

UNCLASSIFIED

**Department of Defense
Fiscal Year (FY) 2014 President's Budget Submission**

April 2013



Office of Secretary Of Defense

Justification Book Volume 3 of 3

Research, Development, Test & Evaluation, Defense-Wide

UNCLASSIFIED

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

UNCLASSIFIED

Office of Secretary Of Defense • President's Budget Submission FY 2014 • RDT&E Program

Table of Volumes

Defense Advanced Research Projects Agency.....	Volume 1
Missile Defense Agency.....	Volume 2
Office of the Secretary of Defense.....	Volume 3
Chemical and Biological Defense Programs.....	Volume 4
Defense Contract Management Agency.....	Volume 5
Defense Human Resources Activity.....	Volume 5
Defense Information Systems Agency.....	Volume 5
Defense Logistics Agency.....	Volume 5
Defense Security Cooperation Agency.....	Volume 5
Defense Security Service.....	Volume 5
Defense Technical Information Center.....	Volume 5
Defense Threat Reduction Agency.....	Volume 5
The Joint Staff.....	Volume 5
U.S. Special Operations Command.....	Volume 5
Washington Headquarters Service.....	Volume 5
Operational Test and Evaluation.....	Volume 5

UNCLASSIFIED

UNCLASSIFIED

Office of Secretary Of Defense • President's Budget Submission FY 2014 • RDT&E Program

Defense Geospatial Intelligence Agency..... (see NIP and MIP Justification Books)

Defense Intelligence Agency..... (see NIP and MIP Justification Books)

National Security Agency.....(see NIP and MIP Justification Books)

UNCLASSIFIED

Office of Secretary Of Defense • President's Budget Submission FY 2014 • RDT&E Program

Volume 3 Table of Contents

Comptroller Exhibit R-1..... Volume 3 - v

Program Element Table of Contents (by Budget Activity then Line Item Number).....Volume 3 - xiii

Exhibit R-2's..... Volume 3 - 1

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

UNCLASSIFIED

Department of Defense
FY 2014 President's Budget
Exhibit R-1 FY 2014 President's Budget
Total Obligational Authority
(Dollars in Thousands)

25 Mar 2013

Summary Recap of Budget Activities -----	FY 2012 (Base & OCO)	FY 2013 Base Request with CR Adj*	FY 2013 OCO Request with CR Adj*	Emergency Disaster Relief Act of 2013	FY 2013 Total Request with CR Adj*	FY 2014 Base
-----	-----	-----	-----	-----	-----	-----
Basic Research	95,044	107,384			107,384	126,337
Applied Research	106,639	104,848			104,848	141,955
Advanced Technology Development	884,851	859,251			859,251	878,507
Advanced Component Development And Prototypes	547,662	290,349			290,349	408,566
System Development And Demonstration	274,129	185,820			185,820	135,404
Management Support	640,307	488,733			488,733	535,205
Operational System Development	79,623	54,867			54,867	69,148
Total Research, Development, Test & Evaluation	2,628,255	2,091,252			2,091,252	2,295,122
Summary Recap of FYDP Programs -----						
General Purpose Forces	1,720	2,637			2,637	5,306
Intelligence and Communications	89,933	131,568			131,568	119,341
Research and Development	2,498,701	1,879,572			1,879,572	2,127,228
Training Medical and Other	37,244	77,475			77,475	43,247
Administration and Associated Activities	657					
Total Research, Development, Test & Evaluation	2,628,255	2,091,252			2,091,252	2,295,122

R-1C: FY 2014 President's Budget (Published Version), as of March 25, 2013 at 08:48:06

* Reflects the FY 2013 President's Budget with an undistributed adjustment to match the Annualized Continuing Resolution funding level by appropriation.

UNCLASSIFIED

Volume 3 - v

UNCLASSIFIED

Office of Secretary of Defense
FY 2014 President's Budget
Exhibit R-1 FY 2014 President's Budget
Total Obligational Authority
(Dollars in Thousands)

25 Mar 2013

Appropriation: 0400D Research, Development, Test & Eval, DW

Line No	Program Element Number	Item	Act	FY 2012 (Base & OCO)	FY 2013 Base Request with CR Adj*	FY 2013 OCO Request with CR Adj*	Emergency Disaster Relief Act of 2013	FY 2013 Total Request with CR Adj*	FY 2014 Base	S e c
3	0601110D8Z	Basic Research Initiatives	01	7,170	19,405			19,405	11,171	U
5	0601120D8Z	National Defense Education Program	01	87,874	87,979			87,979	84,271	U
6	0601228D8Z	Historically Black Colleges and Universities/ Minority Institutions	01						30,895	U
	Basic Research			95,044	107,384			107,384	126,337	
8	0602000D8Z	Joint Munitions Technology	02	20,298	20,615			20,615	20,065	U
10	0602228D8Z	Historically Black Colleges and Universities (HBCU) Science	02	35,245						U
11	0602234D8Z	Lincoln Laboratory Research Program	02	34,444	36,826			36,826	46,875	U
12	0602250D8Z	Systems 2020 Applied Research	02		7,898			7,898		U
13	0602251D8Z	Applied Research for the Advancement of S&T Priorities	02						45,000	U
19	0602663D8Z	Data to Decisions Applied Research	02	3,714	13,753			13,753		U
20	0602668D8Z	Cyber Security Research	02	5,280	18,985			18,985	18,908	U
21	0602670D8Z	Human, Social and Culture Behavior Modeling (HSCB) Applied Research	02	7,658	6,771			6,771		U
26	0602751D8Z	Software Engineering Institute (SEI) Applied Research	02						11,107	U
	Applied Research			106,639	104,848			104,848	141,955	
28	0603000D8Z	Joint Munitions Advanced Technology	03	14,590	25,612			25,612	26,646	U
29	0603121D8Z	SO/LIC Advanced Development	03	44,186	26,324			26,324	19,420	U
30	0603122D8Z	Combating Terrorism Technology Support	03	74,563	77,144			77,144	77,792	U

R-1C: FY 2014 President's Budget (Published Version), as of March 25, 2013 at 08:48:06

* Reflects the FY 2013 President's Budget with an undistributed adjustment to match the Annualized Continuing Resolution funding level by appropriation.

UNCLASSIFIED

Volume 3 - vi

UNCLASSIFIED

Office of Secretary of Defense
FY 2014 President's Budget
Exhibit R-1 FY 2014 President's Budget
Total Obligational Authority
(Dollars in Thousands)

25 Mar 2013

Appropriation: 0400D Research, Development, Test & Eval, DW

Line No	Program Element Number	Item	Act	FY 2012 (Base & OCO)	FY 2013 Base Request with CR Adj*	FY 2013 OCO Request with CR Adj*	Emergency Disaster Relief Act of 2013	FY 2013 Total Request with CR Adj*	FY 2014 Base	S e c
--	-----	----	---	-----	-----	-----	-----	-----	-----	-
33	0603200D8Z	Joint Advanced Concepts	03	7,100						U
34	0603225D8Z	Joint DoD-DoE Munitions Technology Development	03	19,538	20,032			20,032	19,305	U
40	0603618D8Z	Joint Electronic Advanced Technology	03	6,588	6,983			6,983	9,009	U
41	0603648D8Z	Joint Capability Technology Demonstrations	03	192,297	158,263			158,263	174,428	U
42	0603662D8Z	Networked Communications Capabilities	03	20,856	25,393			25,393	20,000	U
43	0603663D8Z	Data to Decisions Advanced Technology Development	03	4,536	13,754			13,754		U
44	0603665D8Z	Biometrics Science and Technology	03	10,342						U
45	0603668D8Z	Cyber Security Advanced Research	03	5,836	19,935			19,935	19,668	U
46	0603670D8Z	Human, Social and Culture Behavior Modeling (HSCB) Advanced Development	03	12,153	8,235			8,235		U
47	0603680D8Z	Defense-Wide Manufacturing Science and Technology Program	03	49,026	21,966			21,966	34,041	U
48	0603699D8Z	Emerging Capabilities Technology Development	03	43,377	24,662			24,662	61,971	U
49	0603711D8Z	Joint Robotics Program/Autonomous Systems	03	9,481						U
52	0603716D8Z	Strategic Environmental Research Program	03	64,220	65,282			65,282	72,324	U
54	0603727D8Z	Joint Warfighting Program	03	10,276	8,403			8,403	8,431	U
56	0603755D8Z	High Performance Computing Modernization Program	03	23,000						U
62	0603781D8Z	Software Engineering Institute	03	27,189	30,036			30,036	19,008	U
63	0603826D8Z	Quick Reaction Special Projects	03	63,029	107,002			107,002	78,532	U
64	0603828D8Z	Joint Experimentation	03	28,160						U
66	0603832D8Z	DoD Modeling and Simulation Management Office	03	29,860	47,433			47,433	41,370	U

R-1C: FY 2014 President's Budget (Published Version), as of March 25, 2013 at 08:48:06

* Reflects the FY 2013 President's Budget with an undistributed adjustment to match the Annualized Continuing Resolution funding level by appropriation.

UNCLASSIFIED

Volume 3 - vii

Office of Secretary of Defense
FY 2014 President's Budget
Exhibit R-1 FY 2014 President's Budget
Total Obligational Authority
(Dollars in Thousands)

25 Mar 2013

Appropriation: 0400D Research, Development, Test & Eval, DW

Line No	Program Element Number	Item	Act	FY 2012 (Base & OCO)	FY 2013 Base Request with CR Adj*	FY 2013 OCO Request with CR Adj*	Emergency Disaster Relief Act of 2013	FY 2013 Total Request with CR Adj*	FY 2014 Base	S e c
69	0603941D8Z	Test & Evaluation Science & Technology	03	96,622	92,602			92,602	92,508	U
70	0604055D8Z	Operational Energy Capability Improvement	03	23,909	26,244			26,244	52,001	U
71	0303310D8Z	CWMD Systems	03	4,117	53,946			53,946	52,053	U
		Advanced Technology Development		884,851	859,251			859,251	878,507	
75	0603161D8Z	Nuclear and Conventional Physical Security Equipment RDT&E ADC&P	04	29,792	33,234			33,234	63,641	U
76	0603527D8Z	RETRACT LARCH	04	20,431	21,023			21,023	19,152	U
77	0603600D8Z	WALKOFF	04	90,665	94,624			94,624	70,763	U
78	0603709D8Z	Joint Robotics Program	04	10,932						U
79	0603714D8Z	Advanced Sensors Application Program	04	18,402	16,958			16,958	17,230	U
80	0603851D8Z	Environmental Security Technical Certification Program	04	61,838	75,941			75,941	71,453	U
99	0603920D8Z	Humanitarian Demining	04	14,540	13,231			13,231	11,704	U
100	0603923D8Z	Coalition Warfare	04	11,389	11,398			11,398	9,842	U
101	0604016D8Z	Department of Defense Corrosion Program	04	34,249	3,283			3,283	3,312	U
102	0604250D8Z	Advanced Innovative Technologies	04						130,000	U
103	0604400D8Z	Department of Defense (DoD) Unmanned Aircraft System (UAS) Common Development	04	24,161	12,368			12,368	8,300	U
105	0604670D8Z	Human, Social and Culture Behavior Modeling (HSCB) Research and Engineering	04	7,037	5,131			5,131		U
106	0604775D8Z	Defense Rapid Innovation Program	04	199,233						U
107	0604787D8Z	Joint Systems Integration Command (JSIC)	04	12,671						U
109	0604828D8Z	Joint FIRES Integration and Interoperability Team	04	8,965						U

R-1C: FY 2014 President's Budget (Published Version), as of March 25, 2013 at 08:48:06

* Reflects the FY 2013 President's Budget with an undistributed adjustment to match the Annualized Continuing Resolution funding level by appropriation.

Office of Secretary of Defense
FY 2014 President's Budget
Exhibit R-1 FY 2014 President's Budget
Total Obligational Authority
(Dollars in Thousands)

25 Mar 2013

Appropriation: 0400D Research, Development, Test & Eval, DW

Line No	Program Element Number	Item	Act	FY 2012 (Base & OCO)	FY 2013 Base Request with CR Adj*	FY 2013 OCO Request with CR Adj*	Emergency Disaster Relief Act of 2013	FY 2013 Total Request with CR Adj*	FY 2014 Base	S e c
115	0303191D8Z	Joint Electromagnetic Technology (JET) Program	04	3,357	3,158			3,158	3,169	U
		Advanced Component Development And Prototypes		547,662	290,349			290,349	408,566	
117	0604051D8Z	Defense Acquisition Challenge Program (DACP)	05	24,833						U
118	0604161D8Z	Nuclear and Conventional Physical Security Equipment RDT&E SDD	05	6,977	6,817			6,817	8,155	U
119	0604165D8Z	Prompt Global Strike Capability Development	05	174,077	110,383			110,383	65,440	U
121	0604709D8Z	Joint Robotics Program - EMD	05	2,705						U
123	0604771D8Z	Joint Tactical Information Distribution System (JTIDS)	05	16,775	20,688			20,688	19,475	U
127	0605022D8Z	Defense Exportability Program	05	1,915	1,859			1,859	3,763	U
128	0605027D8Z	OUSD(C) IT Development Initiatives	05	4,845	7,010			7,010	6,788	U
130	0605075D8Z	DCMO Policy and Integration	05	27,594	25,269			25,269	22,297	U
132	0605210D8Z	Defense-Wide Electronic Procurement Capabilities	05	14,408	10,238			10,238	6,184	U
134	0305304D8Z	DoD Enterprise Energy Information Management (EEIM)	05		3,556			3,556	3,302	U
		System Development And Demonstration		274,129	185,820			185,820	135,404	
135	0604774D8Z	Defense Readiness Reporting System (DRRS)	06	6,598	6,383			6,383	6,393	U
136	0604875D8Z	Joint Systems Architecture Development	06	4,545	3,845			3,845	2,479	U
137	0604940D8Z	Central Test and Evaluation Investment Development (CTEIP)	06	156,249	144,109			144,109	240,213	U
138	0604942D8Z	Assessments and Evaluations	06	2,574	2,419			2,419	2,127	U
139	0604943D8Z	Thermal Vicar	06	7,658	8,214			8,214	8,287	U

R-1C: FY 2014 President's Budget (Published Version), as of March 25, 2013 at 08:48:06

* Reflects the FY 2013 President's Budget with an undistributed adjustment to match the Annualized Continuing Resolution funding level by appropriation.

UNCLASSIFIED

Office of Secretary of Defense
FY 2014 President's Budget
Exhibit R-1 FY 2014 President's Budget
Total Obligational Authority
(Dollars in Thousands)

25 Mar 2013

Appropriation: 0400D Research, Development, Test & Eval, DW

Line No	Program Element Number	Item	Act	FY 2012 (Base & OCO)	FY 2013 Base Request with CR Adj*	FY 2013 OCO Request with CR Adj*	Emergency Disaster Relief Act of 2013	FY 2013 Total Request with CR Adj*	FY 2014 Base	S e c
--	-----	----	---	-----	-----	-----	-----	-----	-----	-
140	0605100D8Z	Joint Mission Environment Test Capability (JMETC)	06	10,215	19,380			19,380	31,000	U
141	0605104D8Z	Technical Studies, Support and Analysis	06	33,001	32,266			32,266	24,379	U
142	0605110D8Z	USD(A&T)--Critical Technology Support	06	1,425	840			840		U
143	0605117D8Z	Foreign Materiel Acquisition and Exploitation	06	64,505	56,012			56,012	54,311	U
145	0605128D8Z	Classified Program USD(P)	06	97,603						U
146	0605130D8Z	Foreign Comparative Testing	06	18,616	18,174			18,174	12,134	U
147	0605142D8Z	Systems Engineering	06	39,118	43,195			43,195	44,237	U
148	0605151D8Z	Studies and Analysis Support - OSD	06		6,457			6,457	5,871	U
149	0605161D8Z	Nuclear Matters-Physical Security	06	3,824	4,901			4,901	5,028	U
150	0605170D8Z	Support to Networks and Information Integration	06	9,119	6,307			6,307	6,301	U
151	0605200D8Z	General Support to USD (Intelligence)	06	17,644	6,601			6,601	6,504	U
155	0605502D8Z	Small Business Innovative Research	06	47,755						U
158	0605790D8Z	Small Business Innovation Research (SBIR)/ Small Business Technology Transfer (S	06	1,911	1,857			1,857	1,868	U
159	0605798D8Z	Defense Technology Analysis	06	16,858	12,056			12,056	8,362	U
162	0605804D8Z	Development Test and Evaluation	06	18,389	15,110			15,110	15,451	U
165	0606100D8Z	Budget and Program Assessments	06	4,431	4,454			4,454	4,083	U
166	0606301D8Z	Aviation Safety Technologies	06	6,877						U
167	0203345D8Z	Defense Operations Security Initiative (DOSI)	06	1,720	2,637			2,637	5,306	U
171	0303166D8Z	Support to Information Operations (IO) Capabilities	06	11,767						U

R-1C: FY 2014 President's Budget (Published Version), as of March 25, 2013 at 08:48:06

* Reflects the FY 2013 President's Budget with an undistributed adjustment to match the Annualized Continuing Resolution funding level by appropriation.

UNCLASSIFIED

Volume 3 - x

Office of Secretary of Defense
FY 2014 President's Budget
Exhibit R-1 FY 2014 President's Budget
Total Obligational Authority
(Dollars in Thousands)

25 Mar 2013

Appropriation: 0400D Research, Development, Test & Eval, DW

Line	Program Element No Number	Item	Act	FY 2012 (Base & OCO)	FY 2013 Base Request with CR Adj*	FY 2013 OCO Request with CR Adj*	Emergency Disaster Relief Act of 2013	FY 2013 Total Request with CR Adj*	FY 2014 Base	S e c
---	-----	----	---	-----	-----	-----	-----	-----	-----	-
173	0303169D8Z	Information Technology Rapid Acquisition	06	4,146						U
175	0305193D8Z	Cyber Intelligence	06	14,997	16,041			16,041	7,624	U
177	0305400D8Z	Warfighting and Intelligence-Related Support	06	861						U
178	0804767D8Z	COCOM Exercise Engagement and Training Transformation (CE2T2)	06	37,244	77,475			77,475	43,247	U
181	0909999D8Z	Financing for Cancelled Account Adjustments	06	657						U
	Management Support			640,307	488,733			488,733	535,205	
185	0607210D8Z	Industrial Base Analysis and Sustainment Support	07						14,000	U
186	0607310D8Z	Operational Systems Development	07						1,955	U
189	0607828D8Z	Joint Integration and Interoperability	07	28,935						U
207	0303140D8Z	Information Systems Security Program	07	11,348	11,780			11,780	10,673	U
213	0303260D8Z	Defense Military Deception Program Office (DMDPO)	07	1,206	1,294			1,294	1,246	U
221	0305125D8Z	Critical Infrastructure Protection (CIP)	07	12,814	10,462			10,462	9,752	U
225	0305186D8Z	Policy R&D Programs	07	6,718	6,360			6,360	3,210	U
227	0305199D8Z	Net Centricity	07	14,528	21,190			21,190	21,602	U
238	0305387D8Z	Homeland Defense Technology Transfer Program	07	2,630	2,303			2,303	2,338	U
239	0305600D8Z	International Intelligence Technology and Architectures	07	1,444	1,478			1,478	4,372	U
	Operational System Development			79,623	54,867			54,867	69,148	
Total	Office of Secretary of Defense			2,628,255	2,091,252			2,091,252	2,295,122	

R-1C: FY 2014 President's Budget (Published Version), as of March 25, 2013 at 08:48:06

* Reflects the FY 2013 President's Budget with an undistributed adjustment to match the Annualized Continuing Resolution funding level by appropriation.

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

UNCLASSIFIED

Office of Secretary Of Defense • President's Budget Submission FY 2014 • RDT&E Program

Program Element Table of Contents (by Budget Activity then Line Item Number)

Budget Activity 01: Basic Research

Appropriation 0400: Research, Development, Test & Evaluation, Defense-Wide

Line Item	Budget Activity	Program Element Number	Program Element Title	Page
3	01	0601110D8Z	Basic Research Initiatives.....	Volume 3 - 1
5	01	0601120D8Z	National Defense Education Program (NDEP).....	Volume 3 - 7
6	01	0601228D8Z	Historically Black Colleges and Universities and Minority Institutions.....	Volume 3 - 17

Budget Activity 02: Applied Research

Appropriation 0400: Research, Development, Test & Evaluation, Defense-Wide

Line Item	Budget Activity	Program Element Number	Program Element Title	Page
8	02	0602000D8Z	Joint Munitions Technology.....	Volume 3 - 23
10	02	0602228D8Z	Historically Black Colleges and Universities and Minority Institutions (HBCU/MI).....	Volume 3 - 37
11	02	0602234D8Z	Lincoln Laboratory.....	Volume 3 - 43
12	02	0602250D8Z	Systems 2020 Applied Research.....	Volume 3 - 57
13	02	0602251D8Z	Applied Research for the Advancement of S&T Priorities	Volume 3 - 61
19	02	0602663D8Z	Data to Decisions Applied Research.....	Volume 3 - 65

UNCLASSIFIED

UNCLASSIFIED

Office of Secretary Of Defense • President's Budget Submission FY 2014 • RDT&E Program

Budget Activity 02: Applied Research

Appropriation 0400: Research, Development, Test & Evaluation, Defense-Wide

Line Item	Budget Activity	Program Element Number	Program Element Title	Page
20	02	0602668D8Z	Cyber Applied Research.....	Volume 3 - 71
21	02	0602670D8Z	Human Social Culture Behavior (HSCB) Modeling Applied Research.....	Volume 3 - 79
26	02	0602751D8Z	Software Engineering Institute (SEI) Applied Research.....	Volume 3 - 85

Budget Activity 03: Advanced Technology Development (ATD)

Appropriation 0400: Research, Development, Test & Evaluation, Defense-Wide

Line Item	Budget Activity	Program Element Number	Program Element Title	Page
28	03	0603000D8Z	Joint Munitions Advanced Technology.....	Volume 3 - 91
29	03	0603121D8Z	SO/LIC Advanced Development	Volume 3 - 105
30	03	0603122D8Z	Combating Terrorism Technology Support	Volume 3 - 119
33	03	0603200D8Z	Joint Advanced Concepts.....	Volume 3 - 135
34	03	0603225D8Z	Joint DOD/DOE Munitions Technology Development.....	Volume 3 - 143
40	03	0603618D8Z	Joint Electronic Advanced Technology.....	Volume 3 - 159
41	03	0603648D8Z	Joint Capability Technology Demonstration (JCTD).....	Volume 3 - 167
42	03	0603662D8Z	Networked Communications Capability.....	Volume 3 - 203
43	03	0603663D8Z	Data to Decisions Advanced Technology.....	Volume 3 - 217

UNCLASSIFIED

UNCLASSIFIED

Office of Secretary Of Defense • President's Budget Submission FY 2014 • RDT&E Program

Budget Activity 03: Advanced Technology Development (ATD)
Appropriation 0400: Research, Development, Test & Evaluation, Defense-Wide

Line Item	Budget Activity	Program Element Number	Program Element Title	Page
44	03	0603665D8Z	Biometrics Science and Technology.....	Volume 3 - 223
45	03	0603668D8Z	Cyber Advanced Technology Development.....	Volume 3 - 231
46	03	0603670D8Z	Human Social Culture Behavior (HSCB) Modeling Advanced Development.....	Volume 3 - 239
47	03	0603680D8Z	Defense Wide Manufacturing Science and Technology Program.....	Volume 3 - 245
48	03	0603699D8Z	Emerging Capabilities Technology Development.....	Volume 3 - 265
49	03	0603711D8Z	Joint Robotics Program/Autonomous Systems.....	Volume 3 - 279
52	03	0603716D8Z	Strategic Environmental Research and Development Program (SERDP).....	Volume 3 - 289
54	03	0603727D8Z	Joint Warfighting Program.....	Volume 3 - 295
56	03	0603755D8Z	High Performance Computing Modernization Program.....	Volume 3 - 301
62	03	0603781D8Z	Software Engineering Institute (SEI).....	Volume 3 - 307
63	03	0603826D8Z	Quick Reactions Special Projects (QRSP).....	Volume 3 - 319
64	03	0603828D8Z	Joint Experimentation.....	Volume 3 - 347
66	03	0603832D8Z	DoD Modeling and Simulation Management Office.....	Volume 3 - 355
69	03	0603941D8Z	Test and Evaluation/Science and Technology.....	Volume 3 - 369
70	03	0604055D8Z	Operational Energy Capability Improvement	Volume 3 - 395
71	03	0303310D8Z	Countering Weapons of Mass Destruction (CWMD) Systems	Volume 3 - 403

UNCLASSIFIED

UNCLASSIFIED

Office of Secretary Of Defense • President's Budget Submission FY 2014 • RDT&E Program

Budget Activity 04: Advanced Component Development & Prototypes (ACD&P)

Appropriation 0400: Research, Development, Test & Evaluation, Defense-Wide

Line Item	Budget Activity	Program Element Number	Program Element Title	Page
75	04	0603161D8Z	Nuclear and Conventional Physical Security/Countering Nuclear Threats	Volume 3 - 411
76	04	0603527D8Z	Retract Larch.....	Volume 3 - 433
77	04	0603600D8Z	WALKOFF.....	Volume 3 - 437
78	04	0603709D8Z	Joint Robotics Program.....	Volume 3 - 441
79	04	0603714D8Z	Advanced Sensor Applications Program.....	Volume 3 - 453
80	04	0603851D8Z	Environmental Security Technology Certification Program.....	Volume 3 - 457
99	04	0603920D8Z	Humanitarian De-mining.....	Volume 3 - 465
100	04	0603923D8Z	Coalition Warfare.....	Volume 3 - 475
101	04	0604016D8Z	Department of Defense Corrosion Policy and Oversight.....	Volume 3 - 489
102	04	0604250D8Z	Advanced Innovative Technologies	Volume 3 - 499
103	04	0604400D8Z	Unmanned Aircraft Systems Common Development.....	Volume 3 - 507
105	04	0604670D8Z	Human Social Culture Behavior (HSCB) Modeling Research and Engineering.....	Volume 3 - 519
106	04	0604775D8Z	Defense Rapid Innovation Fund.....	Volume 3 - 529
107	04	0604787D8Z	Joint Systems Integration Command.....	Volume 3 - 533
109	04	0604828D8Z	Joint Fires Integration and Interoperability Team.....	Volume 3 - 545
115	04	0303191D8Z	Joint Electromagnetic Technology (JET) Program.....	Volume 3 - 555

UNCLASSIFIED

UNCLASSIFIED

Office of Secretary Of Defense • President's Budget Submission FY 2014 • RDT&E Program

Budget Activity 05: System Development & Demonstration (SDD)

Appropriation 0400: Research, Development, Test & Evaluation, Defense-Wide

.....

Line Item	Budget Activity	Program Element Number	Program Element Title	Page
117	05	0604051D8Z	Defense Acquisition Challenge Program (DACP).....	Volume 3 - 559
118	05	0604161D8Z	Nuclear and Conventional Physical Security/Countering Nuclear Threats.....	Volume 3 - 567
119	05	0604165D8Z	Prompt Global Strike Capability Development.....	Volume 3 - 581
121	05	0604709D8Z	Joint Robotics EMD.....	Volume 3 - 603
123	05	0604771D8Z	Joint Tactical Information Distribution System (JTIDS).....	Volume 3 - 611
127	05	0605022D8Z	Defense Exportability Program.....	Volume 3 - 623
128	05	0605027D8Z	OUSD(C) IT Development Initiative.....	Volume 3 - 633
130	05	0605075D8Z	DCMO Policy and Integration.....	Volume 3 - 639
132	05	0605210D8Z	Defense-Wide Electronic Procurement Capabilities.....	Volume 3 - 647
134	05	0305304D8Z	DoD Enterprise Energy Information Management (EEIM).....	Volume 3 - 655

UNCLASSIFIED

UNCLASSIFIED

Office of Secretary Of Defense • President's Budget Submission FY 2014 • RDT&E Program

Budget Activity 06: RDT&E Management Support

Appropriation 0400: Research, Development, Test & Evaluation, Defense-Wide

.....

Line Item	Budget Activity	Program Element Number	Program Element Title	Page
135	06	0604774D8Z	Defense Readiness Reporting System (DRRS).....	Volume 3 - 661
136	06	0604875D8Z	Joint Systems Architecture Development.....	Volume 3 - 667
137	06	0604940D8Z	Central Test and Evaluation Investment Program (CTEIP).....	Volume 3 - 673
138	06	0604942D8Z	Assessments & Evaluations.....	Volume 3 - 683
139	06	0604943D8Z	Thermal Vicar.....	Volume 3 - 685
140	06	0605100D8Z	Joint Mission Environment Test Capability (JMETC).....	Volume 3 - 687
141	06	0605104D8Z	Technical Studies.....	Volume 3 - 695
142	06	0605110D8Z	USD (A&T) Critical Technology Support.....	Volume 3 - 705
143	06	0605117D8Z	Foreign Materiel Acquisition and Exploitation.....	Volume 3 - 711
145	06	0605128D8Z	Classified Program	Volume 3 - 713
146	06	0605130D8Z	Foreign Comparative Testing.....	Volume 3 - 715
147	06	0605142D8Z	Systems Engineering.....	Volume 3 - 723
148	06	0605151D8Z	Studies and Analysis Support - OSD.....	Volume 3 - 737
149	06	0605161D8Z	Nuclear Matters.....	Volume 3 - 743
150	06	0605170D8Z	Support to Networks and Information Integration.....	Volume 3 - 751
151	06	0605200D8Z	General Support to OUSD(I).....	Volume 3 - 765

UNCLASSIFIED

UNCLASSIFIED

Office of Secretary Of Defense • President's Budget Submission FY 2014 • RDT&E Program

Budget Activity 06: RDT&E Management Support

Appropriation 0400: Research, Development, Test & Evaluation, Defense-Wide

.....

Line Item	Budget Activity	Program Element Number	Program Element Title	Page
155	06	0605502D8Z	Small Business Innovation Research/Small Business Technology Transfer (SBIR/ STTR).....	Volume 3 - 773
158	06	0605790D8Z	Small Business Innovation Research (SBIR)/Small Business Technology Transfer (STTR) Administration	Volume 3 - 779
159	06	0605798D8Z	Defense Technology Analysis.....	Volume 3 - 783
162	06	0605804D8Z	Development Test & Evaluation.....	Volume 3 - 793
165	06	0606100D8Z	Budget and Program Assessments.....	Volume 3 - 801
166	06	0606301D8Z	Aviation Safety Technologies.....	Volume 3 - 807
167	06	0203345D8Z	Defense Operations Security Initiative.....	Volume 3 - 809
171	06	0303166D8Z	Support to Information Operations Capabilities.....	Volume 3 - 815
173	06	0303169D8Z	Information Technology Rapid Acquisition.....	Volume 3 - 821
175	06	0305193D8Z	Cyber Intelligence.....	Volume 3 - 825
177	06	0305400D8Z	Warfighting and Intelligence-Related Support.....	Volume 3 - 829
178	06	0804767D8Z	COCOM Exercise Engagement and Training Transformation (CE2T2).....	Volume 3 - 831
181	06	0909999D8Z	Financing for Cancelled Account Adjustments.....	Volume 3 - 863

UNCLASSIFIED

UNCLASSIFIED

Office of Secretary Of Defense • President's Budget Submission FY 2014 • RDT&E Program

Budget Activity 07: Operational Systems Development

Appropriation 0400: Research, Development, Test & Evaluation, Defense-Wide

.....

Line Item	Budget Activity	Program Element Number	Program Element Title	Page
185	07	0607210D8Z	Industrial Base Analysis and Sustainment Support.....	Volume 3 - 865
186	07	0607310D8Z	Operational Systems Development.....	Volume 3 - 871
189	07	0607828D8Z	Joint Integration & Interoperability.....	Volume 3 - 877
207	07	0303140D8Z	Information Systems Security Program.....	Volume 3 - 889
213	07	0303260D8Z	Defense Military Deception Program Office	Volume 3 - 897
221	07	0305125D8Z	Critical Infrastructure Protection (CIP)	Volume 3 - 901
225	07	0305186D8Z	Policy R&D Programs.....	Volume 3 - 909
227	07	0305199D8Z	Net Centricity	Volume 3 - 917
238	07	0305387D8Z	Homeland Defense Technology Transfer Program.....	Volume 3 - 929
239	07	0305600D8Z	International Intelligence Technology and Architectures	Volume 3 - 935

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense	DATE: April 2013
-------------------------------------------------------------------------------------------------	-------------------------

APPROPRIATION/BUDGET ACTIVITY

0400: *Research, Development, Test & Evaluation, Defense-Wide*
 BA 1: *Basic Research*

R-1 ITEM NOMENCLATURE

PE 0601110D8Z: *Basic Research Initiatives*

COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
Total Program Element	-	7.170	19.405	11.171	-	11.171	13.091	19.795	24.621	24.958	Continuing	Continuing
P010: <i>Basic Research Initiatives</i>	-	7.170	19.405	11.171	-	11.171	13.091	19.795	24.621	24.958	Continuing	Continuing

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

Note

This program element (PE) incorporates Minerva Research Initiative activities, which include university-led basic research in social science and sponsored research faculty chair positions at defense education institutions, and activities to implement the basic research office strategic plan for the Department of Defense (DoD).

A. Mission Description and Budget Item Justification

Basic research provides the DoD with a deep and broad awareness of current directions in science and engineering through the scientific performers in areas of research that are important to U.S. military capabilities including, among others, physics and the physical sciences, materials science, chemistry and chemical engineering, electrical engineering, applied mathematics, computer science, mechanical and aerodynamic engineering, ocean sciences, biological sciences, and the social sciences. Basic research sustains scientific and engineering communities in areas that form the critical technical underpinnings of DoD capabilities. Basic research through exploration and discovery provides the unique means for disruptive non-incremental advances that can improve or radically change military strategy and operations.

The Minerva Research Initiative is a university-based social science basic research program directed from within the Office of the Secretary of Defense (OSD) and executed by the Services, consistent with the January 2012 priorities document "Sustaining U.S. Global Leadership: Priorities for 21st Century Defense" and the Quadrennial Defense Review (QDR) requirements. This program seeks to build a deeper understanding of the social, cultural, and political forces that shape regions of the world of strategic importance to the United States. Deeper understanding of the cultural and political environments where threats, such as radical actors and regime disruptions, develop supports more effective strategic and operational policy decisions.

The Strategic Support for Basic Research (SSBR) program funds initiatives to implement the Assistant Secretary of Defense for Research and Engineering (ASD(R&E)) strategic plan for defense basic research. This plan defines specific and quantifiable actions to help create conditions for defense basic research investments capable of creating high-payoff, transformative scientific breakthroughs for DoD. The SSBR initiatives support the five aims of: (1) providing scientific leadership; (2) attracting the Nation's best Scientists and Engineers (S&Es); (3) ensuring the coherence and balance of the Basic Research portfolio; (4) fostering connections between DoD performers and DoD; and (5) improving the efficiency of the defense research business environment.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense	DATE: April 2013
-------------------------------------------------------------------------------------------------	-------------------------

APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 1: <i>Basic Research</i>	R-1 ITEM NOMENCLATURE PE 0601110D8Z: <i>Basic Research Initiatives</i>
------------------------------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------

B. Program Change Summary (\$ in Millions)	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total
Previous President's Budget	7.482	19.405	13.754	-	13.754
Current President's Budget	7.170	19.405	11.171	-	11.171
Total Adjustments	-0.312	0.000	-2.583	-	-2.583
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-0.310	-			
• SBIR/STTR Transfer	-	-			
• Baseline Adjustments	-	-	-2.583	-	-2.583
• Other Adjustments	-0.002	-	-	-	-

Change Summary Explanation

FY 2014 baseline adjustments are in compliance with the Department of Defense new Strategic Guidance on the Asia-Pacific rebalance.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 1: Basic Research					R-1 ITEM NOMENCLATURE PE 0601110D8Z: Basic Research Initiatives				PROJECT P010: Basic Research Initiatives			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
P010: Basic Research Initiatives	-	7.170	19.405	11.171	-	11.171	13.091	19.795	24.621	24.958	Continuing	Continuing

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

Basic research provides the DoD with a deep and broad awareness of current directions in science and engineering through the scientific performers in areas of research that are important to U.S. military capabilities including, among others, physics and the physical sciences, materials science, chemistry and chemical engineering, electrical engineering, applied mathematics, computer science, mechanical and aerodynamic engineering, ocean sciences, biological sciences, and the social sciences. Basic research sustains scientific and engineering communities in areas that form the critical technical underpinnings of DoD capabilities. Basic research through exploration and discovery provides the unique means for disruptive non-incremental advances that can improve or radically change military strategy and operations.

The Minerva Research Initiative is a university-based social science basic research program directed from within the Office of the Secretary of Defense (OSD) and executed by the Services, consistent with the January 2012 priorities document "Sustaining U.S. Global Leadership: Priorities for 21st Century Defense" and the Quadrennial Defense Review (QDR) requirements. This program seeks to build a deeper understanding of the social, cultural, and political forces that shape regions of the world of strategic importance to the United States. Deeper understanding of the cultural and political environments where threats, such as radical actors and regime disruptions, develop supports more effective strategic and operational policy decisions.

The Strategic Support for Basic Research (SSBR) program funds initiatives to implement the Assistant Secretary of Defense for Research and Engineering (ASD(R&E)) strategic plan for defense basic research. This plan defines specific and quantifiable actions to help create conditions for defense basic research investments capable of creating high-payoff, transformative scientific breakthroughs for DoD. The SSBR initiatives support the five aims of (1) providing scientific leadership; (2) attracting the Nation's best Scientists and Engineers (S&Es); (3) ensuring the coherence and balance of the Basic Research portfolio; (4) fostering connections between DoD performers and DoD; and (5) improving the efficiency of the defense research business environment.

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2012	FY 2013	FY 2014
Title: Minerva Research Initiative	5.769	16.520	7.331
Description: The Minerva Research Initiative is a university-based social science basic research program directed from within the OSD and executed by the Services, consistent with the January 2012 priorities document "Sustaining U.S. Global Leadership: Priorities for 21st Century Defense" and the QDR requirements. This program seeks to build a deeper understanding of the social, cultural, and political forces that shape regions of the world of strategic importance to the United States. Deeper understanding of the cultural and political environments where threats such as radical actors and regime disruptions develop supports more effective strategic and operational policy decisions.			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 1: <i>Basic Research</i>	R-1 ITEM NOMENCLATURE PE 0601110D8Z: <i>Basic Research Initiatives</i>	PROJECT P010: <i>Basic Research Initiatives</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
<p><i>FY 2012 Accomplishments:</i> The FY 2012 Broad Agency Announcement (BAA) yielded 350 white papers and 53 full proposals, over half from principal investigators (PIs) that had never received DoD funds before. Of these, ten new grants for university led research were awarded, giving support to approximately 30 new PIs at 17 institutions. This represents the first solicitation and new program funding for university research since FY 2009. In preparation for the FY 2013 BAA, sought and received research prioritization input from Service leadership, Defense Advanced Research Projects Agency (DARPA), Combatant Commands (COCOMs), Joint Staff (J5), the intelligence community and others. Supported faculty chairs for 14 Minerva Research Fellows at defense education institutions such as war colleges and service academies.</p> <p><i>FY 2013 Plans:</i> A Department-wide solicitation of topics to be set as Minerva priority social science research areas drew responses from Service leadership, DARPA, COCOMs, J5, the intelligence community and others. The resulting BAA and correlated source selection process identified several new university-led research grants to be awarded in these newly derived focus areas. The FY 2013 BAA yielded 270 white papers. Full proposals from this set will be selected for award in accordance with recommendations from a panel of defense Science and Technology (S&T), defense policy, and academic experts as well as the appropriated FY 2013 budget.</p> <p>Maintain sponsored faculty chairs for Minerva Research Fellows at defense education institutions (war colleges and service academies).</p> <p><i>FY 2014 Plans:</i> Continue and start new university-led research initiatives. Maintain support of sponsored Minerva faculty chairs at defense education institutions, such as war colleges and service academies.</p>			
<p><i>Title:</i> Strategic Support for Basic Research (SSBR)</p> <p><i>Description:</i> The SSBR program funds initiatives to implement the ASD(R&E) strategic plan for defense basic research. This plan defines specific and quantifiable actions to help create conditions for defense basic research investments capable of creating high-payoff, transformative scientific breakthroughs for DoD. The SSBR initiatives support the five aims of (1) providing scientific leadership; (2) attracting the Nation's best scientists and engineers; (3) ensuring the coherence and balance of the Basic Research portfolio; (4) fostering connections between DoD performers and DoD; and (5) improving the efficiency of the defense research business environment.</p> <p><i>FY 2012 Accomplishments:</i> Conducted three scientific workshops to define/determine the state and direction of emerging area in today's basic research. Provided insight into: grand challenges, the potential for each field,the investments needed to move the field forward, and an</p>		1.401	2.885
			3.840

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 1: <i>Basic Research</i>	R-1 ITEM NOMENCLATURE PE 0601110D8Z: <i>Basic Research Initiatives</i>	PROJECT P010: <i>Basic Research Initiatives</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
<p>assessment of current and future projected leadership in international basic research. In addition, organized Multidisciplinary University Research Initiative (MURI) Reviews with industrial participation to network and identify potential high impact areas of transition. Generated a strategic plan and associated implementation plan, tying the strategic plan to the recently released Report of the Defense Science Board Task Force on Basic Research.</p> <p><i>FY 2013 Plans:</i> Conduct workshops for scientific situational awareness. Convene National research leaders to provide external perspectives on potential breakthroughs and barriers to advancement in rapidly evolving fields of basic research. Analyze university related business practices for improvement. Acquire scientific expertise to oversee engineering and science initiatives. Conduct ASD(R&E) Deans Dialog event to foster more active connections with research universities. Establish DoD wide Basic Research objectives and priorities.</p> <p><i>FY 2014 Plans:</i> Conduct workshops for scientific situational awareness. Convene National research leaders to provide external perspectives on potential breakthroughs and barriers to advancement in rapidly evolving fields of basic research. Continue to analyze university related business practices for improvement. Continue support for scientific expertise to oversee engineering and science initiatives. Conduct annual ASD(R&E) Deans Dialog event to foster active connections with research universities.</p>			
Accomplishments/Planned Programs Subtotals		7.170	19.405
C. Other Program Funding Summary (\$ in Millions)			
N/A			
Remarks			
D. Acquisition Strategy			
N/A			
E. Performance Metrics			
N/A			

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE							
0400: Research, Development, Test & Evaluation, Defense-Wide BA 1: Basic Research					PE 0601120D8Z: National Defense Education Program (NDEP)							
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
Total Program Element	-	87.874	87.979	84.271	-	84.271	96.906	97.393	82.727	84.337	Continuing	Continuing
P120: National Defense Education Program (NDEP)	-	87.874	87.979	84.271	-	84.271	96.906	97.393	82.727	84.337	Continuing	Continuing

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

The purpose of the National Defense Education Program (NDEP) is to attract, engage, and develop current and future generations of science, technology, engineering, and mathematics (STEM) talent to benefit the Department of Defense (DoD) mission. NDEP is DoD's primary program to execute high quality, experiential STEM efforts for pre-Kindergarten-12th Grade (PK-12) students through world-class researchers to address DoD's STEM workforce needs, and to provide current and future scientific and technological capabilities. NDEP initiatives align with the four priority areas of the National Science and Technology Council (NSTC) Committee on STEM Education (CoSTEM) Federal Five-Year STEM Strategic Plan: (1) STEM teacher training, (2) groups underrepresented in STEM, (3) STEM undergraduate education, and (4) STEM engagement.

NDEP consists of three components: (1) Science, Mathematics, and Research for Transformation (SMART); (2) the National Security Science and Engineering Faculty Fellowship (NSSEFF); and (3) pre-Kindergarten-12th Grade (PK-12). NDEP aligns to the Science and Technology (S&T) priorities and emerging scientific research areas, the integrated STEM/Historically Black Colleges and Universities and Minority Institutions (HBCU/MIs) synchronized with the Federal Five-Year STEM Strategic Plan, the DoD STEM Strategic Plan and the in-progress DoD Strategic Workforce Plan. NDEP components are guided and informed by the Office of Management and Budget's "Use of Evidence and Evaluation in the 2014" memorandum and are consistent with Government Accountability Office guidance on assessment and evaluation practices.

SMART awards highly competitive scholarships-for-service to undergraduate and graduate students in 19 academic STEM disciplines and moves graduates directly into DoD's workforce following graduation. Internships provide SMART scholars with an opportunity to engage in hands-on research and work experiences in DoD labs, thereby enhancing their educational experience and building a public service commitment to the Department's mission. Since its inception as a pilot program in FY 2005, SMART has supported approximately 1,130 students from bachelor's to doctoral levels and to date approximately 550 have completed program studies and transitioned into the DoD workforce. SMART ensures that DoD has a steady infusion of highly educated, high caliber U.S. technical talent, prepared in areas of critical importance to DoD, ready to apply their technical knowledge, skills, and abilities to help DoD fulfill its mission.

NSSEFF supports 29 world-class researchers (NSSEFF Fellows) in areas of critical importance to DoD and ensures the cultivation of exceptional future talent. The NSSEFF Fellows work with approximately 100 undergraduate students, 200 graduate students, and 100 post-doctoral scholars at their respective academic institutions. Three cohorts of NSSEFF Fellows, with the first selected in FY 2008, have provided critical connections between academia and the DoD science and engineering

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense	DATE: April 2013
-------------------------------------------------------------------------------------------------	-------------------------

APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 1: <i>Basic Research</i>	R-1 ITEM NOMENCLATURE PE 0601120D8Z: <i>National Defense Education Program (NDEP)</i>
------------------------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------

enterprise. Fellows' work spans all seven DoD S&T priorities and the six emerging scientific research areas. NSSEFF Fellows serve as speakers at DoD events, reviewers on panels for DoD science, and as collaborators with scientists and engineers at DoD's laboratories and other research facilities.

NDEP PK-12 engages, develops, and attracts STEM talent for future DoD military and civilian workforce needs via 68 local sites and nine national organizations. NDEP PK-12 leverages the DoD's STEM expertise to connect students, teachers, schools, and public sector and industry partners with DoD subject matter experts (SMEs) primarily in those communities adjacent to DoD laboratories and bases where the talent pool resides. Authentic STEM experiences for teachers and students include hands-on activities that are aligned with DoD's technical workforce requirements. Since FY 2007, NDEP PK-12 has increased the number of DoD facilities that directly engage local education authorities (LEAs) to: (1) build student interest in STEM fields and disciplines and in careers specific to DoD; (2) develop DoD-relevant science, engineering and mathematics skills; and (3) provide future talent to fulfill DoD's demand for highly skilled STEM professionals. NDEP PK-12 has utilized 4,100 exceptional DoD STEM professionals to reach 500,000 students and 8,300 teachers in 30 states. As one specific example, DoD SMEs contributed over 8,000 hours to lead FIRST Robotics Competition teams, with over 90 percent of team members reporting that the hands-on experience taught them about how science and technology can be used to solve real-world science and engineering problems.

B. Program Change Summary (\$ in Millions)	<u>FY 2012</u>	<u>FY 2013</u>	<u>FY 2014 Base</u>	<u>FY 2014 OCO</u>	<u>FY 2014 Total</u>
Previous President's Budget	83.577	87.979	78.690	-	78.690
Current President's Budget	87.874	87.979	84.271	-	84.271
Total Adjustments	4.297	0.000	5.581	-	5.581
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	4.323	-			
• SBIR/STTR Transfer	-	-			
• Baseline Adjustments	-	-	5.581	-	5.581
• Other Adjustments	-0.026	-	-	-	-

Change Summary Explanation

FY 2014 baseline adjustments are reflective of DoD priorities and requirements.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 1: Basic Research					R-1 ITEM NOMENCLATURE PE 0601120D8Z: National Defense Education Program (NDEP)				PROJECT P120: National Defense Education Program (NDEP)			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
P120: National Defense Education Program (NDEP)	-	87.874	87.979	84.271	-	84.271	96.906	97.393	82.727	84.337	Continuing	Continuing

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

The purpose of the National Defense Education Program (NDEP) is to attract, engage, and develop current and future generations of science, technology, engineering, and mathematics (STEM) talent to benefit the Department of Defense (DoD) mission. NDEP is DoD's primary program to execute high quality, experiential STEM efforts for pre-Kindergarten-12th Grade (PK-12) students through world-class researchers to address DoD's STEM workforce needs, and to provide current and future scientific and technological capabilities. NDEP initiatives align with the four priority areas of the National Science and Technology Council (NSTC) Committee on STEM Education (CoSTEM) Federal Five-Year STEM Strategic Plan: STEM teacher training, groups underrepresented in STEM, STEM undergraduate education, and STEM engagement.

NDEP consists of three components: (1) Science, Mathematics, and Research for Transformation (SMART); (2) the National Security Science and Engineering Faculty Fellowship (NSSEFF); and (3) pre-Kindergarten-12th Grade (PK-12). NDEP aligns to the Science and Technology (S&T) priorities and emerging scientific research areas, the integrated STEM/Historically Black Colleges and Universities and Minority Institutions (HBCU/MIs) synchronized with the Federal Five-Year STEM Strategic Plan, the DoD STEM Strategic Plan and the in-progress DoD Strategic Workforce Plan. NDEP components are guided and informed by the Office of Management and Budget's "Use of Evidence and Evaluation in the 2014" memorandum and consistent with Government Accountability Office guidance on assessment and evaluation practices.

SMART awards highly competitive scholarships-for-service to undergraduate and graduate students in 19 academic STEM disciplines and moves graduates directly into DoD's workforce following graduation. Internships provide SMART scholars with an opportunity to engage in hands-on research and work experiences in DoD labs, thereby enhancing their educational experience and building a public service commitment to the Department's mission. Since its inception as a pilot program in FY 2005, SMART has supported approximately 1,130 students from bachelor's to doctoral levels and to date approximately 550 have completed program studies and transitioned into the DoD workforce. SMART ensures that DoD has a steady infusion of highly educated, high caliber U.S. technical talent, prepared in areas of critical importance to DoD, ready to apply their technical knowledge, skills, and abilities to help DoD fulfill its mission.

NSSEFF supports 29 world-class researchers (NSSEFF Fellows) in areas of critical importance to DoD and ensures the cultivation of exceptional future talent. The NSSEFF Fellows work with approximately 100 undergraduate students, 200 graduate students, and 100 post-doctoral scholars at their respective academic institutions. Three cohorts of NSSEFF Fellows, with the first selected in FY 2008, have provided critical connections between academia and the DoD science and engineering enterprise. Fellows' work spans all seven DoD S&T priorities and the six emerging scientific research areas. NSSEFF Fellows serve as speakers at DoD events, reviewers on panels for DoD science, and as collaborators with scientists and engineers at DoD's laboratories and other research facilities.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 1: Basic Research	R-1 ITEM NOMENCLATURE PE 0601120D8Z: National Defense Education Program (NDEP)	PROJECT P120: National Defense Education Program (NDEP)		
NDEP PK-12 engages, develops, and attracts STEM talent for future DoD military and civilian workforce needs via 68 local sites and nine national organizations. NDEP PK-12 leverages the DoD’s STEM expertise to connect students, teachers, schools, and public sector and industry partners with DoD subject matter experts (SMEs) primarily in those communities adjacent to DoD laboratories and bases where the talent pool resides. Authentic STEM experiences for teachers and students include hands-on activities that are aligned with DoD’s technical workforce requirements. Since FY 2007, NDEP PK-12 has increased the number of DoD facilities that directly engage local education authorities (LEAs) to: (1) build student interest in STEM fields and disciplines and in careers specific to DoD; (2) develop DoD-relevant science, engineering and mathematics skills; and (3) provide future talent to fulfill DoD’s demand for highly skilled STEM professionals. NDEP PK-12 has utilized 4,100 exceptional DoD STEM professionals to reach 500,000 students and 8,300 teachers in 30 states. As one specific example, DoD SMEs contributed over 8,000 hours to lead FIRST Robotics Competition teams, with over 90 percent of team members reporting that the hands-on experience taught them about how science and technology can be used to solve real-world science and engineering problems.				
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
Title: Science, Mathematics, and Research for Transformation (SMART) Defense Education Program Description: SMART is a scholarship-for-service program that provides support to high performing U.S. graduate and undergraduate students in 19 academic STEM disciplines identified as areas of future workforce need by DoD. The disciplines align with the Department’s seven S&T priorities and emerging scientific research areas. The disciplines are: Aeronautical and Astronautical Engineering; Biosciences; Chemical Engineering; Chemistry; Civil Engineering; Cognitive, Neural, and Behavioral Sciences; Computer Science; Electrical Engineering; Geosciences; Industrial and Systems Engineering; Information Sciences; Materials Science and Engineering; Mathematics; Mechanical Engineering; Naval Architecture and Ocean Engineering; Nuclear Engineering; Oceanography; Operations Research; and Physics. Upon completion of their degree, students fulfill a service commitment to DoD on a one-to-one payback per year of education funded. In part, SMART success is measured by participants that remain in the DoD workforce beyond their required service commitment. Oversight of the SMART program falls under the Office of the Assistant Secretary of Defense for Research and Engineering (OASD(R&E)). Two types of individuals participate in the program: retention scholars who are current DoD employees and recruitment scholars who are college students enrolled in undergraduate and graduate programs and represent new talent for the DoD. Internships provide SMART scholars with an opportunity to engage in hands-on research and work experiences in DoD labs, thereby enhancing their educational experience and building a public service commitment to the Department’s mission. Since FY 2005, approximately 1,130 students have participated in SMART at approximately 160 sponsoring facilities. As of July 2012, approximately 550 SMART scholars have transitioned into the service commitment phase. To date, these scholars have transitioned as civilian employees into the Air Force, Army, Navy, and other DoD components. Among those who transitioned to employment, 82 percent who have completed their service commitment are still employed by DoD beyond their original service commitment.		43.325	46.867	48.720

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense			DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 1: <i>Basic Research</i>		R-1 ITEM NOMENCLATURE PE 0601120D8Z: <i>National Defense Education Program (NDEP)</i>		PROJECT P120: <i>National Defense Education Program (NDEP)</i>	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2012	FY 2013	FY 2014
<p><i>FY 2012 Accomplishments:</i></p> <ul style="list-style-type: none"> • Successfully transitioned the administration of the SMART program from the Naval Postgraduate School to OASD(R&E). • Examined the effectiveness of efforts to increase the number of eligible applicants from underrepresented groups such as women and minorities, veterans, and individuals preparing to separate from the military. • Continued to increase the number of eligible applicants as well as application reviewers from HBCU/MIs. • Assessed the effectiveness of the transition process through data analysis and implementation of direct hiring authority. • Transitioned approximately 250 participants into the DoD STEM workforce. • Selected new participants based on available funding. • Created efficiencies through the streamlining of processes and development of Web portals and information management systems. • Collected data on the impact of the SMART investment on DoD and its facilities (e.g., patents, publications, and other outputs) in order to measure the efficacy of SMART as an approach to distributed research and as a collaborative method for networking DoD programs. <p><i>FY 2013 Plans:</i></p> <ul style="list-style-type: none"> • Continue to examine the effectiveness of efforts to increase the number of eligible applicants from underrepresented groups such as women and minorities, veterans, and individuals preparing to separate from the military. • Increase transparency and effectiveness of the program through the engagement of and benchmarking across the DoD components. • Continue to assess the mentoring and workforce development initiatives for current participants and the effectiveness of the transition process. • Transition approximately 100 participants into the DoD workforce. • Select new participants based on available funding. • Coordinate with the HBCU/MI program to increase the number of eligible applicants as well as application reviewers from HBCU/MIs. • Conduct a study to benchmark the performance of SMART PhD scholars (i.e., time to degree) with those of their peers in the general U.S. PhD population. <p><i>FY 2014 Plans:</i></p> <ul style="list-style-type: none"> • Continue to examine the effectiveness of efforts to increase the number of eligible applicants from underrepresented groups such as women and minorities, veterans, and individuals preparing to separate from the military. • Examine SMART participation and growth of degrees conferred at HBCU/MIs. • Continue to assess SMART mentoring and workforce development initiatives for current participants and the effectiveness of the transition process. 					

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense			DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 1: <i>Basic Research</i>		R-1 ITEM NOMENCLATURE PE 0601120D8Z: <i>National Defense Education Program (NDEP)</i>		PROJECT P120: <i>National Defense Education Program (NDEP)</i>	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2012	FY 2013	FY 2014
<ul style="list-style-type: none"> • Transition approximately 100 participants into the DoD workforce. • Increase the number of candidate spots and select new participants based on available increased funding. • Establish metrics to measure effectiveness of SMART program, including: (1) percentage of SMART participants enrolled at HBCU/MIs; (2) percentage of eligible SMART participants transitioned to the DoD workforce; and (3) percentage of SMART scholars retained post-service commitment. 					
Title: National Security Science and Engineering Faculty Fellowship (NSSEFF) Description: NSSEFF ensures that DoD has a research portfolio that supports the foremost creative, innovative, and productive university researchers, and their students and trainees. Objectives of the program are to: <ul style="list-style-type: none"> • Support scientific research that may lead to breakthroughs for DoD. • Educate and train outstanding student and post-doctoral researchers in support of DoD and national security research areas and the DoD technical workforce. • Foster long term relationships between outstanding university researchers and DoD. • Familiarize select university researchers and their students with DoD's current and future scientific and technical challenges. • Increase the number of exceptionally talented technical experts who contribute to DoD's mission and upon whom DoD may draw to serve on advisory boards, panels, and groups. The program funds distinguished researchers at our Nation's leading universities to conduct innovative basic research in areas of interest to DoD. Ensuring that students and trainees are actively engaged in conducting research with world-class researchers that are funded by DoD is an important priority. In addition, NSSEFF Fellows forge research partnerships with DoD labs.			20.099	25.930	35.551
FY 2012 Accomplishments: <ul style="list-style-type: none"> • Continued to support current NSSEFF Fellows. • Engaged undergraduate students through post-doctoral scholars with DoD scientists and engineers to strengthen their understanding of topic areas of importance to DoD. • Continued to foster engagement opportunities for students and Fellows with DoD's scientific and technical community. 					
FY 2013 Plans: <ul style="list-style-type: none"> • Continue support for current NSSEFF Fellows. • Conduct a NSSEFF program review and report on Fellows' progress. • Develop a new competition solicitation. • Organize and conduct two scientific workshops to further develop the collaborative relationships between DoD researchers and NSSEFF Fellows in areas of scientific or technological importance to DoD. 					

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 1: <i>Basic Research</i>	R-1 ITEM NOMENCLATURE PE 0601120D8Z: <i>National Defense Education Program (NDEP)</i>	PROJECT P120: <i>National Defense Education Program (NDEP)</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
<ul style="list-style-type: none"> Develop metrics for NSSEFF program effectiveness as both a high prestige scientific program for national leaders in their fields, and as an effective means for long-term engagement of the PIs and their research team's with DoD scientific staff. <p>FY 2014 Plans:</p> <ul style="list-style-type: none"> Continue support for current NSSEFF Fellows. Conduct a NSSEFF program review and report on Fellows' progress. Organize and conduct two scientific workshops to further develop the collaborative relationships between DoD researchers and NSSEFF Fellows in areas of scientific or technological importance to DoD. Utilize the metrics developed in FY 2013 to assess the effectiveness and impact of the program. Conduct a new competition. 			
<p>Title: PK-12</p> <p>Description: As the demand for a diverse, highly skilled scientific and technical military and civilian DoD workforce grows, DoD is investing in and strengthening local defense communities by enhancing student engagement in STEM initiatives that support DoD research areas. NDEP PK-12 leverages the DoD's STEM professionals and facilities to connect students, teachers, schools, and public sector and industry partners with DoD subject matter experts (SMEs) in communities adjacent to DoD laboratories and bases. NDEP PK-12 (1) builds student interest in STEM fields and disciplines and in careers specific to DoD; 2) develops DoD-relevant science, engineering and mathematics skills; and (3) provides a future talent pool to fulfill DoD's demand for highly skilled STEM professionals by increasing access to authentic STEM experiences.</p> <p>FY 2012 Accomplishments:</p> <ul style="list-style-type: none"> Increased the quality and duration of engagements led by DoD SMEs in local communities adjacent to DoD laboratories and bases. Initiated development of a system wide evaluation and assessment plan to determine effective practices and opportunities to expand engagement with students, teachers, schools, the public sector and industry partners, and national organizations in alignment with the National Science and Technology Council's Federal Committee on STEM Education (CoSTEM) Strategic Plan and in concert with the Office of Management and Budget and General Accountability Office guidance on assessment and evaluation. Built upon existing, sustainable partnerships between NDEP PK-12 and DoD laboratories and bases to identify effective engagement practices and work to build long-term sustainability and institutionalization of PK-12 informal education. Expanded partnerships across DoD to maximize NDEP investments in PK-12 learning to leverage available funding and to build a future STEM workforce capacity for DoD. Supported the FY 2012 U.S.A. Science and Engineering Festival Expo, where DoD was the second largest exhibitor, with 30 DoD organizations represented. 		16.550	15.182
			0.000

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 1: <i>Basic Research</i>	R-1 ITEM NOMENCLATURE PE 0601120D8Z: <i>National Defense Education Program (NDEP)</i>	PROJECT P120: <i>National Defense Education Program (NDEP)</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
<ul style="list-style-type: none"> • Provided over 5,000 copies of the NDEP funded "Engineering – Go For It" magazines to middle school teachers to enrich their instruction and increase student awareness of engineering careers. <p>FY 2013 Plans:</p> <ul style="list-style-type: none"> • Perform strategic planning activities to foster connectivity of NDEP PK-12 initiatives to the DoD civilian and military STEM workforce, optimize NDEP STEM investment, update and improve DoD STEM policy related to NDEP, and achieve greater coordination among NDEP Defense Component participants. • Increase the quality and duration of engagements led by DoD SMEs in communities near DoD laboratories and bases. • Develop a performance management system to enable on-going monitoring of key initiatives. • Engage evaluation expertise to build assessment and evaluation capabilities for NDEP PK-12 investments in alignment with CoSTEM guidelines and in concert with Office of Management and Budget and General Accountability Office guidance on assessment and evaluation. • Ensure all NDEP PK-12 investments are managed consistent with the CoSTEM general management criteria and are building robust evaluation systems. • Build upon existing, sustainable partnerships amongst higher education institutions and PK-12 school systems to build capacity for long-term sustainability. • Build upon existing, sustainable partnerships between NDEP PK-12 and DoD laboratories and bases to identify effective engagement practices associated with authentic STEM experiences and in alignment with DoD STEM requirements (military and civilian) and work to build long-term sustainability and institutionalization of PK-12 informal education. • Insure the quality of partnerships across DoD to maximize NDEP's investments in PK-12 learning to leverage available funding and to build a diverse future STEM workforce for DoD. • Leverage and maximize the FY 2013 NDEP PK-12 investment through the implementation of effective practices for the engagement of local partners with DoD SMEs. <p>FY 2014 Plans:</p> <ul style="list-style-type: none"> • The PK-12 program will transfer to the National Science Foundation in FY 2014. 			
<p>Title: National Defense Science and Engineering Graduate (NDSEG) Fellowship Program</p> <p>Description: The NDSEG Fellowship program develops and attracts current and next generation STEM talent by funding competitive scholarships to U.S. citizens and nationals pursuing doctoral degrees in STEM research areas critical to DoD. These research areas include bioscience, engineering, computer and computational science, mathematics, and cognitive and behavioral science.</p> <p>FY 2012 Accomplishments:</p> <ul style="list-style-type: none"> • Funded tuitions and stipend payments for the 2012 NDSEG class. 		7.900	0.000
			0.000

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 1: <i>Basic Research</i>		R-1 ITEM NOMENCLATURE PE 0601120D8Z: <i>National Defense Education Program (NDEP)</i>	PROJECT P120: <i>National Defense Education Program (NDEP)</i>
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
<ul style="list-style-type: none"> Participated in STEM outreach. Supported the 2012 NDSEG selection process. 			
Accomplishments/Planned Programs Subtotals		87.874	84.271
C. Other Program Funding Summary (\$ in Millions) N/A			
Remarks			
D. Acquisition Strategy N/A			
E. Performance Metrics <ul style="list-style-type: none"> The increase in the direct and indirect connectivity of NDEP participants (SMART, NSSEFF, and PK-12 students) with DoD. SMART PhD scholars research productivity: (1) number of research papers; (2) number of research citations. The increase in the number of SMART scholars that are transitioned into the DoD workforce. The increase in the number of SMART scholars that are retained by DoD post-service commitment. The increase in the number of eligible SMART/NSSEFF applicants from HBCU/MIs. The increase in the number of SMART/NSSEFF application reviewers from HBCU/MIs. Conduct a study to benchmark the performance of SMART PhD scholars (i.e., time to degree) with those of their peers in the general U.S. PhD population. Increase directly and indirectly the connectivity of NSSEFF Fellows with DoD. The increase in the direct support and/or advancement of research into DoD S&T emphasis areas and the six emerging scientific research areas by: (1) new scientifically relevant publications in peer reviewed journals; and (2) new patents filed/awarded in these areas. NDEP PK-12: The increase in the number of investments that (1) are of meaningful duration (i.e., ten hours or greater); and (2) include age-appropriate, hands-on activities that connect directly to DoD's skills requirements. 			

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE							
0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 1: <i>Basic Research</i>					PE 0601228D8Z: <i>Historically Black Colleges and Universities and Minority Institutions</i>							
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
Total Program Element	0.000	0.000	0.000	30.895	-	30.895	31.199	28.639	24.798	25.230	Continuing	Continuing
P448: <i>Historically Black Colleges and Universities and Minority Institutions</i>	0.000	0.000	0.000	30.895	-	30.895	31.199	28.639	24.798	25.230	Continuing	Continuing

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

Note

The FY 2012 President's Budget Request (PBR) transferred the Historically Black Colleges and Universities and Minority Institutions (HBCU/MI) program from the Office of the Secretary of Defense (OSD) to the Army. The FY 2012 National Defense Authorization Act (NDAA) directed the OSD to retain oversight and execution of the HBCU/MI program. Accordingly, FY 2012 funds were reprogrammed from Army PE 0601104A to OSD PE 0602228D8Z for program execution.

The FY 2013 PBR requested funds for the HBCU/MI program under Army PE 0601104A. To comply with direction of the Congress, OSD will submit a reprogramming request in FY 2013 to transfer funds from the Army PE 0601104A to OSD PE 0602228D8Z.

In FY 2014, funding for the HBCU/MI program is requested under OSD budget activity 1, PE 0601228D8Z. The OSD Assistant Secretary of Defense for Research and Engineering (ASD(R&E)) retains oversight and execution of the program.

A. Mission Description and Budget Item Justification

The HBCU/MI program provides support in fields of science and engineering that are important to national defense. The DoD HBCU/MI Program encourages participation of small minority schools as well as large minority research institutions. This competitive program provides support through grants or contracts for research, education assistance, instrumentation purchases, and technical assistance as described below:

- Research. The research grants are to further the knowledge in the basic scientific disciplines through theoretical and experimental activities. Collaborative research allows university professors to work directly with military laboratories or other universities.
- Education. Education assistance funds are used by minority institutions to strengthen their academic programs in science, technology, engineering, and mathematics (STEM) thereby increasing the number of under-represented minorities obtaining undergraduate and graduate degrees in these fields. These grants provide equipment, scholarships, cooperative work/study opportunities, visiting faculty programs, summer programs, and a variety of other enhancements designed to support students and to encourage them to pursue careers in STEM.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense	DATE: April 2013
-------------------------------------------------------------------------------------------------	-------------------------

APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 1: <i>Basic Research</i>	R-1 ITEM NOMENCLATURE PE 0601228D8Z: <i>Historically Black Colleges and Universities and Minority Institutions</i>
------------------------------------------------------------------------------------------------------------------------------------------------	------------------------------------------------------------------------------------------------------------------------------

- Infrastructure. This program allows universities to purchase basic laboratory equipment for research and education program enhancements to highly sophisticated research instruments, such as lasers and spectrometers.

- Technical assistance. These funds are used to design programs that enhance the ability of minority institutions to successfully compete for future Defense funding. The objective is to assist the HBCU/MI community in areas such as proposal writing and administration of grants and contracts.

B. Program Change Summary (\$ in Millions)	<u>FY 2012</u>	<u>FY 2013</u>	<u>FY 2014 Base</u>	<u>FY 2014 OCO</u>	<u>FY 2014 Total</u>
Previous President's Budget	0.000	0.000	0.000	-	0.000
Current President's Budget	0.000	0.000	30.895	-	30.895
Total Adjustments	0.000	0.000	30.895	-	30.895
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Baseline Adjustments	-	-	30.895	-	30.895

Change Summary Explanation

The HBCU/MI program was executed in FY 2012 and will be executed in FY 2013 under OSD, RDT&E-DW, Budget Activity 2, PE 0602228D8Z. Beginning in FY 2014, the HBCU/MI program will be executed under OSD, RDT&E-DW, Budget Activity 1, PE 0601228D8Z.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE				PROJECT			
0400: Research, Development, Test & Evaluation, Defense-Wide BA 1: Basic Research					PE 0601228D8Z: Historically Black Colleges and Universities and Minority Institutions				P448: Historically Black Colleges and Universities and Minority Institutions			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
P448: Historically Black Colleges and Universities and Minority Institutions	0.000	0.000	0.000	30.895	-	30.895	31.199	28.639	24.798	25.230	Continuing	Continuing

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

Note

The FY 2012 President's Budget Request (PBR) transferred the Historically Black Colleges and Universities and Minority Institutions (HBCU/MI) program from the Office of the Secretary of Defense (OSD) to the Army. The FY 2012 National Defense Authorization Act (NDAA) directed the OSD to retain oversight and execution of the HBCU/MI program. Accordingly, FY 2012 funds were reprogrammed from Army PE 0601104A to OSD PE 0602228D8Z for program execution.

The FY 2013 PBR requested funds for the HBCU/MI program under Army PE 0601104A. To comply with direction of the Congress, OSD will submit a reprogramming request in FY 2013 to transfer funds from the Army PE 0601104A to OSD PE 0602228D8Z.

In FY 2014, funding for the HBCU/MI program is requested under OSD budget activity 1, PE 0601228D8Z. The OSD Assistant Secretary of Defense for Research and Engineering (ASD(R&E)) retains oversight and execution of the program.

A. Mission Description and Budget Item Justification

The HBCU/MI program provides support in fields of science and engineering that are important to national defense. The DoD HBCU/MI Program encourages participation of small minority schools as well as large minority research institutions. This competitive program provides support through grants or contracts for research, education assistance, instrumentation purchases, and technical assistance as described below:

- **Research.** The research grants are to further the knowledge in the basic scientific disciplines through theoretical and experimental activities. Collaborative research allows university professors to work directly with military laboratories or other universities.
- **Education.** Education assistance funds are used by minority institutions to strengthen their academic programs in science, technology, engineering, and mathematics (STEM) thereby increasing the number of under-represented minorities obtaining undergraduate and graduate degrees in these fields. These grants provide equipment, scholarships, cooperative work/study opportunities, visiting faculty programs, summer programs, and a variety of other enhancements designed to support students and to encourage them to pursue careers in STEM.
- **Infrastructure.** This program allows universities to purchase basic laboratory equipment for research and education program enhancements to highly sophisticated research instruments, such as lasers and spectrometers.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 1: <i>Basic Research</i>				R-1 ITEM NOMENCLATURE PE 0601228D8Z: <i>Historically Black Colleges and Universities and Minority Institutions</i>				PROJECT P448: <i>Historically Black Colleges and Universities and Minority Institutions</i>			
<ul style="list-style-type: none"> • Technical assistance. These funds are used to design programs that enhance the ability of minority institutions to successfully compete for future Defense funding. The objective is to assist the HBCU/MI community in areas such as proposal writing and administration of grants and contracts. 											
B. Accomplishments/Planned Programs (\$ in Millions)								FY 2012	FY 2013	FY 2014	
Title: Historically Black Colleges and Universities and Minority Institutions (HBCU/MI) Description: The HBCU/MI program provides support for research and collaboration with DoD facilities and personnel. The research grants further knowledge in the basic physical scientific and engineering disciplines through theoretical and empirical activities. Collaborative research allows university professors to work directly with military laboratories or other universities. FY 2014 Plans: Continue efforts from FY 2013. Conduct annual competition of the HBCU/MI program. Continue the research and educational collaboration project between Naval Air Warfare Center and HBCUs/MIs in support of the Avionic Enabling Technology Development for Manned and Unmanned Airborne System. The goal is to increase the number of FY 2015 summer interns from 60 to 70 participants. Establish new Centers of Excellence in support of the ASD(R&E) Science and Technology Priorities in the areas of Cyber Security Science and Technology, Data-to-Decisions, and Autonomy.								0.000	0.000	30.895	
Accomplishments/Planned Programs Subtotals								0.000	0.000	30.895	
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
• BA 2, PE 0602228D8Z: <i>HBCU/MI</i>	35.245	0.000	0.000		0.000	0.000	0.000			Continuing	Continuing
Remarks											
D. Acquisition Strategy N/A											
E. Performance Metrics											
<ul style="list-style-type: none"> • Number of students funded other than undergraduates • Number of undergraduate students funded • Number of undergraduates funded who graduated • Number of students participating in the Centers of Excellence for Research and Education • Number of students working in Defense Laboratories • Number of undergraduates funded who graduated with degrees in STEM • Number of graduates who will continue to pursue graduate or Ph.D. degrees in STEM • Number of graduates who intend to work for DoD 											

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 1: <i>Basic Research</i>	R-1 ITEM NOMENCLATURE PE 0601228D8Z: <i>Historically Black Colleges and Universities and Minority Institutions</i>	PROJECT P448: <i>Historically Black Colleges and Universities and Minority Institutions</i>
<ul style="list-style-type: none">Number of undergraduates who will receive scholarships and fellowships for further studies in STEM		

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY

0400: *Research, Development, Test & Evaluation, Defense-Wide*

BA 2: *Applied Research*

R-1 ITEM NOMENCLATURE

PE 0602000D8Z: *Joint Munitions Technology*

COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
Total Program Element	-	20.298	20.615	20.065	-	20.065	21.556	22.172	22.536	22.974	Continuing	Continuing
P000: <i>Insensitive Munitions</i>	-	14.474	14.216	13.936	-	13.936	14.615	15.041	15.220	15.516	Continuing	Continuing
P204: <i>Enabling Fuze Technology</i>	-	5.824	6.399	6.129	-	6.129	6.941	7.131	7.316	7.458	Continuing	Continuing

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

This program addresses applied research associated with improving the lethality, reliability, safety, and survivability of munitions and weapon systems. The goal is to develop and demonstrate joint enabling technologies that can be used by the Program Executive Officers (PEOs) as they develop their specific weapon programs. The program invests in and demonstrates technologies from a Joint Service perspective, thus ensuring the development of technology with the broadest applicability while avoiding duplication of efforts.

Munition Area Technology Groups (MATGs) and Fuze Area Technology Groups (FATGs) have been established for each munition and capability area and are tasked with: 1) coordinating, establishing, and maintaining five, ten, and fifteen year technology development plans and roadmaps, 2) coordinating biannual meetings to review technical and programmatic details of each funded and proposed effort, 3) developing and submitting Technology Transition Agreements in coordination with appropriate PEOs for insertion in their Insensitive Munitions (IM) Strategic Plans / Fuze Technology Development Plan, and 4) interfacing with other MATGs / FATGs and IM / fuze science and technology projects as appropriate. The Joint Insensitive Munitions Technology Program (JIMTP) and Joint Fuze Technology Program (JFTP) will utilize a Technical Advisory Committee (TAC) (consisting of senior Department of Defense (DoD) and Department of Energy (DOE) laboratory representatives, and senior Munitions PEO representatives) to provide program oversight, policy, direction, and priorities during its annual meeting.

The Insensitive Munitions (IM) effort will demonstrate enabling technologies needed to develop weapons in compliance with requirements established in United States Code, Title 10, Chapter 141, Section 2389 and DoD Instruction 5000.1. This effort will take promising technologies demonstrated at the laboratory scale and transition them into demonstration programs utilizing generic hardware based on priority munitions identified in the PEO IM Strategic Plans. Mature demonstrated IM technology can be transitioned, thereby decreasing their program costs and schedule risk and facilitating spin-offs to other non-compliant munitions within their portfolios.

The JIMTP investments focus on five Munition Areas: 1) High Performance Rocket Propulsion (HPP), 2) Minimum Signature Rocket Propulsion (MSP), 3) Blast and Fragmentation Warheads (BFW), 4) Anti-Armor Warheads (AAW), and 5) Propulsion (GP). MATGs, under tri-service leadership, have developed technology roadmaps for each Munition Area that are used to guide investments based on goals consistent with the DoD IM Strategic Plan. These IM technologies, alone or in combination, will be developed and tested at the small-scale, and for eventual incorporation in hardware, simulating real-world munitions, to demonstrate their utility and feasibility.

The Enabling Fuze Technology effort will also demonstrate fuze enabling technologies needed to develop weapons that address priority capability areas identified in the Guidance for Development of the Force (GDF), the Secretary of Defense Memorandum, DoD Policy on Cluster Munitions and Unintended Harm to Civilians, and

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense	DATE: April 2013
-------------------------------------------------------------------------------------------------	-------------------------

APPROPRIATION/BUDGET ACTIVITY

0400: *Research, Development, Test & Evaluation, Defense-Wide*
 BA 2: *Applied Research*

R-1 ITEM NOMENCLATURE

PE 0602000D8Z: *Joint Munitions Technology*

shortfalls in current weapon systems. This effort will develop fuzing technologies and mature them for transition into advanced technology (6.3) programs and/or design tools and protocols for weapon fuzing. In this way, the Service and Industrial base weapon and fuze will be able to heavily leverage and apply these emerging and promising technologies in fuzing modeling and simulation tools, multi-point initiation, high reliability fuze architectures, survivable components, modular fuze packaging, and fuze sensor.

The Joint Fuze Technology Program investments focus on four specific capability areas that have been identified by Department strategic guidance and current shortfalls in weapon systems and will be validated by the PEOs and the Heads of the Service Science and Technology (S&T) communities. These capability areas are: 1) Hard Target Survivable Fuzing, 2) Tailorable Effects Weapon Fuzing, 3) High Reliability Fuzing, and 4) Enabling Fuze Technologies and Common Architecture.

B. Program Change Summary (\$ in Millions)	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total
Previous President's Budget	20.328	20.615	20.840	-	20.840
Current President's Budget	20.298	20.615	20.065	-	20.065
Total Adjustments	-0.030	0.000	-0.775	-	-0.775
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-0.024	-			
• SBIR/STTR Transfer	-	-			
• Baseline Adjustments	-	-	-0.775	-	-0.775
• Other Adjustments	-0.006	-	-	-	-

Change Summary Explanation

FY 2014 baseline adjustments are reflective of DoD S&T priorities and requirements.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 2: Applied Research					R-1 ITEM NOMENCLATURE PE 0602000D8Z: Joint Munitions Technology				PROJECT P000: Insensitive Munitions			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
P000: Insensitive Munitions	-	14.474	14.216	13.936	-	13.936	14.615	15.041	15.220	15.516	Continuing	Continuing

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

The Joint Insensitive Munitions (IM) Technology Program (JIMTP) aims at developing the enabling technologies needed to build weapons in compliance with requirements established in statute (United States Code, Title 10, Chapter 141, Section 2389) and regulation (DoDI 5000.1 and CJCSI 3170.01F). This effort will take promising technologies developed at the laboratory scale and transition them into demonstration programs utilizing generic hardware based on the priority munitions identified in the DoD IM Strategic Plan. Mature and demonstrated IM technology can be transitioned, thereby decreasing the program costs and schedule risk. This will additionally promote spin-offs to other non-compliant munitions within the DoD portfolio. Without new technology, future variants of current weapon systems will have the same, or worse, response to IM stimuli. New weapon developments will face similar challenges.

The JIMTP investments focus on five Munition Areas: 1) High Performance Rocket Propulsion, 2) Minimum Signature Rocket Propulsion, 3) Blast and Fragmentation Warheads, 4) Anti-Armor Warheads, and 5) Gun Propulsion. Munition Area Technology Groups (MATGs), under tri-service leadership, have developed technology roadmaps for each Munition Area that are used to guide investments based on goals consistent with the DoD IM Strategic Plan. The program is structured around these five areas with clear cross-cutting tasks.

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2012	FY 2013	FY 2014
Title: High Performance Rocket Propulsion (HPP)	2.880	2.656	3.772
Description: High Performance Rocket Propulsion (HPP) focuses on the development and demonstration of technologies to improve the IM response of HPP systems (rocket motors with Ammonium Perchlorate and with or without a metal fuel) for rockets and missiles launched from air, ground, and sea platforms. These technologies, when applied to rocket motors, improve IM response to one or more threats, while not degrading the response to other IM threats and at least maintaining munition performance. Technologies include, but are not limited to, rocket propellant ingredients (including synthesis, characterization and scale-up), reduced smoke or smoky propellants (including formulation, characterization and scale-up), rocket motor case design, materials for active and passive thermal mitigation, shock mitigation materials and techniques, passive and active coatings, active and passive venting techniques for motor cases or containers, ignition systems, sensors, and thrust mitigation techniques. Operating conditions may be controlled or widely varying in both temperature and vibration. The five, ten, or fifteen year goals of the HPP MATG are concentrated on solving the IM response of missile propulsion systems due to Fragment Impacts and Slow Cook Off for the majority of HPP rocket motors, and solving the Fast Cook Off response of very large HPP motors.			
FY 2012 Accomplishments:			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 2: Applied Research		R-1 ITEM NOMENCLATURE PE 0602000D8Z: Joint Munitions Technology		PROJECT P000: Insensitive Munitions
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
<ul style="list-style-type: none">• Scaled-up reduced smoke propellant to the five gallon scale with acceptable processing, conducted small-scale motor and impact testing, developed liner, and conducted slow cook off IM test.• Completed reduced smoke propellant evaluation, small-scale motor testing, accelerated aging, and IM tests. Conducted propellant formulation efforts to produce burn or no-reaction response for fragment impact, bullet impact, and slow cook off and fast cook off events.• Determined the thermal and mechanical response and the mechanical strength of the fabricated composite cases impregnated with additives with continued safety and environmental testing.• Completed scale-up of high performance rocket propellants to one gallon size batches, refined processing procedures and conducted sensitivity and safety testing.• Designed, analyzed, and built small-scale motors and conducted safety and environmental tests. <p>FY 2013 Plans:</p> <ul style="list-style-type: none">• Study thermal and mechanical responses of composite cases to slow cook off and aerodynamic heating.• Complete scale up of high performance rocket propellants to five gallon size batches, refine processing procedures and conduct sensitivity and safety testing.• Complete final assembly and conduct slow and fast cook off IM tests.• Characterize novel ionic liquid candidates for high performance propulsion. Downselect, scale-up to one pound, and conduct mechanical property testing.• Complete burn rate measurements and dynamic mechanical analysis of novel binder materials. <p>FY 2014 Plans:</p> <ul style="list-style-type: none">• Determine the IM response of composite cases by conducting IM testing on eight inch diameter analogue motors.• Conduct slow cook off, fragment impact, and hazard classification gap testing of high performance rocket propellants.• Characterize pot life and processing of novel binder materials. Measure mechanical properties, perform slow cook off visualization and STEX testing.				
<p>Title: Minimum Signature Rocket Propulsion (MSP)</p> <p>Description: Minimum Signature Rocket Propulsion (MSP) focuses on the development and demonstration of technologies to improve the IM response of MSP systems. The development and demonstration of minimum signature (MS) rocket technologies, when applied to munition systems, will improve munition IM response to one or more threats, while not degrading the response to other IM threats and at least maintaining munition performance. Technologies include but are not limited to MS rocket propellant formulations, ingredients for MS propellant formulations (including synthesis, characterization and scale-up), case and packaging design, active and passive venting techniques, rocket motor case design, ignition systems and thrust mitigation techniques. Of particular interest are technologies that provide a higher burning rate minimum signature propellant with state-of-the-art</p>		2.957	3.598	2.651

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 2: Applied Research	R-1 ITEM NOMENCLATURE PE 0602000D8Z: Joint Munitions Technology	PROJECT P000: Insensitive Munitions		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
energy and reduced shock sensitivity. The five, ten, and fifteen year goals of the MSP MATG are concentrated on solving the IM response of missile propulsion systems due to Fragment Impact, Slow Cook Off, and Shaped Charge Jet (SCJ) threats. FY 2012 Accomplishments: <ul style="list-style-type: none">Optimized propellant candidates were scaled-up to further characterize their initial ballistic performance and sensitivity properties. Conducted sub-scale motor performance testing via seven inch baseline motor configuration, strand burner ballistics test, thermal cook off, and impact IM tests.Completed binder system alternatives full-scale testing using one gallon size mixes for transition to budget activity (BA) 6.3 project.Conducted additional impact and shock testing on alternative composite minimum signature propellant. Manufactured analogue motors and selected best candidate for transition to BA 6.3.Scaled-up to one pint mixes novel propellant and conducted impact and cook off testing to determine IM responses of formulation.Scaled-up unique propellant and synthesized to 25, 50, 100 grams, and pint scale, and conducted small-scale IM tests. FY 2013 Plans: <ul style="list-style-type: none">Generate 500 grams of novel coated material. Characterize new materials, including safety and compatibility testing. Perform small-scale IM tests on best candidates.Mix pint-sized batches of coated materials and conduct mechanical, safety, and ballistic testing of the mixes.Synthesize, scale-up, and perform safety testing on state of the art energetic materials. Perform predictive thermochemical calculations for potential formulations. FY 2014 Plans: <ul style="list-style-type: none">Generate kilogram batches of novel coated materials. Produce gallon-scale mixes of two promising minimum signature propellants.Determine the thermophysical properties of selected formulations from state of the art energetic materials. Refine casting powder.				
Title: Blast and Fragmentation Warheads (BFW) Description: Blast and Fragmentation Warheads (BFW) focuses on the development and demonstration of technologies to improve the IM response of Blast/Fragmentation munitions. The development and demonstration of explosive ingredients and explosives and warhead and fuze technologies that, when applied to munitions, improve IM response to one or more threats, while not degrading the response to other IM threats and at minimum maintain munition performance. Munition operating conditions may be controlled or have widely varying environmental conditions, such as temperature and vibration, and other factors such as cost, availability and reliability may be critically important depending on the intended munition application.		3.984	3.758	2.796

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 2: <i>Applied Research</i>	R-1 ITEM NOMENCLATURE PE 0602000D8Z: <i>Joint Munitions Technology</i>	PROJECT P000: <i>Insensitive Munitions</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
Technologies include but are not limited to new ingredient synthesis and characterization, initial formulation development, scale-up, warhead/charge configuration, venting techniques for both munitions and their containers, protection or packaging materials and systems, shock mitigation liners, initiation devices, techniques, and technologies. Applications vary but include high performance warhead fills, booster explosives, bulk demolition charges, and bulk fills for blast and/or fragmentation charges. The five, ten, and fifteen year goals of the BFW MATG are concentrated on solving the IM response of blast fragment warheads to the Sympathetic Detonation, Fast Cook Off, and SCJ threats.			
FY 2012 Accomplishments: <ul style="list-style-type: none"> • Down-selected novel ingredient material formulation, completed sub-scale testing, and began transition to BA 6.3 project. • Concluded second generation proof of concept experiments and started weaponization study of unique warhead explosive material. • Began down-selecting materials and the sensitization process in order to conduct device scale testing. 			
FY 2013 Plans: <ul style="list-style-type: none"> • Conclude manufacturing studies and weaponization study for Compounded HE Composites and prepare to demonstrate IM characteristics of unique warhead explosive material. • Conclude down-selecting materials and the sensitization process in order to conduct device scale testing to validate the process and transition to BA 6.3 project. • Conduct characterization studies on novel explosive material. • Conduct laboratory scale formulation, processing and analysis of melt cast enhanced blast and environmentally friendly explosive fill. • Optimize novel explosive fill formulation for general purpose bombs. • Conduct initial synthesis of unique booster materials for explosives. 			
FY 2014 Plans: <ul style="list-style-type: none"> • Perform one kilogram scale-up of additional composite materials. Formulate and test IM characteristics of the material. Synthesize 60 kilograms of new explosive ingredients and formulate explosives on the ten gallon scale. Determine mid-scale performance and IM properties of new formulations. • Conduct thermal cycling and IM testing on novel explosive material. • Scale up to one gallon mix melt cast enhanced blast explosive fill and perform sensitivity and performance testing. Prepare to transition to Task under PE 603000D8Z/P301. • Conduct characterization and performance testing, as well as IM assessments for novel general purpose bomb explosive fill formulation. Conduct characterization testing and down selected unique explosive booster material. 			
Title: Anti-Armor Warheads (AAW)		2.136	1.912
			2.557

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense			DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 2: <i>Applied Research</i>		R-1 ITEM NOMENCLATURE PE 0602000D8Z: <i>Joint Munitions Technology</i>	PROJECT P000: <i>Insensitive Munitions</i>		
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2012	FY 2013	FY 2014
<p>Description: Anti-Armor Warheads (AAW) focuses on the development and demonstration of explosive ingredients, explosives, warhead and fuze technologies for improving IM of AAW munitions. The development of explosive ingredients, explosives and warhead and fuze technologies that, when applied to munitions, improve IM response to one or more threats, while not degrading the response to other IM threats and at minimum maintain munition performance. Technologies include but are not limited to new ingredient synthesis and characterization, initial formulation development, scale-up, warhead/charge configuration, venting techniques for both munitions and their containers, protection/packaging materials and systems, shock mitigation liners, and initiation devices, techniques, and technologies. Applications vary but include high performance warhead fills, booster explosives, and all other technology to mitigate the violent response of Anti-Armor Warhead munitions to IM threats. Munition operating conditions may be controlled or have widely varying environmental conditions, such as temperature and vibration, and other factors such as cost, availability, and reliability may be critically important depending on the intended munition application. The five, ten, and fifteen year goals of the AAW MATG are concentrated on solving the IM response of anti-armor warheads to the Fragment Impact and Slow Cook Off threats and a five year goal of solving Sympathetic Detonation threats, with a ten and fifteen year goal of resolving the IM response to the Shaped Charge Jet threat.</p> <p>FY 2012 Accomplishments:</p> <ul style="list-style-type: none"> • Conducted IM technology studies in the areas of initiation/booster technology, explosive formulations, and warhead venting to develop warheads capable of producing deflagration and explosive type reactions for shaped charge jet and fragment impact threats. • Scaled-up the baseline configuration to ten gallon, the spray coated melt-case to one and ten gallon, and the pressed formulations with spray coated HMX explosive. <p>FY 2013 Plans:</p> <ul style="list-style-type: none"> • Conduct critical diameter and slow cook off IM tests of down-selected formulations. • Conduct formulation and initial screening of explosive material to determine physical and performance characteristics. Prepare to transition to Task under PE 603000D8Z. • Conducted initial formulation work and baseline testing on cast cured explosive, using fine grain materials. • Scale up to pint mixes formulations of energetic materials with less nitramine content and enhanced insensitivity. • Conduct scale-up to one pound batch and demonstrated acceptable fragment testing for novel, cast cured, multi-effects explosives formulation. Conducted engineering assessment and began production of precursor materials for high energy melt-phase explosive. • Develop baseline data for modeling explosive reactions. <p>FY 2014 Plans:</p> <ul style="list-style-type: none"> • Scale up formulations to 50 pound batches. Perform standard IM tests on surrogate AAW. 					

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 2: Applied Research		R-1 ITEM NOMENCLATURE PE 0602000D8Z: Joint Munitions Technology		PROJECT P000: Insensitive Munitions
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
<ul style="list-style-type: none">• Conduct larger scale formulation (five pounds) of explosive material and perform intermediate scale IM and performance tests.• Down-select optimized formulation and conduct IM testing on cast cured explosive, using fine grain material. Prepare to transition to Task under PE 603000D8Z.• Scale up and conduct IM testing of energetic materials with less nitramine content and enhanced insensitivity.• Scale up to five gallon mix, conduct initial testing, complete aging study, and conduct standard IM tests on novel, cast cured, multi-effects explosives formulation.• Scale up high energy pressed explosive and conduct performance testing.• Characterize materials, formulate, and down-select high energy melt-phase explosive.• Assess additional explosive materials to validate the baseline model data.				
<p>Title: Gun Propulsion (GP)</p> <p>Description: Gun Propulsion (GP) focuses on the development and demonstration of technologies in the area of Gun Propulsion systems. The development and demonstration of gun propulsion technologies, that when applied to munition systems, will improve munition IM response to one or more threats, while not degrading the response to other IM threats and at least maintaining munition performance. Technologies include but are not limited to gun propellant formulations, ingredients for gun propellant formulations (including synthesis, characterization and scale-up), cartridge case and packaging design, active and passive venting techniques, reduced sensitivity primer propellant and primer systems, and robust primers for insensitive propellants. Applications vary, but include both large and medium caliber munitions, as well as propelling charges for mortars and shoulder launched munitions. Operating requirements vary, and other factors such as barrel life and operation over varying environmental conditions may be critically important depending on the intended munition application. The five, ten, or fifteen year goals of the GP MATG are concentrated on solving the IM response of gun propulsion munitions to Fragment Impact and Slow Cook Off threats.</p> <p>FY 2012 Accomplishments:</p> <ul style="list-style-type: none">• Manufactured large-scale quantities and completed full-scale IM tests of down-selected propellant formulation mixes of novel propellant binder. Conducted sub-scale ballistic and IM testing.• Conducted instrumented ballistic simulator tests, fabricated hardware, and finalized venting solution for fragment impact and slow cook off.• Continued formulation development to produce optimum IM properties and scale-up to manufacture three kilogram batches. Conducted various tests to validate IM properties and suitability for gun propellant. <p>FY 2013 Plans:</p> <ul style="list-style-type: none">• Establish design of experiments test matrix and complete subsequent modeling effort.• Conduct IM and mechanical tests on containers and compare results with the models' predictions.• Optimize formulation and conduct IM tests to determine viability of down-select candidate for gun propellants.		2.517	2.292	2.160

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense									DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 2: Applied Research				R-1 ITEM NOMENCLATURE PE 0602000D8Z: Joint Munitions Technology				PROJECT P000: Insensitive Munitions			
B. Accomplishments/Planned Programs (\$ in Millions)									FY 2012	FY 2013	FY 2014
<ul style="list-style-type: none">Continue formulation development to manufacture three kilogram batches for extrusion into 15 pounds of propellant.Conduct various tests to validate IM properties and suitability for gun propellant.Perform initial characterization of ignition propellants after exposure to novel ignition methodology.Scale up novel binder material to 25 gram batches and characterize material thermal and sensitivity properties.Conduct thermal and sensitivity testing on propellant formulation effort using unique less sensitive binder propellant.Conduct initial testing on representative samples to develop small-scale slow cookoff testing protocol. <p>FY 2014 Plans:</p> <ul style="list-style-type: none">Conduct performance testing of down-selected candidates for gun propellants.Continue formulation development to manufacture six kilogram batches for extrusion into 30 pounds of propellant. Conduct various tests to validate IM properties and suitability for gun propellant.Develop properties of ignition propellants after exposure to novel ignition methodology. Perform sub-scale performance testing. Produce one gallon mixes of novel binder to complete IM testing.Scale up six pounds of unique less sensitive binder propellant formulation and conduct characterization testing.Design and fabricate apparatus to test propellants and develop modeling code for small-scale slow cookoff protocol.											
Accomplishments/Planned Programs Subtotals									14.474	14.216	13.936
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
• 0603000D8Z P002: BA 3 Insensitive Munitions Advanced Technology	14.529	20.819	19.843		19.843	22.153	22.812	23.055	23.503	Continuing	Continuing
Remarks											
D. Acquisition Strategy N/A											
E. Performance Metrics											
<div>1) Transitions of technologies developed by the Program are tracked and documented using DoD/NASA Technical Readiness Level (TRL) scale.</div> <div>2) Munition Area Technology Group Technology Roadmaps are prepared, evaluated, and analyzed by Joint Insensitive Munitions Technology Program management and technical staff.</div> <div>3) Chairman's Annual Assessments for each MATG are critically reviewed by the Technical Advisory Committee to determine progress, transition plans, and relevance of each project.</div>											

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 2: <i>Applied Research</i>	R-1 ITEM NOMENCLATURE PE 0602000D8Z: <i>Joint Munitions Technology</i>	PROJECT P000: <i>Insensitive Munitions</i>
<p>4) Project progress toward goals and milestones is assessed at each MATG meeting.</p> <p>5) Annual technical reports and papers are tracked and documented for the Program.</p> <p>6) External Peer Review of Projects conducted as part of Joint Army/Navy/NASA/Air Force meetings.</p>		

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE				PROJECT			
0400: Research, Development, Test & Evaluation, Defense-Wide BA 2: Applied Research					PE 0602000D8Z: Joint Munitions Technology				P204: Enabling Fuze Technology			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
P204: Enabling Fuze Technology	-	5.824	6.399	6.129	-	6.129	6.941	7.131	7.316	7.458	Continuing	Continuing

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

This RDT&E effort will demonstrate fuze enabling technologies needed to develop weapons that address priority capability areas identified in the Guidance for Development of the Force (GDF), the Secretary of Defense Memorandum, DoD Policy on Cluster Munitions and Unintended Harm to Civilians, and shortfalls in current weapon systems. This effort will develop enabling technologies at the laboratory scale and transition them into 6.3 demonstration programs for weapons where priority capabilities and technology needs have been identified and validated by the Program Executive Officers (PEOs) and the Heads of the Service Science and Technology (S&T) communities. Mature 6.2 fuze technologies will be transitioned, thereby decreasing their program costs and schedule risk and facilitating spin-offs to other munitions within their portfolios.

Under the Joint Fuze Technology Program (JFTP), investments are focused on specific capability areas that have been identified by Department strategic guidance and current shortfalls in weapon systems and validated by the PEOs and Heads of the Service S&T communities. These four capability areas are: 1) Hard Target Survivable Fuzing, 2) Tailorable Effects (TE) Weapon Fuzing, 3) High Reliability Fuzing, and 4) Enabling Fuze Technologies and Common Architecture.

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2012	FY 2013	FY 2014
Title: Hard Target Fuzing	1.642	1.661	1.574
Description: The Hard Target Fuzing challenges are grouped into three Technology Areas. First, improved modeling and simulation capabilities provide the validated computational tools necessary for hard target applications. Second, basic phenomenology and understanding of the Fuze Environment is the science-based endeavor of providing the test equipment, instrumentation, and analysis techniques for experimentation and data gathering necessary for next generation fuzing. Third, hard target survivable fuze components are developed to increase the effectiveness of facility denial munitions by improving the prediction tools and testing methodologies to evaluate the survivability and functionality of legacy and future fuzes. Development of these technologies will enable next generation boosted and hypersonic penetrators to execute missions against hardened and deeply buried targets.			
FY 2012 Accomplishments: <ul style="list-style-type: none"> - Developed underlying technologies and testing methods to define the high-speed penetration environment. - Completed of hydrocode/EPIC 22 modeling and simulation tools via hard target instrumented characterization testing. - The hard target weapon community began integrating the testing protocol in future boosted and high speed penetrator development programs. 			
FY 2013 Plans:			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 2: Applied Research	R-1 ITEM NOMENCLATURE PE 0602000D8Z: Joint Munitions Technology	PROJECT P204: Enabling Fuze Technology		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
<ul style="list-style-type: none">- Develop and validate modeling and simulation code using high fidelity, multi-scale simulation techniques.- Develop survivable modular fuze technology for multi-common miniature munitions with distributed/embedded fuzes. FY 2014 Plans: <ul style="list-style-type: none">- Adapt and transition Joint Fuze Technology Program developed testing protocol in boosted and high speed penetrator development programs.- Demonstrate and transition survivable modular fuze technology for multi-role common miniature munitions with distributed/embedded fuzes.				
Title: Tailorable Effects Fuzing Description: This area focuses on developing fuzing for tailorable effects weapons that encompasses the ability to selectively vary the output of the weapon (Dial-a-Yield) and/or the ability to generate selectable effects (directed blast, fragmentation); developing initiation and multi-point technologies to include electronic safe and arm based multi-point initiators for tunable output – scalable yield warheads; MicroElectro-Mechanical Systems (MEMS) based multi-point initiators for tunable output/scalable yield warheads; and smart fuzing for tailorable effects weapons. These technologies will enable weapons that can effectively defeat a variety of targets while minimizing unintentional collateral effects. FY 2012 Accomplishments: <ul style="list-style-type: none">- Designed controllable explosive sensitivity technologies that provide the ability to selectively vary the sensitivity of energetic materials.- Conducted explosive testing of miniature fire-set components for 6.3 tailorable effects initiation warhead. FY 2013 Plans: <ul style="list-style-type: none">- Continue to develop Tailorable Effects modeling and simulation using hydrocode.- Develop hardened, Tailorable Effects firing systems for missile and projectile warheads to survive the high-g shock environments associated with impact with Military Operations in Urban Terrain (MOUT) targets. FY 2014 Plans: <ul style="list-style-type: none">- Demonstrate and transition into 6.3 advanced technology development of detonator, initiation, and fireset technologies.- Apply initiation architecture and control technologies for application in the Services’ warhead development programs.		1.694	1.712	1.555
Title: High Reliability Fuzing Description: Develop high reliability fuzing architectures, fuzing components, and Unexploded Ordnance (UXO) reduction features. These technologies will enable the next generation of cluster munitions to achieve the required greater than 99 percent reliability goal. Evolving DoD emphasis on increased weapon system reliability is driving the need to consider new and novel approaches for achieving increased fuze reliability while maintaining or enhancing fuze design safety. DoD policy, higher weapon		1.514	1.574	1.514

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 2: <i>Applied Research</i>	R-1 ITEM NOMENCLATURE PE 0602000D8Z: <i>Joint Munitions Technology</i>	PROJECT P204: <i>Enabling Fuze Technology</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
reliability expectations and harsher weapon system operational requirements are dictating the need for higher fuze reliability than available using current technologies.				
<i>FY 2012 Accomplishments:</i> - Designed high reliability fuze technology components, including MEMS sensors and safety devices that satisfy reliability while maintaining safety by eliminating single-point and common-mode failures. - Developed fuze reliability predictive analysis that is being applied by the Services' weapon community (e.g. cluster munitions, bomb fuzing). <i>FY 2013 Plans:</i> - Demonstrate high reliability fuze architecture concepts that satisfy reliability while maintaining safety by eliminating single-point and common-mode failures. - Apply next generation cluster munitions fuze design and architecture, fabricate component technology prototypes, and conduct performance and reliability tests in ballistic and harsh environment testing. <i>FY 2014 Plans:</i> - Research and develop novel technologies for UXO reduction features including fuze mechanisms and initiation energetic to eliminate any unexploded ordnance.				
<i>Title:</i> Enabling Fuze Technologies <i>Description:</i> Develop common/modular fuze architecture; innovative fuze component technologies; sensors; next generation fuze setting capability, tools and modeling; and fuzing power sources. These fuzing technologies will provide smaller, more cost effective solutions while meeting or exceeding the performance of existing technologies. Development of these technologies will enable future weapon applications to be more mission adaptive and smaller along with improved target detection capabilities. <i>FY 2012 Accomplishments:</i> - Designed and tested phase one exploitation resistant proximity fuze sensors and electronics technology hardware for detecting targets, impact, voids, and media. - Designed fuze power source technology and concepts that include functionality that precludes the inadvertent release of "stored energy" such as Micro power sources and energy harvesting components. <i>FY 2013 Plans:</i> - Establish next generation system interface architecture between various fuze subsystems. - Evaluate proximity fuze sensor, electronics and algorithm technologies in performance and functional testing in air-gun and ballistic environments.		0.974	1.452	1.486

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense							DATE: April 2013				
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 2: <i>Applied Research</i>				R-1 ITEM NOMENCLATURE PE 0602000D8Z: <i>Joint Munitions Technology</i>			PROJECT P204: <i>Enabling Fuze Technology</i>				
B. Accomplishments/Planned Programs (\$ in Millions)							FY 2012	FY 2013	FY 2014		
- Transition to 6.3 development of exploitation resistant proximity fuze sensors and electronics technology.											
FY 2014 Plans: - Conduct assessments of common fuze architecture technologies: safety components, modular electronics, sensors, interfaces, and packaging.											
Accomplishments/Planned Programs Subtotals							5.824	6.399	6.129		
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
• 0603000D8Z P301: BA 3 <i>Enabling Fuze Advanced Technology</i>	1.077	4.793	6.411		6.411	7.887	8.112	8.373	8.536	Continuing	Continuing
Remarks											
D. Acquisition Strategy N/A											
E. Performance Metrics 1) Transitions of technologies developed by the Program are tracked and documented using DoD/NASA Technical Readiness Level (TRL) scale. 2) Fuze Area Technology Group (FATG) Technology Roadmaps are prepared, evaluated, and analyzed by Joint Fuze Technology Program management and technical staff. 3) Chairman's Annual Assessments for each FATG are critically reviewed by the Technology Advisory Committee to determine progress, transition plans, and relevance of each project. 4) Project progress toward goals and milestones is assessed at each FATG meeting. 5) Annual technical reports and papers are tracked and documented for the Program. 6) Technology Transition Agreements in place with Munitions programs.											

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE							
0400: Research, Development, Test & Evaluation, Defense-Wide BA 2: Applied Research					PE 0602228D8Z: Historically Black Colleges and Universities and Minority Institutions (HBCU/MI)							
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
Total Program Element	-	35.245	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
P489: Historically Black Colleges and Universities and Minority Institutions (HBCU/MI)	-	35.245	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

Note

The FY 2012 President's Budget Request (PBR) transferred the Historically Black Colleges and Universities and Minority Institutions (HBCU/MI) program from the Office of the Secretary of Defense (OSD) to the Army. The FY 2012 National Defense Authorization Act (NDAA) directed the OSD to retain oversight and execution of the HBCU/MI program. Accordingly, FY 2012 funds were reprogrammed from Army PE 0601104A to OSD PE 0602228D8Z for program execution.

The FY 2013 PBR requested funds for the HBCU/MI program under Army PE 0601104A. To comply with direction of the Congress, OSD will submit a reprogramming request in FY 2013 to transfer funds from the Army PE 0601104A to OSD PE 0602228D8Z.

In FY 2014, funding for the HBCU/MI program is requested under OSD budget activity 1, PE 0601228D8Z. The OSD Assistant Secretary of Defense for Research and Engineering (ASD(R&E)) retains oversight and execution of the program.

A. Mission Description and Budget Item Justification

The HBCU/MI program provides support in fields of science and engineering that are important to national defense. The Department of Defense (DoD) HBCU/MI Program encourages participation of small minority schools as well as large minority research institutions. This competitive program provides support through grants or contracts for research, education assistance, instrumentation purchases, and technical assistance as described below:

- Research. The research grants further the knowledge in the basic scientific disciplines through theoretical and experimental activities. Collaborative research allows university research staff to work directly with military laboratories or other universities.
- Education. Minority institutions use education assistance funds to strengthen their academic programs in science, technology, engineering, and mathematics (STEM) thereby increasing the number of under-represented minorities obtaining undergraduate and graduate degrees in these fields. These grants provide equipment, scholarships, cooperative work/study opportunities, visiting faculty programs, summer programs, and a variety of other enhancements designed to support students and to encourage them to pursue careers in STEM.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY

0400: *Research, Development, Test & Evaluation, Defense-Wide*
BA 2: *Applied Research*

R-1 ITEM NOMENCLATURE

PE 0602228D8Z: *Historically Black Colleges and Universities and Minority Institutions (HBCU/MI)*

- Infrastructure. This program allows universities to purchase basic laboratory equipment for research and education program enhancements and highly sophisticated research instruments, such as lasers and spectrometers.
- Technical assistance. HBCU/MI uses these funds to design programs that enhance the ability of minority institutions to successfully compete for future Defense funding. The objective is to assist the HBCU/MI community in areas such as proposal writing and administration of grants, and contracts.

B. Program Change Summary (\$ in Millions)	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total
Previous President's Budget	0.000	0.000	0.000	-	0.000
Current President's Budget	35.245	0.000	0.000	-	0.000
Total Adjustments	35.245	0.000	0.000	-	0.000
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	35.245	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Other Program Adjustments	-	-	0.000	-	0.000

Change Summary Explanation

FY 2012 reflects a reprogramming action of \$35.245 million from RDT&E-A, PE 0601104A to RDT&E-DW, PE 0602228D8Z in line with Congressional direction.

FY 2013 appropriated funds will be reprogrammed to the OSD PE in the same manner as FY 2012.

FY 2014 funds will be requested under PE 0601228D8Z (budget activity 1).

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 2: <i>Applied Research</i>					R-1 ITEM NOMENCLATURE PE 0602228D8Z: <i>Historically Black Colleges and Universities and Minority Institutions (HBCU/MI)</i>				PROJECT P489: <i>Historically Black Colleges and Universities and Minority Institutions (HBCU/MI)</i>		
--------------------------------------------------------------------------------------------------------------------------------------------------	--	--	--	--	----------------------------------------------------------------------------------------------------------------------------------------	--	--	--	-----------------------------------------------------------------------------------------------------------------	--	--

COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013[#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
P489: <i>Historically Black Colleges and Universities and Minority Institutions (HBCU/MI)</i>	-	35.245	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

Note

The FY 2012 President's Budget Request (PBR) transferred the Historically Black Colleges and Universities and Minority Institutions (HBCU/MI) program from the Office of the Secretary of Defense (OSD) to the Army. The FY 2012 National Defense Authorization Act (NDAA) directed the OSD to retain oversight and execution of the HBCU/MI program. Accordingly, FY 2012 funds were reprogrammed from Army PE 0601104A to OSD PE 0602228D8Z for program execution.

The FY 2013 PBR requested funds for the HBCU/MI program under Army PE 0601104A. To comply with direction of the Congress, OSD will submit a reprogramming request in FY 2013 to transfer funds from the Army PE 0601104A to OSD PE 0602228D8Z.

In FY 2014, funding for the HBCU/MI program is requested under OSD budget activity 1, PE 0601228D8Z. The OSD Assistant Secretary of Defense for Research and Engineering (ASD(R&E)) retains oversight and execution of the program.

A. Mission Description and Budget Item Justification

The HBCU/MI program provides support in fields of science and engineering that are important to national defense. The Department of Defense (DoD) HBCU/MI Program encourages participation of small minority schools as well as large minority research institutions. This competitive program provides support through grants or contracts for research, education assistance, instrumentation purchases, and technical assistance as described below:

- **Research.** The research grants further the knowledge in the basic scientific disciplines through theoretical and experimental activities. Collaborative research allows university research staff to work directly with military laboratories or other universities.
- **Education.** Minority institutions use education assistance funds to strengthen their academic programs in science, technology, engineering, and mathematics (STEM) thereby increasing the number of under-represented minorities obtaining undergraduate and graduate degrees in these fields. These grants provide equipment, scholarships, cooperative work/study opportunities, visiting faculty programs, summer programs, and a variety of other enhancements designed to support students and to encourage them to pursue careers in STEM.
- **Infrastructure.** This program allows universities to purchase basic laboratory equipment for research and education program enhancements and highly sophisticated research instruments, such as lasers and spectrometers.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 2: Applied Research	R-1 ITEM NOMENCLATURE PE 0602228D8Z: Historically Black Colleges and Universities and Minority Institutions (HBCU/MI)	PROJECT P489: Historically Black Colleges and Universities and Minority Institutions (HBCU/MI)		
<ul style="list-style-type: none">• Technical assistance. HBCU/MI uses these funds to design programs that enhance the ability of minority institutions to successfully compete for future Defense funding. The objective is to assist the HBCU/MI community in areas such as proposal writing and administration of grants and contracts.				
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
Title: Historically Black Colleges and Universities and Minority Institutions (HBCU/MI)		35.245	0.000	0.000
Description: The HBCU/MI program provides support for research and collaboration with DoD facilities and personnel. The research grants further knowledge in the basic physical scientific and engineering disciplines through theoretical and empirical activities. Collaborative research allows university professors to work directly with military laboratories or other universities.				
FY 2012 Accomplishments: Issued program solicitation to select new awards in support of basic research and student involvement with principal investigators at HBCUs/MIs. Solicitation closed on July 11, 2012. Anticipate new awards to be in place by March 2013.				
Collected and evaluated the data from the DoD Components on the actions described in the ASD(R&E) December 2, 2011 memo, "Reinvigorating Our Relationship with HBCUs and MIs."				
Conducted annual review of the six DoD Centers of Excellence started in FY 2011.				
Conducted a DoD Technical Officers and HBCU Investigators workshop in which the purpose was to establish closer links between the two groups and to develop long-term relationships for DoD and the institutions. Approximately 75 attended (16 HBCUs participated, and eight DoD Agencies participated).				
Funded the research and educational collaboration project between Naval Air Warfare Center and HBCUs/MIs in support of the Avionic Enabling Technology Development for Manned and Unmanned Airborne System. Goal is to increase the number of FY 2013 summer interns from 40 to 50 participants (\$3.250 million).				
Funded the on-going effort with the Thurgood Marshall College Fund Defense Leadership project in support of STEM scholarships and internships to HBCUs/MIs (\$3.100 million).				
FY 2013 Plans: Conduct annual competition of the HBCU/MI program.				
Establish the process needed to fund new Centers of Excellence in support of the ASD(R&E) Science and Technology (S&T) Priorities in the areas of Cyber Security Science and Technology, Data-to-Decisions, and Autonomy.				

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 2: <i>Applied Research</i>	R-1 ITEM NOMENCLATURE PE 0602228D8Z: <i>Historically Black Colleges and Universities and Minority Institutions (HBCU/MI)</i>	PROJECT P489: <i>Historically Black Colleges and Universities and Minority Institutions (HBCU/MI)</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2012	FY 2013	FY 2014
Expand the HBCU/MI participation in Multidisciplinary University Research Initiative (MURI), Defense University Research Instrumentation Program (DURIP), MINERVA, and Science, Mathematics, and Research for Transformation (SMART) programs.			
Develop a DoD-wide HBCU/MI Strategic Plan.			
Continue to assess the DoD-wide HBCU/MI programs in order to strengthen the competitive position of these institutions within DoD.			
Continue the research and educational collaboration project between Naval Air Warfare Center and HBCUs/MIs in support of the Avionic Enabling Technology Development for Manned and Unmanned Airborne System. Goal is to increase the number of FY 2014 summer interns from 50 to 60 participants.			
Conduct annual review of the six DoD Centers of Excellence started in FY 2011.			
Continue to examine the effectiveness of DoD-wide efforts to increase the number of minorities graduating from HBCUs/MIs in STEM fields and the transition of these students into DoD or the federal workforce.			
Conduct outreach workshops to expose HBCUs/MIs to opportunities in DoD.			
Accomplishments/Planned Programs Subtotals	35.245	0.000	0.000

C. Other Program Funding Summary (\$ in Millions)

Line Item	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
• BA 1, PE 0601228D8Z: <i>HBCU/MI</i>	0.000	0.000	30.895		30.895	31.199	28.639	24.798	25.230	Continuing	Continuing

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

Since FY 2007, the following data has been collected as a grant requirement:

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 2: <i>Applied Research</i>	R-1 ITEM NOMENCLATURE PE 0602228D8Z: <i>Historically Black Colleges and Universities and Minority Institutions (HBCU/MI)</i>	PROJECT P489: <i>Historically Black Colleges and Universities and Minority Institutions (HBCU/MI)</i>
<ul style="list-style-type: none">• Percent of students graduating with undergraduate degrees in Science, Mathematics, Engineering, and Technology fields.• Percent of students pursuing graduate and Ph.D. degrees.• Number of undergraduate students achieving specified Grade Point Average.• Number of students participating in the Centers of Excellence for Research and Engineering.• Number of students working in Defense Laboratories. <p>This data constitutes the "Existing Baseline" for measurement and improvement in future years.</p>		

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY

0400: *Research, Development, Test & Evaluation, Defense-Wide*

BA 2: *Applied Research*

R-1 ITEM NOMENCLATURE

PE 0602234D8Z: *Lincoln Laboratory*

COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
Total Program Element	-	34.444	36.826	46.875	-	46.875	51.452	54.453	57.828	58.716	Continuing	Continuing
P534: <i>Lincoln Laboratory</i>	-	27.877	32.775	37.870	-	37.870	41.846	44.707	46.003	46.797	Continuing	Continuing
P535: <i>Technical Intelligence</i>	-	3.687	3.683	8.640	-	8.640	9.606	9.746	11.825	11.919	Continuing	Continuing
P536: <i>Testbed for Comparative Analysis</i>	-	2.880	0.368	0.365	-	0.365	0.000	0.000	0.000	0.000	Continuing	Continuing

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

The Lincoln Laboratory (LL) research line program is an advanced technology research and development effort conducted through a cost reimbursable contract with the Massachusetts Institute of Technology (MIT). The LL Program funds innovations that directly lead to the development of new system concepts, technologies, components and materials in support of Lincoln Laboratory's missions in Advanced Electronics Technology, Communications Systems, Intelligence, Surveillance and Reconnaissance Systems and Technology, Tactical Systems, Space Control, and Air and Missile Defense. For FY 2013 the LL Program will support these missions by conducting research and development in five core science and engineering disciplines and four technical initiatives:

- Advanced Devices, with emphasis on development of materials, devices, and subsystems utilizing microelectronic, photonic, biological, and chemical technologies to enable new system approaches to Department of Defense (DoD) sensors.
- Optical Systems and Technologies, including the development of focal planes, integrated imagers, imaging and spectroscopic detection systems.
- RF Systems and Technologies, including the development of novel active and passive Radio Frequency (RF) sensors and development of electronic protection and electronics attack technologies and system concepts.
- Information, Computation, and Exploitation, which seeks to develop novel architectures, tools, and techniques for the processing, fusion, interpretation, computation, and exploitation of multi-sensor, multi-intelligence data.
- Cyber Security, includes developing technologies and new techniques for the protection of systems against cyber attack and exploitation.
- Technical Initiatives, include biological sciences to aid the warfighter and develop tools for biological research; autonomous systems technologies with the objective of developing mobile, autonomous, robotic platforms that demonstrate key capabilities needed for a wide range of defense applications; quantum information sciences to develop basic technologies that support the storage, transport, and computation of quantum information; and novel and engineered materials that utilize nano-manufacturing techniques to create meta or other materials with unique physical and optical properties not readily found in nature.

Supporting these and other priority technology and capability areas are work efforts entitled Technical Intelligence and Testbed for Comparative Analysis:

- Technical Intelligence is working to develop a comprehensive understanding of technology emergence and advancement in a range of relevant scientific areas such as nanotechnology, directed energy, and propulsion. Some details are classified, but one focus area is working to establish a broad horizon scanning and technology forecasting capability through a collaborative effort by the Department of Defense (DoD) and the Intelligence Community. This effort will develop insight into our relative position in science and technology around the world over time, as well as determine potential impacts on DoD capability development and future threat environments.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense	DATE: April 2013
-------------------------------------------------------------------------------------------------	-------------------------

APPROPRIATION/BUDGET ACTIVITY

0400: *Research, Development, Test & Evaluation, Defense-Wide*
 BA 2: *Applied Research*

R-1 ITEM NOMENCLATURE

PE 0602234D8Z: *Lincoln Laboratory*

- The Testbed for Comparative Analysis will enable the evaluation of quantitative, horizon scanning and technology forecasting techniques for discovering disruptive technologies that may impact the DoD. This effort will provide the DoD with objective ways to evaluate the accuracy of existing and future horizon scanning and technology forecasting efforts.

B. Program Change Summary (\$ in Millions)	<u>FY 2012</u>	<u>FY 2013</u>	<u>FY 2014 Base</u>	<u>FY 2014 OCO</u>	<u>FY 2014 Total</u>
Previous President's Budget	36.608	36.826	37.014	-	37.014
Current President's Budget	34.444	36.826	46.875	-	46.875
Total Adjustments	-2.164	0.000	9.861	-	9.861
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-2.153	-			
• SBIR/STTR Transfer	-	-			
• Baseline Adjustments	-	-	9.861	-	9.861
• Other Adjustments	-0.011	-	-	-	-

Change Summary Explanation

FY 2014 baseline adjustments are reflective of DoD S&T priorities and requirements.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 2: Applied Research					R-1 ITEM NOMENCLATURE PE 0602234D8Z: Lincoln Laboratory				PROJECT P534: Lincoln Laboratory			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
P534: Lincoln Laboratory	-	27.877	32.775	37.870	-	37.870	41.846	44.707	46.003	46.797	Continuing	Continuing

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

The Lincoln Laboratory (LL) research line program is an advanced technology research and development effort conducted through a cost reimbursable contract with the Massachusetts Institute of Technology (MIT). The LL Program funds innovations that directly lead to the development of new system concepts, technologies, components and materials in support of Lincoln Laboratory's missions in Advanced Electronics Technology, Communications Systems, Intelligence, Surveillance and Reconnaissance Systems and Technology, Tactical Systems, Space Control, and Air and Missile Defense. For FY 2013 the LL Program will support these missions by conducting research and development in five core science and engineering disciplines and four technical initiatives:

- Advanced Devices, with emphasis on development of materials, devices, and subsystems utilizing microelectronic, photonic, biological, and chemical technologies to enable new system approaches to Department of Defense (DoD) sensors.
- Optical Systems and Technologies, including the development of focal planes, integrated imagers, imaging and spectroscopic detection systems.
- RF Systems and Technologies, including the development of novel active and passive Radio Frequency (RF) sensors and development of electronic protection and electronics attack technologies and system concepts.
- Information, Computation, and Exploitation, which seeks to develop novel architectures, tools, and techniques for the processing, fusion, interpretation, computation, and exploitation of multi-sensor, multi-intelligence data.
- Cyber Security, includes developing technologies and new techniques for the protection of systems against cyber attack and exploitation.
- Technical Initiatives, include biological sciences to aid the warfighter and develop tools for biological research; autonomous systems technologies with the objective of developing mobile, autonomous, robotic platforms that demonstrate key capabilities needed for a wide range of defense applications; quantum information sciences to develop basic technologies that support the storage, transport, and computation of quantum information; and novel and engineered materials that utilize nano-manufacturing techniques to create meta or other materials with unique physical and optical properties not readily found in nature.

Supporting these and other priority technology and capability areas is a work effort titled Technical Intelligence. Technical Intelligence supports comprehensive understanding of technology emergence and advancement in a range of relevant scientific areas such as nanotechnology, directed energy, and propulsion. Some details are classified, but one collaborative effort by DoD and the Intelligence community is focused on establishing a broad horizon scanning and technology forecasting capability. This effort will develop insight over time into our relative position in science and technology around the world and potential impacts on capability development and future threat environments.

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2012	FY 2013	FY 2014
Title: Advanced Electronics Technology	4.956	0.000	0.000

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 2: <i>Applied Research</i>	R-1 ITEM NOMENCLATURE PE 0602234D8Z: <i>Lincoln Laboratory</i>	PROJECT P534: <i>Lincoln Laboratory</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
Description: Development of materials, devices, and subsystems utilizing microelectronic, photonic, biological, and chemical technologies to enable new system approaches to Department of Defense (DoD) sensors. FY 2012 Accomplishments: Developed new imager and electronics devices for visible and extended wavelength imaging. Continued development of photonics integrated-circuit-based coherent optical systems. Investigated novel semiconductor optical waveguide laser and amplifier designs architected for beam-combined sensing and directed energy applications.			
Title: Communications Description: Development of high-efficiency, free-space optical communications links as well as development and applications of meta materials. FY 2012 Accomplishments: Developed concepts for novel materials with improved spectral and spatial filtering for daytime optical communications. Developed high efficiency arrays of photon counting receivers for free-space coupling. Investigated distributed algorithms for dynamic networks.		2.062	0.000
Title: Intelligence, Surveillance, and Reconnaissance (ISR) Description: Development of novel active and passive Radio Frequency (RF) and electro-optic sensors useful for intelligence, surveillance, and reconnaissance applications. FY 2012 Accomplishments: Continued development of small, unmanned aerial system (UAS)-based distributed ISR architecture with multi-intelligence (multi-INT) sensor payloads. Continued development of low Size, Weight and Power (SWaP) reconfigurable RF System on Chip (SoC). Developed compact, low-power, multi-modal active imaging systems. Investigated high-resolution imaging capability using a synthetic aperture ladar. Built and demonstrated a long-endurance solar-powered UAS with high-bandwidth optical downlink technology for relaying real-time high-definition video.		5.236	0.000
Title: Net-centric Operations (NCO) Description: Developing and demonstrating the key technologies that will enable composable and dynamic multi-mission net-centric operations on the Global Information Grid. FY 2012 Accomplishments: Continued development of Knowledge Creation Services, to include improved access to massive heterogeneous data sources, resource allocation algorithms, and metadata extraction and linking algorithms. Continued development of algorithms and		1.053	0.000

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 2: <i>Applied Research</i>	R-1 ITEM NOMENCLATURE PE 0602234D8Z: <i>Lincoln Laboratory</i>	PROJECT P534: <i>Lincoln Laboratory</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
techniques to implement trusted security of information in net-centric systems. Explored novel techniques to enable operator queries to dynamically modify algorithms.			
Title: Air and Missile Defense Description: Development of novel discrimination schemes and electronic warfare applications. FY 2012 Accomplishments: Investigated advanced concepts for the electronic protection (EP) of radars from jammers using advanced waveform and adaptive signal processing approaches. Explored concepts for a multi-beamforming antenna and receive architecture to provide extremely high sensitivity for electronic support (ES) functions. Investigated the use of laser radar in support of target characterization and identification.		1.570	0.000
Title: Space Control Description: Development of advanced remote-sensing architectures and small satellite applications. FY 2012 Accomplishments: Developed architectures and sensing technologies for satellite-based remote sensing applications. Began development of micro-satellite payload components and deployment schemes.		1.000	0.000
Title: Information, Computation, and Exploitation Sciences Description: Seeks to develop novel architectures, tools, and techniques for the processing, fusion, interpretation, computation, and exploitation of multi-sensor, multi-intelligence data. FY 2012 Accomplishments: Investigated full-motion video analytics, graph analytics, and multi-sensor fusion techniques. Developed video analysis tools on wide-area video sensor data from outdoor environments. Prototyped novel semantic analytics tailored to internet data sources. Demonstrated automatic three-dimensional construction and exploitation of a multi-intelligence world model. FY 2013 Plans: Extend video analytics work to enable end user customization and composability of video analytics engine. Develop theoretical framework for threat detection in networks and graphs. Develop a data-intensive cloud analytics infrastructure to enable collection, fusion, and exploitation of structured and unstructured datasets. FY 2014 Plans: Begin demonstration of large-scale multi-intelligence data fusion, exploitation, and visualization for specific application domains.		1.000	3.926
Title: Cyber Security		3.000	3.595
			4.117
			3.770

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 2: <i>Applied Research</i>	R-1 ITEM NOMENCLATURE PE 0602234D8Z: <i>Lincoln Laboratory</i>	PROJECT P534: <i>Lincoln Laboratory</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
Description: Developing technologies and new techniques for the protection of systems against cyber attack and exploitation. FY 2012 Accomplishments: Developed automated mission-relevant cyber risk assessment tools, novel hardware sensors for low-level low-artifact cyber data collection, and reference implementations for cyber testing standards. Continued work on flexible anti-tamper architecture and physically unclonable functions. Developed system for assessing Cyber situational awareness, using Lincoln Laboratory network operations. FY 2013 Plans: Develop tools to improve cyber situation awareness and simulation environments to model the impact of cyber attacks on mission effectiveness. Develop automated methods to reverse engineer malicious computer codes. FY 2014 Plans: Evaluate cyber situational awareness tools on operational networks. Evaluate the impact of cyber attacks on simulated networks and develop strategies to maximize mission effectiveness.			
Title: Advanced Devices Description: Development of materials, devices, and subsystems utilizing microelectronic, photonic, biological, and chemical technologies to enable new system approaches to Department of Defense (DoD) sensors. FY 2013 Plans: Evaluate new materials for short-wavelength infrared (SWIR) imagers. Develop proof-of-concept, ultra-low power electronics for processors. Fabricate silicon photonic devices for heterogeneous integration into coherent analog systems. Demonstrate arrays of high-power, semiconductor lasers optimized for incorporation into directed energy systems. FY 2014 Plans: Fabricate and test new SWIR imagers. Develop design and processes for full-scale, ultra-low power processors. Extend heterogeneous photonic component performance from the radio frequency (RF) to the microwave regime. Increase power scaling of directed energy laser components.		0.000	5.750
Title: Optical Systems Description: Development of focal planes, integrated imagers, imaging and spectroscopic detection systems. FY 2013 Plans:		0.000	4.816
		5.051	

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 2: <i>Applied Research</i>	R-1 ITEM NOMENCLATURE PE 0602234D8Z: <i>Lincoln Laboratory</i>	PROJECT P534: <i>Lincoln Laboratory</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
Develop optical systems and components for space surveillance. Develop components and techniques for high-power, high-efficiency mid-wavelength infrared (MWIR) and long-wavelength infrared (LWIR) transmitters. Evaluate the performance of new concepts for extending the range of coherent laser radars.			
FY 2014 Plans: Continue technology development and evaluate performance of new optical space surveillance systems. Demonstrate high-efficiency MWIR/LWIR transmitters. Develop components for coherent laser radar imaging.			
Title: Radio Frequency (RF) Systems Description: Development of novel active and passive RF sensors and development of electronic protection and electronics attack technologies and system concepts. FY 2013 Plans: Complete fabrication and testing of a high-performance, low-power tunable receiver on a chip. Develop and evaluate concepts to extend the linearity of RF analog devices. Design and fabricate photonic components needed for massively channelized RF receivers. Develop RF techniques for electronic protection and attack. FY 2014 Plans: Design next generation RF receiver chips with enhanced linearity. Test components for massively channelized photonic RF receiver. Design and fabricate new RF components.		0.000	4.895
Title: Technical Initiatives Description: Technical Initiatives includes: Biological sciences to aid the warfighter and develop tools for biological research. Autonomous systems technologies with the objective of developing mobile, autonomous, robotic platforms that demonstrate key capabilities needed for a wide range of defense applications. Quantum information sciences to develop basic technologies that support the storage, transport, and computation of quantum information. Novel and engineered materials that utilize nano-manufacturing techniques to create meta or other materials with unique physical and optical properties not readily found in nature. FY 2012 Accomplishments: Biosciences: Continued development of novel tools for depression assessment using physiological biomarkers. Developed evaluation tools for rapid and accurate diagnosis of traumatic brain injury. Developed platform for gene synthesis under new Synthetic Biology initiative. Autonomous systems: Demonstrated optimized algorithms for distributed robotics networks and model-based autonomy algorithms for higher-level autonomy, and developed the technology underpinnings of a cognitive robotics architecture featuring biomimetic algorithms for true robot autonomy. Quantum Information Sciences: Continued to work on		8.000	9.793
			10.269

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 2: <i>Applied Research</i>	R-1 ITEM NOMENCLATURE PE 0602234D8Z: <i>Lincoln Laboratory</i>	PROJECT P534: <i>Lincoln Laboratory</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
optimization of qubits. Developed sources and detectors nearly capable of supporting the development of a verifiable random number generator. FY 2013 Plans: Biosciences: Grow techniques and platforms for synthetic biology research, focusing on digital-based gene synthesis. Develop tools and methods for rapid assessment of traumatic brain injury. Develop low Size, Weight and Power (SWaP) tools for physiological load monitoring. Autonomous systems: Focus on growth of shared-perception for autonomous systems, cognitive robotics (including demonstration) and multi-unmanned aerial vehicle/unmanned ground vehicle (UAV/UGV) cooperative mission operations. Quantum Information Sciences: Focus on demonstration of multi-qubit computation and development of quantum protected communications. Novel and Engineered Materials: Develop meta material designs and test material properties in support of the development of high-frequency, tunable mirrors in the mid to long-wave infrared. Develop designs and test miniature broad-band antennas utilizing negative index of refraction materials. FY 2014 Plans: Biosciences: Conduct synthetic biology research, focusing on digital-based gene synthesis. Evaluate methods for rapid assessment of traumatic brain injury. Evaluate low Size, Weight and Power (SWaP) tools for physiological load monitoring. Autonomous systems: Develop hardware optimized for autonomous control and planning. Quantum Information Sciences: Narrow focus of qubit research to one or more competing schemes. Focus on demonstration of multi-qubit computation. Demonstrate quantum protected communications. Novel and Engineered Materials: Develop high-frequency, tunable mirrors in the mid to long-wave infrared. Test miniature broad-band antennas.			
Title: Applied Research Analyses for Advancing S&T Priorities Description: In FY 2014 the Lincoln Laboratory (LL) program will include an additional project area to support studies, analyses and experiments across a wide range of complex systems problems that face the DoD. Emerging conflicts, shifting global priorities, natural disasters, and dwindling federal resources, to name a few, are all factors that will tax our ability to provide a timely and cost-effective military defense of the nation. LL will develop an agile analytical and experimental methodology for addressing the impact of proposed solutions on complex-systems-engineering challenges and will reduce this method to practice on specific problems selected by the Assistant Secretary of Defense for Research and Engineering (ASD(R&E)). FY 2014 Plans: Assess one or more specific time-critical problems of interest to the DoD with the goal of providing a clear understanding of the source of the problem, proposed solution space, cost, and resources required to validate the proposed solutions, and conduct experimentation and analyses to support specific courses of action. The objective of these studies are to provide quick and		0.000	0.000
			3.500

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 2: <i>Applied Research</i>	R-1 ITEM NOMENCLATURE PE 0602234D8Z: <i>Lincoln Laboratory</i>	PROJECT P534: <i>Lincoln Laboratory</i>	
B. Accomplishments/Planned Programs (\$ in Millions) thorough reactive or proactive analyses that will aid in the DoD specific short term conflict resolution and long term strategic decision making.		FY 2012	FY 2013
		FY 2014	
Accomplishments/Planned Programs Subtotals		27.877	32.775
C. Other Program Funding Summary (\$ in Millions) N/A Remarks D. Acquisition Strategy N/A E. Performance Metrics N/A			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 2: Applied Research					R-1 ITEM NOMENCLATURE PE 0602234D8Z: Lincoln Laboratory				PROJECT P535: Technical Intelligence			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
P535: Technical Intelligence	-	3.687	3.683	8.640	-	8.640	9.606	9.746	11.825	11.919	Continuing	Continuing

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

Technical Intelligence supports the Assistant Secretary of Defense for Research and Engineering (ASD(R&E)) priorities through two primary mechanisms: 1) leveraging the university community through the JASONS; and 2) accessing information on the emergence, maturation, and development of technology globally.

JASONS is a group of approximately 65 appropriately cleared experts who provide detailed independent technical assessments of challenging technological problems. JASON members are primarily fully tenured professors in physics, mathematics, biosciences, and engineering disciplines who hold active Sensitive Compartmented Information-level clearances. The annual outputs of the JASONS are studies provided across the leadership and program manager levels which inform and often shape programmatic and technical decisions involving millions of dollars. JASONS were previously funded through university research programs, but their level of technical expertise in systems and development is appropriate for incorporation into Applied Research.

The technical intelligence program is working to develop a detailed understanding of both the opportunity and threat aspects from military-relevant technology emergence and advancement across a range of scientific, technology and capability areas. These areas include but are not limited to quantum information sciences, data analytics and data-intensive systems, novel manufacturing, directed energy and other emerging technologies to fight and win in denied and contested environments. Some details are classified, but the focus is to work collaboratively across the Department of Defense (DoD) and the Intelligence Community (IC) to establish a broad horizon scanning and technology forecasting capability. This capability is coupled with implementation of technical net assessments and other approaches to develop detailed analyses of the opportunities and threats posed by the technology and relevant counter-capabilities where impact appears most significant. These efforts will develop insight into our relative position in science and technology around the world over time, as well as determine potential impacts on DoD capability development and future threat environments.

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2012	FY 2013	FY 2014
Title: Technical Intelligence	3.687	3.683	8.640
Description: The mission of the Office of Technical Intelligence (OTI) is to support the ASD(R&E) imperative to prepare for an uncertain future. OTI identifies and assesses potential opportunities and threats, including novel issues as well as persistent problems or trends, to improve strategic direction and strengthen the research and engineering (R&E) portfolio. OTI maintains a robust collaboration across ASD(R&E), the Services, and the Intelligence Community (IC) to provide acquisition decision-makers a relevant awareness of emerging global Science and Technology (S&T) concepts, technologies, and capabilities.			
FY 2012 Accomplishments:			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense			DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 2: <i>Applied Research</i>		R-1 ITEM NOMENCLATURE PE 0602234D8Z: <i>Lincoln Laboratory</i>		PROJECT P535: <i>Technical Intelligence</i>	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2012	FY 2013	FY 2014
<p>Continued to focus the JASON studies and Technical Intelligence in areas critical to national security. JASON studies focused on the areas most important in the security environment at the time. For the Technical Intelligence portion some details are classified. The program developed frameworks for S&T baseline assessments for the S&T Intelligence priorities and full technical net assessments on global technology advancement. This program continued 'five eyes' collaboration with the United Kingdom, Australia, Canada, and New Zealand to continue assessments on emerging and disruptive technologies and will leverage the best collection of methodologies for scanning/discovery, prioritization, and assessment of the military relevance for those emerging technologies. The program continued the effort of the National Academy of Sciences (under the National Research Council) through the Board of Global Science and Technology to engage globally on targeted areas of science and technology to understand global shifts and their relevance to national security. The Board sponsored several conferences in countries in reference to technologies of interest, with the initial focus on the large data challenge. In coordination with the National Intelligence Committee and the Defense Intelligence Community effort to Strengthen Science and Technology Analysis, this program continued a strong partnership with the intelligence community to provide clear feedback on products, improve articulation of S&T requirements, and define higher impact products for future development. Technical Intelligence continued to update and refine the S&T Intelligence priorities and mechanisms for increasing information flow from the intelligence community.</p> <p>FY 2013 Plans:</p> <p>Continue to focus the JASON studies and Technical Intelligence in areas critical to national security. JASON studies will be focused on the area most important in the security environment at the time. For the Technical Intelligence portion some details are classified. The program will work to develop a detailed understanding of both the opportunity and threat aspects from military-relevant technology emergence and advancement across a range of scientific, technology and capability areas. These areas include but are not limited to quantum information sciences, data analytics and data-intensive systems, novel manufacturing, directed energy and other emerging technologies to fight and win in denied and contested environments. Some details are classified, but the focus is to work collaboratively across the Department of Defense (DoD) and the Intelligence Community (IC) to establish a broad horizon scanning and technology forecasting capability. This capability is coupled with implementation of technical net assessments and other approaches to develop detailed analyses of the opportunities and threats posed by the technology and relevant counter-capabilities where impact appears most significant. These efforts will develop insight into our relative position in science and technology around the world over time, as well as determine potential impacts on DoD capability development and future threat environments.</p> <p>FY 2014 Plans:</p> <p>Continue to focus the JASON studies and Technical Intelligence in areas critical to national security. JASON studies will be focused on the area most important in the security environment at the time. For the Technical Intelligence portion some details are classified. The program will work to develop a detailed understanding of both the opportunity and threat aspects from military-relevant technology emergence and advancement across a range of scientific, technology and capability areas. These areas include but are not limited to quantum information sciences, data analytics and data-intensive systems, novel manufacturing,</p>					

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 2: <i>Applied Research</i>		R-1 ITEM NOMENCLATURE PE 0602234D8Z: <i>Lincoln Laboratory</i>	PROJECT P535: <i>Technical Intelligence</i>
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
directed energy, and other emerging technologies to fight and win in denied and contested environments. Some details are classified, but the focus is to work collaboratively across the DoD and the IC to establish a broad horizon scanning and technology forecasting capability. This capability is coupled with implementation of technical net assessments and other approaches to develop detailed analyses of the opportunities and threats posed by the technology and relevant counter-capabilities where impact appears most significant. These efforts will develop insight into our relative position in science and technology around the world over time, as well as determine potential impacts on DoD capability development and future threat environments.			
Accomplishments/Planned Programs Subtotals		3.687	3.683
C. Other Program Funding Summary (\$ in Millions) N/A			
Remarks			
D. Acquisition Strategy N/A			
E. Performance Metrics N/A			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense									DATE: April 2013			
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 2: Applied Research					R-1 ITEM NOMENCLATURE PE 0602234D8Z: Lincoln Laboratory				PROJECT P536: Testbed for Comparative Analysis			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
P536: Testbed for Comparative Analysis	-	2.880	0.368	0.365	-	0.365	0.000	0.000	0.000	0.000	Continuing	Continuing
# FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012												
## The FY 2014 OCO Request will be submitted at a later date												
A. Mission Description and Budget Item Justification												
The Testbed for Comparative Analysis will include a data, test and evaluation environment to enable analysis of both quantitative and qualitative techniques for technology forecasting and horizon scanning. This includes the ability to derive an understanding of accuracy, relevance, and robustness of analysis techniques and algorithms (for example, cluster analysis) to identify emerging technology trends and potentially disruptive weak signals. The testbed will be developed in collaboration with other interested government agencies with modularity and expansion capabilities in mind.												
B. Accomplishments/Planned Programs (\$ in Millions)									FY 2012	FY 2013	FY 2014	
Title: Testbed for Comparative Analysis									2.880	0.368	0.365	
Description: The Testbed for Comparative Analysis will enable the evaluation of quantitative horizon scanning and technology forecasting techniques for discovering disruptive technologies that may impact the DoD. This effort will provide the DoD with objective ways to evaluate the accuracy of existing and future horizon scanning and technology forecasting efforts.												
FY 2012 Accomplishments: Designed an initial data, test and evaluation environment to enable analysis of both quantitative and qualitative techniques for technology forecasting and horizon scanning. This includes the ability to derive an understanding of accuracy, relevance, and robustness of analysis techniques and algorithms (for example, cluster analysis) to identify emerging technology trends and potentially disruptive weak signals.												
FY 2013 Plans: Implement and test the data, test and evaluation environment, and demonstrate analysis of both quantitative and qualitative techniques for technology forecasting and horizon scanning. This includes the ability to derive an understanding of accuracy, relevance, and robustness of analysis techniques and algorithms (for example, cluster analysis) to identify emerging technology trends and potentially disruptive weak signals. The testbed will be developed in collaboration with other interested government agencies with modularity and expansion capabilities in mind.												
FY 2014 Plans: Implement and test the data, test and evaluation environment, and demonstrate analysis of both quantitative and qualitative techniques for technology forecasting and horizon scanning. This includes the ability to derive an understanding of accuracy,												

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 2: Applied Research		R-1 ITEM NOMENCLATURE PE 0602234D8Z: Lincoln Laboratory		PROJECT P536: Testbed for Comparative Analysis
B. Accomplishments/Planned Programs (\$ in Millions)				
relevance, and robustness of analysis techniques and algorithms (for example, cluster analysis) to identify emerging technology trends and potentially disruptive weak signals.		FY 2012	FY 2013	FY 2014
Accomplishments/Planned Programs Subtotals		2.880	0.368	0.365
C. Other Program Funding Summary (\$ in Millions)				
N/A				
Remarks				
D. Acquisition Strategy				
N/A				
E. Performance Metrics				
N/A				

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE							
0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 2: <i>Applied Research</i>					PE 0602250D8Z: <i>Systems 2020 Applied Research</i>							
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
Total Program Element	-	0.000	7.898	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
P209: <i>Systems 2020 Applied Research</i>	-	0.000	7.898	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

Systems 2020 will set the technical foundation for the Department's system needs for the next decade. This initiative funds Office of the Secretary of Defense and Service research and development efforts in key technologies and tools for design and development of complex systems. The program seeks to develop enabling technologies that will support the rise of a new class of adaptable systems, and will spawn a new generation of engineering tools and markets that could revolutionize systems engineering practice.

Systems 2020 research initiatives will investigate advanced engineering technologies and provide experimental platforms to assess the feasibility of proposed solutions. These areas include: (1) Multi-dimensional, multi-feature design and engineering tradespace analysis approaches computed rapidly, accurately and within an integrated environment; (2) Techniques to generate multiple alternative designs with data structures enabling modeling of lifecycle implications such as producibility and sustainability; and (3) Novel decision-making techniques that interface engineering and operational data and inputs while guarding against premature or stovepiped design choices. Together these efforts address opportunities to improve system adaptability and will develop techniques to balance design choices against costs for future adaptation precipitated by unexpected threats, changing missions, and disruptive technologies, while operating with far greater speed and agility.

B. Program Change Summary (\$ in Millions)	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total
Previous President's Budget	0.000	7.898	1.903	-	1.903
Current President's Budget	0.000	7.898	0.000	-	0.000
Total Adjustments	0.000	0.000	-1.903	-	-1.903
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Baseline Adjustment	-	-	-1.903	-	-1.903

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 2: <i>Applied Research</i>		R-1 ITEM NOMENCLATURE PE 0602250D8Z: <i>Systems 2020 Applied Research</i>
<p><u>Change Summary Explanation</u></p> <p>Baseline adjustments are reflective of DoD priorities and requirements.</p>		

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 2: Applied Research					R-1 ITEM NOMENCLATURE PE 0602250D8Z: Systems 2020 Applied Research				PROJECT P209: Systems 2020 Applied Research			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
P209: Systems 2020 Applied Research	-	0.000	7.898	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
# FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012												
## The FY 2014 OCO Request will be submitted at a later date												
A. Mission Description and Budget Item Justification												
Systems 2020 research initiatives will investigate advanced engineering technologies and provide experimental platforms to assess the feasibility of proposed solutions. These areas include: (1) Multi-dimensional, multi-feature design and engineering tradespace analysis approaches computed rapidly, accurately and within an integrated environment; (2) Techniques to generate multiple alternative designs with data structures enabling modeling of lifecycle implications such as producibility and sustainability; and (3) Novel decision-making techniques that interface engineering and operational data and inputs while guarding against premature or stovepiped design choices. Together these efforts address opportunities to improve system adaptability and will develop techniques to balance design choices against costs for future adaptation precipitated by unexpected threats, changing missions, and disruptive technologies, while operating with far greater speed and agility.												
B. Accomplishments/Planned Programs (\$ in Millions)										FY 2012	FY 2013	FY 2014
Title: Systems 2020 Applied Research										0.000	7.898	0.000
Description: Systems 2020 research initiatives will investigate advanced engineering technologies and provide experimental platforms to assess the feasibility of proposed solutions. These areas include: (1) Multi-dimensional, multi-feature design and engineering tradespace analysis approaches computed rapidly, accurately and within an integrated environment; (2) Techniques to generate multiple alternative designs with data structures enabling modeling of lifecycle implications such as producibility and sustainability; and (3) Novel decision-making techniques that interface engineering and operational data and inputs while guarding against premature or stovepiped design choices.												
FY 2013 Plans:												
-Conduct Systems 2020 research projects, coordinate with the Services' science and technology leadership and the Service's research, development and engineering centers. Integrate Services' pilot project results and data. Coordinate research agenda with outside agencies such as the National Institute of Science and Technology, and the National Science Foundation.												
-Perform applied research to enable implementation of candidate Systems 2020 tools, technologies and methods in an integrated laboratory demonstration and evaluation of initial capabilities to accelerate delivery of complex adaptive systems.												
-Perform applied research to enable implementation of candidate Systems 2020 systems analysis and design engineering tools in an integrated laboratory demonstration that performs within a wide range of architectures and design drivers in the context of dynamic mission and threat conditions.												

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 2: <i>Applied Research</i>		R-1 ITEM NOMENCLATURE PE 0602250D8Z: <i>Systems 2020 Applied Research</i>	PROJECT P209: <i>Systems 2020 Applied Research</i>
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
-Perform applied research to enable implementation of Systems 2020 tools that mature a concept-engineering and integrated modeling environment that enables rapid assessment of new material, increases productivity of engineering, design and production processes, and readily incorporates a wide range of mission data for generation of design alternatives. -Perform applied research to enable implementation of candidate Systems 2020 tools, technologies and methods in an integrated laboratory demonstration and evaluation of initial capabilities to accelerate delivery of complex adaptive systems. -Perform applied research to enable implementation of candidate Systems 2020 systems analysis and design engineering tools in an integrated laboratory demonstration that performs within a wide range of architectures and design drivers in the context of dynamic mission and threat conditions. -Perform applied research to enable implementation of Systems 2020 tools that mature a concept-engineering and integrated modeling environment that enables rapid assessment of new material, increases productivity of engineering, design and production processes, and readily incorporates a wide range of mission data for generation of design alternatives.			
Accomplishments/Planned Programs Subtotals		0.000	7.898
C. Other Program Funding Summary (\$ in Millions)			
N/A			
Remarks			
D. Acquisition Strategy			
N/A			
E. Performance Metrics			
N/A			

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense	DATE: April 2013
-------------------------------------------------------------------------------------------------	-------------------------

APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE							
0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 2: <i>Applied Research</i>					PE 0602251D8Z: <i>Applied Research for the Advancement of S&T Priorities</i>							
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
Total Program Element	-	0.000	0.000	45.000	-	45.000	38.800	45.654	49.698	51.538	Continuing	Continuing
P227: <i>Applied Research for the Advancement of S&T Priorities</i>	-	0.000	0.000	45.000	-	45.000	38.800	45.654	49.698	51.538	Continuing	Continuing

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

Note

This program element (PE) is a FY 2014 new start.

A. Mission Description and Budget Item Justification

The Applied Research for the Advancement of Science and Technology (S&T) Priorities PE will enable the early launch of S&T applied research projects to shape Components' investments. The PE is oriented toward the design, development, and improvement of prototypes and new processes to meet general mission area requirements, and to translate promising research into solutions for military needs. Efforts are situated within the seven DoD S&T priorities and focus areas and will include studies, feasibility evaluations, and non-system specific technology efforts. Investigations conducted in this PE will facilitate concept exploration efforts and studies of alternative concepts. Efforts are formulated and managed by teams of subject matter experts drawn from the Office of the Secretary of Defense, the Military Services, and Defense Agencies. The PE will also provide necessary administrative support to the Priority Steering Councils and S&T Focus Areas.

<u>B. Program Change Summary (\$ in Millions)</u>	<u>FY 2012</u>	<u>FY 2013</u>	<u>FY 2014 Base</u>	<u>FY 2014 OCO</u>	<u>FY 2014 Total</u>
Previous President's Budget	0.000	0.000	0.000	-	0.000
Current President's Budget	0.000	0.000	45.000	-	45.000
Total Adjustments	0.000	0.000	45.000	-	45.000
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Baseline Adjustments	-	-	45.000	-	45.000

Change Summary Explanation

FY 2014 baseline adjustments are in compliance with DoD S&T priorities and Advanced Manufacturing.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE				PROJECT			
0400: Research, Development, Test & Evaluation, Defense-Wide BA 2: Applied Research					PE 0602251D8Z: Applied Research for the Advancement of S&T Priorities				P227: Applied Research for the Advancement of S&T Priorities			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
P227: Applied Research for the Advancement of S&T Priorities	-	0.000	0.000	45.000	-	45.000	38.800	45.654	49.698	51.538	Continuing	Continuing
[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012 ^{##} The FY 2014 OCO Request will be submitted at a later date												
Note This program element (PE) is a FY 2014 new start.												
A. Mission Description and Budget Item Justification The Applied Research for the Advancement of Science and Technology (S&T) Priorities program element (PE) will enable the early launch of S&T applied research projects to shape the Components' investments. The PE is oriented toward the design, development, and improvement of prototypes and new processes to meet general mission area requirements, and to translate promising research into solutions for military needs. Efforts are situated within the seven DoD S&T priorities and focus areas and will include studies, feasibility evaluations, and non-system specific technology efforts. Investigations conducted in this PE will facilitate concept exploration efforts and studies of alternative concepts. Efforts are formulated and managed by teams of subject matter experts drawn from the Office of the Secretary of Defense, the Military Services, and Defense Agencies. The PE will also provide necessary administrative support to the Priority Steering Councils and S&T Focus Areas.												
B. Accomplishments/Planned Programs (\$ in Millions)									FY 2012	FY 2013	FY 2014	
Title: Applied Research for the Advancement of S&T Priorities									0.000	0.000	32.667	
Description: The FY 2014 S&T priorities include: Electronic Warfare (EW), Human Systems, Counter Weapons of Mass Destruction (CWMD), Engineered Resilient Systems (ERS), Data to Decisions (D2D), Autonomy, and Cybersecurity.												
FY 2014 Plans: Conduct concept exploration efforts that focus on the seven S&T priority areas. Challenge areas within the priorities include:												
Electronic Warfare:												
- Spatial and spectral parameters												
- Integrated, network-enabled EW systems												
- Electronic protection measures												
Human Systems:												
- System interfaces												

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 2: <i>Applied Research</i>	R-1 ITEM NOMENCLATURE PE 0602251D8Z: <i>Applied Research for the Advancement of S&T Priorities</i>	PROJECT P227: <i>Applied Research for the Advancement of S&T Priorities</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
<ul style="list-style-type: none"> - Social and cultural understanding - Personnel and training - Protection and sustainment <p>Counter Weapons of Mass Destruction:</p> <ul style="list-style-type: none"> - Systems integration - Activity recognition - Advanced signature detection and tracking - Advanced radiation detection <p>Engineered Resilient Systems:</p> <ul style="list-style-type: none"> - Systems analysis methods and tools - Early concept engineering techniques - Advanced architecture and design analysis techniques - New approaches to analysis and testing - Methods and tools for more robust designs - Advanced algorithms <p>Data to Decisions:</p> <ul style="list-style-type: none"> - Enhanced images - Temporal and text analytics - Better software architectures - Improved algorithms for data fusion - Improved understanding of user interactions <p>Autonomy:</p> <ul style="list-style-type: none"> - Machine reasoning and intelligence - Human/autonomous systems interaction and collaboration - Scalable Teaing of Autonomous systems - Testing and Evaluation and Verification and Validation <p>Cyber:</p> <ul style="list-style-type: none"> - Mission assurance and effectiveness - Operating securely in an insecure world 				

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense			DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 2: <i>Applied Research</i>		R-1 ITEM NOMENCLATURE PE 0602251D8Z: <i>Applied Research for the Advancement of S&T Priorities</i>		PROJECT P227: <i>Applied Research for the Advancement of S&T Priorities</i>	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2012	FY 2013	FY 2014
- Reinventing cyber technology foundations					
Title: S&T Focus Areas Description: The S&T Focus Areas task facilitates cooperation and collaboration among Components and optimizes development of selected S&T efforts across the DoD enterprise. Select technology areas are examined and projects are initiated to address gaps or opportunities. FY 2014 focus areas are: Advanced Materials; Energy and Power; Weapons; Command, Control, and Communications and Networks; Intelligence, Surveillance, and Reconnaissance; Counter-Improvised Explosive Devices; and Biomedical. FY 2014 Plans: Candidate projects for S&T Focus Areas include: exceptional materials properties and processing routes through electromagnetic field - materials coupling; active informatics photonic materials; development of models and architecture for digital curation; nano-scale battery architectures; and 3-dimensional (3D) stereochemistry through multitasking polymer catalysts; garbage and waste mining – creation of material stock for mobile manufacturing.			0.000	0.000	12.333
Accomplishments/Planned Programs Subtotals			0.000	0.000	45.000
C. Other Program Funding Summary (\$ in Millions) N/A					
Remarks					
D. Acquisition Strategy N/A					
E. Performance Metrics Project performance metrics specific to each effort are identified in the project plans established by the Priority Steering Councils and Focus Area leads. Individual project success will be monitored through these metrics.					

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY

0400: *Research, Development, Test & Evaluation, Defense-Wide*
BA 2: *Applied Research*

R-1 ITEM NOMENCLATURE

PE 0602663D8Z: *Data to Decisions Applied Research*

COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
Total Program Element	-	3.714	13.753	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
P266: <i>Data to Decisions Applied Research</i>	-	3.714	13.753	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

Note

Change from FY 2013 to FY 2014 reflects a realignment of the program from the Data to Decisions Applied Research program element (PE) 0602663D8Z to the Applied Research for the Advancement of Science and Technology (S&T) Priorities PE 0602251D8Z.

The goals of this program will be shifted to the Department of Defense (DoD) Components under the direction of the Research and Engineering Executive Committee and will conform with the DoD Data to Decision Priority Steering Council roadmaps. Historically, the Joint Data Management program was restructured to evolve into the revised Data to Decisions Applied Research program, a FY 2012 new start, to support the 2010 Quadrennial Defense Review mission: Succeed in counterinsurgency, stability, and counterterrorism operations. Additionally this program addresses a signed Secretary of Defense S&T priority, Data to Decisions, which reduces the cycle time and manpower requirements for analysis and use of large data sets.

A. Mission Description and Budget Item Justification

The DoD response to a changing threat environment includes an expansion of the types of sensors deployed, new types of information collected, and different features used to classify these new threats. As the DoD increases the capability and capacity to generate increasing amounts of data from numerous sensors in the battlespace, the issue of handling very large data sets has become more challenging. From a technical perspective, data creation speeds have outpaced the speed and ability to transport, store and process the data created. S&T investigation into new and novel ways to manage and exploit this data is required to more efficiently use sensor assets and effectively use information in a timely fashion.

The Office of the Secretary of Defense (OSD) Data to Decisions program (PEs 0602663D8Z and 0603663D8Z) uniquely addresses three specific gap areas not addressed by Component S&T: minimal dedicated Data to Decisions research to support Joint and emerging mission areas; DoD needs a mechanism to increase responsiveness of Component Data to Decisions research and lower the time-to-solution across a broad DoD-wide user base; and limited investment in multi-disciplinary research investigations of Data to Decisions issues and solutions. The OSD Data to Decisions program pulls together research efforts to address shortfalls within the context of Joint and emerging missions to ensure that the distinctive needs of these joint analysts and decision makers are addressed by DoD science and technology. As an example, irregular warfare, non-state terrorism movements, and uncertain environmental patterns that trigger major weather disasters are producing a reality for military and government leaders where traditional physics-based sensors alone are insufficient to plan current and future actions in a region of interest or need. Component Data to Decisions efforts focus on developing technology to overcome a particular challenge within a mission or advance a particular priority area of that Component, as a result the Research and Engineering Database has over 388 references to Decision Support programs all of which are designed to address

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense	DATE: April 2013
-------------------------------------------------------------------------------------------------	-------------------------

APPROPRIATION/BUDGET ACTIVITY

0400: *Research, Development, Test & Evaluation, Defense-Wide*
 BA 2: *Applied Research*

R-1 ITEM NOMENCLATURE

PE 0602663D8Z: *Data to Decisions Applied Research*

a specific need over the course of several years. However, there exists no other program in the DoD that focuses on technology development efforts to speed the delivery of the Component solutions and lessons learned to a DoD-wide user base. The OSD Data to Decisions program provides the common platform (access to datasets, infrastructure, and metrics) to integrate and evaluate the technology development and research methods to support various missions driven by the challenge problems. This ability to rapidly evaluate technology development and research methods will allow technology transfer for mission analysis not previously foreseen and lower the time-to solution across DoD by rigorously analyzing technical performance for more immediate use. Traditional approaches within research seek to advance machine systems for a specific mission effect resulting in large complex data sets. While necessary for sensor system improvements, potential Data to Decisions solutions require a coupling of automated data analysis with human analysts, operators, and decision makers in order to reduce time and limit the number of people required. Many research studies, workshops, and analysis have stated that solutions to data issues are multi-disciplinary. The OSD Data to Decisions program is in the unique position to reach across Components and research disciplines to blend promising research in new ways in response to cross-service Challenge Problem statements. For Challenge Problems, contextual understanding will result from research combining human sciences with computer processing techniques to take advantage of a person's cognitive ability to fuse and assimilate multiple sources and types of information for new insights.

B. Program Change Summary (\$ in Millions)	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total
Previous President's Budget	4.128	13.753	13.796	-	13.796
Current President's Budget	3.714	13.753	0.000	-	0.000
Total Adjustments	-0.414	0.000	-13.796	-	-13.796
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-0.413	-			
• SBIR/STTR Transfer	-	-			
• Baseline Adjustments	-	-	-13.796	-	-13.796
• Other Adjustments	-0.001	-	-	-	-

Change Summary Explanation

FY 2014 baseline adjustments are reflective of DoD priorities and requirements.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 2: Applied Research					R-1 ITEM NOMENCLATURE PE 0602663D8Z: Data to Decisions Applied Research				PROJECT P266: Data to Decisions Applied Research			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
P266: Data to Decisions Applied Research	-	3.714	13.753	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012												
^{##} The FY 2014 OCO Request will be submitted at a later date												
Note												
Change from FY 2013 to FY 2014 reflects a realignment of the program from the Data to Decisions Applied Research program element (PE) 0602663D8Z to the Applied Research for the Advancement of Science and Technology (S&T) Priorities PE 0602251D8Z.												
A. Mission Description and Budget Item Justification												
The OSD Data to Decisions (D2D) program (PEs 0602663D8Z and 0603663D8Z) uniquely addresses three specific gap areas not addressed by Component Science and Technology (S&T): 1) minimal dedicated D2D research to support Joint and emerging mission areas; 2) DoD needs a mechanism to increase responsiveness of Component D2D research and lower the time-to-solution across a broad DoD-wide user base; and 3) limited investment in multi-disciplinary research investigations of D2D issues and solutions.												
The D2D program establishes the demonstration and experimentation environment to conduct independent evaluations of research efforts that have the most potential of minimizing the impact of the increasing amount of information available and required to support military operational decision-making. The intent is to leverage existing research investments within defense S&T and provide proper evaluations and assessments to facilitate technology transition. The Applied Research program concentrates on the development portion of this collaborative effort, focusing on the development of improved algorithms, relative to FY 2012 state of the art, to be demonstrated and validated in the 6.3 D2D program test bed. The D2D Advanced Development (6.3) program uses a spiral development model with four-steps. Each year Operational teams will choose a series of cross-service challenge problems dominated by a specific sensing modality. Representative data for each of those problems will then be collected for testing against that problem. A Development team will design algorithms and data management architectures using high-level languages and self-test on controlled data sets to address those challenge problems. Independent assessment will occur with sequestered data sets, but each development tool will also be tested against new sensors not included in the self-testing to determine fragility and applicability. A Transition team will host the developed algorithms as services in a spiraling prototype system that will support rapid prototyping and transition.												
B. Accomplishments/Planned Programs (\$ in Millions)									FY 2012	FY 2013	FY 2014	
Title: Moving Intelligence (MOVINT) Analytics									3.565	6.913	0.000	
Description: MOVINT analytics is concerned with developing algorithms to exploit full motion video, Ground Moving Target Indication (GMTI), Communications Intelligence (COMINT), and other forms of MOVINT. These algorithms will be implemented in software modules that can be cast as services on a Service-Oriented Architecture. Representative modules include trackers, activity based analytics, behavior detection, start-stop detectors, and others.												

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 2: <i>Applied Research</i>	R-1 ITEM NOMENCLATURE PE 0602663D8Z: <i>Data to Decisions Applied Research</i>	PROJECT P266: <i>Data to Decisions Applied Research</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
<i>FY 2012 Accomplishments:</i> - Researched methods to discover and identify threat signatures in complex, incomplete, imprecise, and potentially contradictory large MOVINT data sets. - Developed three unique tracking systems, with three distinct approaches that work in cluttered urban environments where conventional tracking approaches fail. Evaluated the performance of the approaches with three different WAMI sensors. - Researched methods to discover and provide contextual information to the analyst about MOVINT data such as scene location, object movement, and object proximity. Developed activity models from WAMI tracks focusing on low level behaviors including moving straight, turning, and making u-turns. For tracks enriched with GPS information showed demonstrated the feasibility of identifying individual drivers and deviations from expected routes in a highly controlled environment. <i>FY 2013 Plans:</i> - Conduct bottoms up analysis of a single workflow to identify functions controlling performance. - Initiate efforts to provide management of uncertainty by simultaneously controlling sensing and processing. - Develop and populate and "Application Store" consisting of common functions that occur in the wide area motion imagery problem space. - Review projects and determine if they should continue as DoD Component programs, can be completed at the end of FY 2013, or cancelled as soon as practical.			
<i>Title:</i> Text Analytics <i>Description:</i> Text Analytics, a term used to identify a set of linguistic, statistical, and machine learning techniques that model and structure the information content of textual sources for exploratory data analysis, research, and investigation, play a vital role in achieving open-source intelligence (OSINT) and human intelligence (HUMINT) capabilities that inform timely and accurate situational awareness in time-constrained, uncertain, and complex environments. With the recent advances in online social media and the proliferation of mobile communication devices, text information is available in unprecedented amounts and formats and thus represents an opportunity to engage in research for information retrieval, lexical analysis to study word frequency, and data mining techniques including link and association analysis, visualization, and predictive analytics. <i>FY 2012 Accomplishments:</i> - Due to funding limitations, a majority of the technical work originally planned for FY 2012 was deferred to FY 2013. - Identified gaps within the text analytics domain focusing on contextual understanding, event prediction, and machine translation and processing. <i>FY 2013 Plans:</i> - Research information representation methods to enable faster and more efficient detection of social networks in complex, incomplete, imprecise, and potentially contradictory large data sets.		0.149	6.840
			0.000

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense							DATE: April 2013				
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 2: <i>Applied Research</i>				R-1 ITEM NOMENCLATURE PE 0602663D8Z: <i>Data to Decisions Applied Research</i>			PROJECT P266: <i>Data to Decisions Applied Research</i>				
B. Accomplishments/Planned Programs (\$ in Millions)							FY 2012	FY 2013	FY 2014		
- Research methods to enable analysts to operate more efficiently, leverage non-traditional data sources, and more effectively identify objects of interest - Review projects and determine if they should continue as DoD Component programs, can be completed at the end of FY 2013, or cancelled as soon as practical.											
Accomplishments/Planned Programs Subtotals							3.714	13.753	0.000		
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
• BA 3, PE# 0603663D8Z, P366: <i>Data to Decisions Advanced Development</i>	4.117	13.753	0.000		0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
Remarks											
Change from FY 2013 to FY 2014 reflects a realignment of the program from the Data to Decisions Advanced Development PE 0603663D8Z to the Applied Research for the Advancement of Science and Technology (S&T) Priorities PE 0602251D8Z. The goals of the program will be shifted to the DoD Components under the direction of the Research and Engineering Executive Committee and will conform with the DoD Data to Decision Priority Steering Council roadmaps.											
D. Acquisition Strategy											
N/A											
E. Performance Metrics											
N/A											

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense	DATE: April 2013
-------------------------------------------------------------------------------------------------	-------------------------

APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE							
0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 2: <i>Applied Research</i>					PE 0602668D8Z: <i>Cyber Applied Research</i>							
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
Total Program Element	-	5.280	18.985	18.908	-	18.908	23.675	22.790	22.675	22.797	Continuing	Continuing
P003: <i>Cyber Applied Research</i>	-	5.280	18.985	18.908	-	18.908	23.675	22.790	22.675	22.797	Continuing	Continuing

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

Our military forces require resilient, reliable networks and computer systems to conduct effective operations. However, the number and sophistication of threats in cyberspace are rapidly growing, making it urgent and critical to improve the cyber security of Department of Defense (DoD) networks to counter those threats and assure our missions. This program focuses on innovative and sustained research in both cyber security and computer network operations to develop new concepts to harden key network and computer components, design new resilient cyber infrastructures, increase the military's ability to fight and survive during cyber attacks, disrupt nation-state level attack planning and execution, measure the state of cyber security, and explore and exploit new ideas in cyber warfare for agile cyber operations and mission assurance.

The Cyber Applied Research program element is budgeted in the applied research budget activity because it emphasizes an approach to develop new security paradigms and architectures to enable agile cyber operations in a resilient and trustworthy cyberspace. These approaches will include moving from cyber defense to cyber resilience by changing the defensive terrain of our existing digital infrastructure, identifying ways to raise the risk and lower the value of attack from an advanced, persistent cyber threat, and focusing on mission assurance. The Cyber Applied Research program builds on the existing basic and applied research results and transition new successful applied research results to the Cyber Advanced Technology Development program element (0603668D8Z).

This program focuses on integrating computer network defense and computer network operations, addressing the advanced persistent threat, and filling DoD technology gaps as identified in the 2012 Cyber Priority Steering Council Science & Technology Roadmap and assessments conducted by the Office of the Assistant Secretary of Defense for Research & Engineering (OASD(R&E)).

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense	DATE: April 2013
-------------------------------------------------------------------------------------------------	-------------------------

APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 2: <i>Applied Research</i>	R-1 ITEM NOMENCLATURE PE 0602668D8Z: <i>Cyber Applied Research</i>
--------------------------------------------------------------------------------------------------------------------------------------------------	------------------------------------------------------------------------------

B. Program Change Summary (\$ in Millions)	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total
Previous President's Budget	4.581	18.985	19.041	-	19.041
Current President's Budget	5.280	18.985	18.908	-	18.908
Total Adjustments	0.699	0.000	-0.133	-	-0.133
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	0.700	-			
• SBIR/STTR Transfer	-	-			
• Baseline Adjustments	-	-	-0.133	-	-0.133
• Other Adjustments	-0.001	-	-	-	-

Change Summary Explanation

Baseline adjustments are reflective of DoD priorities and requirements.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 2: Applied Research					R-1 ITEM NOMENCLATURE PE 0602668D8Z: Cyber Applied Research				PROJECT P003: Cyber Applied Research			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
P003: Cyber Applied Research	-	5.280	18.985	18.908	-	18.908	23.675	22.790	22.675	22.797	Continuing	Continuing

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

The program is developing technology options through the DoD S&T organizations within and across the following technical areas:

INFORMATION ASSURANCE AND COMPUTER NETWORK DEFENSE (IA/CND):

Develop technologies to harden DoD network components; evolve from network defense to mission assurance; and enable systems to operate through cyber attacks in degraded and contested environments.

COMPUTER NETWORK OPERATIONS (CNO):

Disrupt adversary attack planning and execution; explore game-changing ideas over the full spectrum of CNO and new concepts in cyber warfare; increase collaboration between disparate research communities within CNO; and address identified gaps in DoD CNO S&T to prepare for cyber conflict against advanced persistent threats.

CYBER METRICS AND EXPERIMENTATION:

Explore new analytical methodologies, models, and experimental data sets to establish metrics to measure a system's state of security, apply the scientific method to establish the foundations of a scientific framework in which cyber security research can be conducted to test hypothesis with measurable and repeatable results, and quantitative experimentation and assessment of new cyber technologies.

Beginning in FY 2014, the program will expand research in cyber command and control to provide warfighters and commanders new situational awareness, course of action analysis, cyber operational agility and cyber mission control. This research will include protection of tactical networks, weapons systems and platforms. The six new technical thrust areas include:

TRUST:

Develop approaches and methods to establish known degree of assurance that devices, networks, and cyber-dependent functions perform as expected, despite attack or error. This technical area encompasses all aspects of the assessment, establishment, propagation, maintenance, and composition of trust relationships between devices, networks, and people.

RESILIENT INFRASTRUCTURE:

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 2: <i>Applied Research</i>	R-1 ITEM NOMENCLATURE PE 0602668D8Z: <i>Cyber Applied Research</i>	PROJECT P003: <i>Cyber Applied Research</i>
<p>Entails the ability to withstand cyber attacks, and sustain or recover critical functions. A resilient infrastructure has the ability to continue to perform its functions and provide its services to required levels during an attack. The objective in this area is to develop integrated architectures that are optimized for their ability to absorb (cyber) shock, and recover in a timely fashion to a known secure state, even if this is at the expense of degraded performance. Resilient Algorithms and Protocols covers ways to develop novel protocols and algorithms to increase the repertoire of resiliency mechanisms available to the infrastructure and architecture. Research is needed to develop resiliency at lower levels with specific algorithms and protocols to support higher-level resiliency architectures.</p> <p>AGILE OPERATIONS: Explore new methods and technologies to dynamically reshape cyber systems as conditions/goals change, to escape harm, or to manipulate the adversary. These capabilities present technology challenges in the areas of Autonomic Cyber Agility and Cyber Maneuver. Cyber Maneuver is a new way to manage systems dynamically in a cyber situation. It is a set of emerging methods for maintaining defensive or offensive advantage in cyber operations. It entails developing mechanisms that enable goal-directed reshaping of cyber systems. Cyber maneuver encompasses reallocation for repurposing a device or platform, reconfiguration for changing the way a system performs a task, and relocation for altering the operating location in a logical or physical topology. Autonomic Cyber Agility covers several forms of agility. As cyber infrastructures increase in scale and complexity, there is an urgent need for autonomous and agile mechanisms to reconfigure, heal, optimize, and protect defensive and offensive cyber mechanisms.</p> <p>ASSURING EFFECTIVE MISSIONS: Develop the ability to assess and control the cyber situation in the mission context. While the focus in cyber research is often placed on individual technologies, how these technologies work toward an effective mission is critical for the DoD. The objective of Assuring Effective Missions presents technology challenges in the areas of Cyber Mission Control and Effects at Scale. Cyber Mission Control covers the ability to orchestrate cyber systems to achieve an overarching mission goal. There is a critical need for tools that can map information technology assets to missions and use modeling and simulation, or other techniques, to perform dynamic analysis of asset criticality and course-of-action alternatives. Inherent in Cyber Mission Control is the ability to automatically derive and fuse information about the characteristics of information technology systems in a manner that allows us to describe, analyze, observe, and control the operation of information technology components. A key goal of this research area is to have tools that enable commanders to assess and direct different information technology maneuvers in conjunction with mission actions. Effects at Scale encompass full spectrum challenges that intersect with cyber becoming a new full-fledged domain of warfare.</p> <p>CYBER MODELING, SIMULATION, AND EXPERIMENTATION (MSE): Develop modeling and simulation capabilities that are able to sufficiently simulate the cyber environment in which the DoD operates and enable a more robust assessment and validation of cyber technology development. There are two technical challenges associated with cyber modeling, simulation, and experimentation: Cyber Modeling and Simulation and Cyber Measurement. Cyber Modeling and Simulation seeks to develop tools and techniques that enable analytical modeling and multi-scale simulation of complex cyber systems. Cyber Measurement develops cyber experimentation and test range technology to conduct controlled, repeatable experiments, providing the ability to track the progress of cyber research investments in a quantitative fashion. This area will explore new analytical methodologies, models, and experimental data sets to establish metrics to measure a system's state of security, apply the scientific method to establish the foundations of a framework in which cyber security research can be conducted, to test hypothesis with measurable and repeatable results, and the quantitative experimentation and assessment for new cyber technologies. These new methodologies will enable the exploration modeling and simulation tools and techniques that can drive innovation in research</p>		

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 2: Applied Research	R-1 ITEM NOMENCLATURE PE 0602668D8Z: Cyber Applied Research	PROJECT P003: Cyber Applied Research		
and aid in integrated experimentation and transition to operations to simulate the cyber environment with sufficient fidelity, and to integrate cyber modeling and simulation with the traditional modeling and simulation related to the kinetic domain.				
EMBEDDED, MOBILE, AND TACTICAL ENVIRONMENTS (EMT): Increase the overall emphasis on the Department’s cyber systems that rely on technology beyond wired networking and standard computing platforms. The objective in the area of embedded and tactical systems is to develop tools and techniques that assure the secure operation of microprocessors within our weapons platforms and systems; enable security in real-time systems; and establish security in disadvantaged, intermittent, and low-bandwidth environments. This research also seeks to expand and cultivate military-grade techniques for securing and operating with enterprise-style commodity mobile devices, such as smart phones, tablets, and their associated infrastructures. With the constant evolution of these devices and their respective infrastructures it is of the utmost importance to provide a secure environment where these devices can be effectively utilized, monitored and tracked.				
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
Title: Cyber Applied Research		5.280	18.985	18.908
Description: The Cyber Applied Research program builds on the existing basic and applied research results and transition new successful applied research results to the Cyber Advanced Technology Development program element. The link between the Cyber Applied Research and Cyber Advanced Technology Development program elements is intended to create a mechanism to take existing basic research results and mature them to the point of incorporation into technology demonstrations. This program focuses on integrating computer network defense and computer network operations, addressing joint problems in cyber operations, and filling capability and technology gaps as identified in the 2012 Cyber Priority Steering Council Science & Technology Roadmap and assessments conducted by the Office of the Assistant Secretary of Defense for Research & Engineering (OASD(R&E)). Progress and results are reviewed by the DoD Cyber Science & Technology Priority Steering Council.				
FY 2012 Accomplishments: INFORMATION ASSURANCE AND COMPUTER NETWORK DEFENSE (IA/CND): - Established technique to detect and prevent attempts to re-flash BIOS or other firmware updates - Established techniques to detect malicious Ethernet firmware/hardware (GOTS printed circuit board) - Created Computer Network Defense (CND) framework to accelerate CND technology development through reuse of common services - Developed initial design for user space anomaly detection and kernel protection for Linux systems - Collaboration among NSA, CERDEC, and NRL improved through co-located work enabling development and Host Integrity analysis advancements COMPUTER NETWORK OPERATIONS (CNO): - Documented high assurance separation architecture using multi-core technology for application in tactical AIS environments				

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 2: <i>Applied Research</i>	R-1 ITEM NOMENCLATURE PE 0602668D8Z: <i>Cyber Applied Research</i>	PROJECT P003: <i>Cyber Applied Research</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
<ul style="list-style-type: none"> - Developed initial defense capabilities for the CNO framework - Complete time of flight measurement algorithm and initiated hybrid geo-location technique investigations <p>CYBER METRICS AND EXPERIMENTATION:</p> <ul style="list-style-type: none"> - Demonstrated a protection system that enhances mission assurance - Reported real-world reviews of reverse engineering framework - Demonstrated call graph monitoring as well as user-space runtime measurement <p>FY 2013 Plans:</p> <p>FOUNDATIONS OF TRUST:</p> <ul style="list-style-type: none"> - Develop scalable reverse engineering and analysis - Explore and identify trust establishment, propagation, and maintenance techniques - Enable measurement of trustworthiness - Develop trustworthy architectures and trust composition tools - Create cost-effective technology for the construction of high-assurance cyber-physical systems, meaning functionally correct and satisfying appropriate safety and security properties <p>CYBER RESILIENCE:</p> <ul style="list-style-type: none"> - Develop analytical model for routing techniques in the presence of jamming - Understand new mechanisms for secure operation of many-core chips - Develop methods for increasing resiliency of operational systems - Identify mechanisms to compose resilient systems from brittle components - Monitor, protect and reconfigure a host system or peripheral components that are targeted during an attack <p>CYBER AGILITY:</p> <ul style="list-style-type: none"> - Research and analyze the security architectures of various major web engines such as Trident and Gecko - Design distributed systems architectures and service application polymorphism <p>ASSURING EFFECTIVE MISSIONS:</p> <ul style="list-style-type: none"> - Research trusted information flow architectures, frameworks, and mechanisms for application to tactical AIS environments - Develop techniques for mapping assets and describing dependencies between mission elements and cyber infrastructure - Develop techniques for course of action development and analysis - Improve Realism through automated mission modeling and mission situational awareness. <p>FY 2014 Plans:</p>			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 2: <i>Applied Research</i>	R-1 ITEM NOMENCLATURE PE 0602668D8Z: <i>Cyber Applied Research</i>	PROJECT P003: <i>Cyber Applied Research</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
<p>FOUNDATIONS OF TRUST*:</p> <ul style="list-style-type: none"> - Develop scalable reverse engineering and analysis - Explore and identify trust establishment, propagation, and maintenance techniques - Enable measurement of trustworthiness - Develop trustworthy architectures and trust composition tools - Detect malicious USB firmware/hardware using GOTS printed circuit board. <p>CYBER RESILIENCE*</p> <ul style="list-style-type: none"> - Develop methods for increasing resiliency of operational systems - Identify mechanisms to compose resilient systems from brittle components - Integrate sensing, detection, response, and recovery mechanisms - Design framework for secure modularization and virtualization of nodes and networks - Conduct resiliency-specific modeling and simulation - Develop code-level software resiliency - Develop advanced Computer Network Defense (CND) components and management features for the CND framework. <p>CYBER AGILITY*</p> <ul style="list-style-type: none"> - Design distributed systems architectures and service application polymorphism - Design network composition based on graph theory, distributed collaboration and social network theory - Develop techniques for autonomous reprogramming, reconfiguration, and control of cyber components, and machine intelligence - Develop automated reasoning techniques for executing courses of action <p>ASSURING EFFECTIVE MISSIONS*</p> <ul style="list-style-type: none"> - Develop techniques for mapping assets and describing dependencies between mission elements and cyber infrastructure - Develop techniques for course of action development and analysis - Enable cyber effects assessment - Demonstrate Computer Network Operations (CNO) framework scalability in a representative laboratory environment (1000+ Nodes) <p>CYBER MODELING, SIMULATION, AND EXPERIMENTATION (MSE)*</p> <ul style="list-style-type: none"> - Derive experimentation metrics and techniques that apply to a suite of technologies - Determine accuracy of experimental results and applicability to operational environments - Demonstrate high fidelity network traffic emulation - Demonstrate cyber M&S integrated with traditional M&S 			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense							DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 2: <i>Applied Research</i>				R-1 ITEM NOMENCLATURE PE 0602668D8Z: <i>Cyber Applied Research</i>			PROJECT P003: <i>Cyber Applied Research</i>		

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2012	FY 2013	FY 2014
<ul style="list-style-type: none"> - Develop M&S for large scale aggregate behavior EMBEDDED, MOBILE, AND TACTICAL ENVIRONMENTS (EMT)* <ul style="list-style-type: none"> - Develop monitoring and assessment tools to track behavior of embedded cyber systems - Develop approaches to detect counterfeit components in embedded hardware *FROM CYBER ROADMAP 			
Accomplishments/Planned Programs Subtotals	5.280	18.985	18.908

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
• BA 3, PE #0603668D8Z, P113: <i>Cyber Advanced Technology Development</i>	5.836	19.935	19.668		19.668	29.221	30.337	30.831	31.431	Continuing	Continuing
Remarks											
D. Acquisition Strategy N/A											
E. Performance Metrics N/A											

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense	DATE: April 2013
-------------------------------------------------------------------------------------------------	-------------------------

APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE							
0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 2: <i>Applied Research</i>					PE 0602670D8Z: <i>Human Social Culture Behavior (HSCB) Modeling Applied Research</i>							
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
Total Program Element	-	7.658	6.771	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
P270: <i>Human Social Culture Behavior (HSCB) Modeling Applied Research</i>	-	7.658	6.771	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

Note

Change from FY 2013 to FY 2014 reflects a reallocation of funds from the Office of the Secretary of Defense (OSD) Human Social Culture Behavior (HSCB) Modeling program to higher priority DoD requirements.

A. Mission Description and Budget Item Justification

The OSD HSCB Modeling Program is a vertically integrated effort to research, develop, and transition technologies, tools, and systems to programs of record and users in need. The program exists to optimize U.S. forces' ability to perform population-centric sensing, understand behaviors driven by social and cultural variables, and select effective courses of action in the full range of military operations. Program research will enhance population-centric intelligence, surveillance, and reconnaissance (ISR) capabilities for understanding the increasingly complex global environment to address national strategic challenges such as instability, aggression, proliferation of weapons of mass destruction, and violent extremism. In three integrated program elements (PE), the program will conduct applied research, mature and demonstrate advanced technology, and develop transitionable methods, technology, tools, and prototypes. Work under PE 0602670D8Z will focus on developing an applied science base, to include validated theory and methods, along with knowledge products and resources to support sociocultural behavior data collection, analysis and forecasting of sociocultural behavior, course of action planning, and effects analysis. Research will address needs in two areas: modeling and data. It will develop and validate theoretical constructions, generate knowledge products, and develop stand-alone computational models of sociocultural behavior; and improve methods for collecting data that will facilitate model development and enhance forecasting and analysis capabilities. The program will ensure that supported research is clearly tied to warfighters and their needs.

Human behavior based theory, knowledge products, and stand-alone models will support development of software to help users represent, understand, and forecast sociocultural behavior at strategic, operational, and tactical levels.

Improved data collection methods will help build the sociocultural science base, facilitate subsequent model development and validation, and address emerging data types and sources.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense	DATE: April 2013
-------------------------------------------------------------------------------------------------	-------------------------

APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 2: <i>Applied Research</i>	R-1 ITEM NOMENCLATURE PE 0602670D8Z: <i>Human Social Culture Behavior (HSCB) Modeling Applied Research</i>
--------------------------------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------

B. Program Change Summary (\$ in Millions)	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total
Previous President's Budget	8.602	6.771	6.923	-	6.923
Current President's Budget	7.658	6.771	0.000	-	0.000
Total Adjustments	-0.944	0.000	-6.923	-	-6.923
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-0.941	-			
• SBIR/STTR Transfer	-	-			
• Baseline Adjustments	-	-	-6.923	-	-6.923
• Other Adjustments	-0.003	-	-	-	-

Change Summary Explanation

FY 2014 baseline adjustments are reflective of DoD priorities and requirements.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 2: Applied Research					R-1 ITEM NOMENCLATURE PE 0602670D8Z: Human Social Culture Behavior (HSCB) Modeling Applied Research				PROJECT P270: Human Social Culture Behavior (HSCB) Modeling Applied Research			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
P270: Human Social Culture Behavior (HSCB) Modeling Applied Research	-	7.658	6.771	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012												
^{##} The FY 2014 OCO Request will be submitted at a later date												
Note Change from FY 2013 to FY 2014 reflects a reallocation of funds from the Office of the Secretary of Defense (OSD) Human Social Culture Behavior (HSCB) Modeling program to higher priority DoD requirements.												
A. Mission Description and Budget Item Justification The OSD HSCB Modeling Program is a vertically integrated effort to research, develop, and transition technologies, tools, and systems to programs of record and users in need. The Program exists to optimize U.S. forces’ ability to perform population-centric sensing, understand behaviors driven by social and cultural variables, and select effective courses of action in the full range of military operations. Program research will enhance population-centric intelligence, surveillance, and reconnaissance (ISR) capabilities for understanding the increasingly complex global environment to address national strategic challenges such as instability, aggression, proliferation of weapons of mass destruction, and violent extremism. In three integrated program elements (PEs), the Program will conduct applied research, mature and demonstrate advanced technology, and develop transitionable methods, technology, tools, and prototypes. Work under PE 0602670D8Z will focus on developing an applied science base, to include validated theory and methods, along with knowledge products and resources to support sociocultural behavior data collection, analysis and forecasting of sociocultural behavior, course of action planning, and effects analysis. Research will address needs in two areas: modeling and data. It will develop and validate theoretical constructions, generate knowledge products, and develop stand-alone computational models of sociocultural behavior; and improve methods for collecting data that will facilitate model development and enhance forecasting and analysis capabilities. The Program will ensure that supported research is clearly tied to warfighters and their needs. Human behavior based theory, knowledge products, and stand-alone models will support development of software to help users represent, understand, and forecast sociocultural behavior at strategic, operational, and tactical levels. Improved data collection methods will help build the sociocultural science base, facilitate subsequent model development and validation, and address emerging data types and sources.												
B. Accomplishments/Planned Programs (\$ in Millions)									FY 2012	FY 2013	FY 2014	
Title: Human Behavior Based Theory and Model Development									4.507	5.371	0.000	

PE 0602670D8Z: *Human Social Culture Behavior (HSCB) Modeling Appl...*

Office of Secretary Of Defense

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 2: <i>Applied Research</i>		R-1 ITEM NOMENCLATURE PE 0602670D8Z: <i>Human Social Culture Behavior (HSCB) Modeling Applied Research</i>	PROJECT P270: <i>Human Social Culture Behavior (HSCB) Modeling Applied Research</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
Description: Conduct the research necessary to develop and refine theoretical constructs and validate them using empirical data. Develop knowledge products including conceptual models, decision frameworks, and ontologies that will support population-centric sensing. Apply validation techniques to quantitative models of sociocultural factors in coalition warfare and sociocultural factors of military significance for emerging conflicts. Develop stand-alone models that instantiate social science theoretical constructs to address mission-specific needs to support population centric sensing and warning.				
FY 2012 Accomplishments: Delivered models that can assist in measuring non-kinetic effects. Advanced the development of methods for tracking narrative to monitor and mitigate violent extremism. Developed theoretically-grounded methods for analysis of open source text to support indications and warnings, and situation awareness. Developed tools to detect and measure changes in population and group sentiment to support instability forecasting. Tested software that uses hybrid model to forecast strategic courses of actions.				
FY 2013 Plans: Complete the development of and demonstrate model-based tools for understanding adversarial networks and tracking the impacts of adversary communications. Deliver model to detect indicators of instability at level below country/state using geographically clustered data. Complete, develop, and deliver approaches for detecting and developing countermeasures for rumors.				
Title: Visualization Methods Description: Develop common categorization of meta-information (i.e., the data source and pedigree, what types of uncertainty are associated with it, how old is the data, etc.) in existing visualization tools/decision aiding systems. Develop methods for visually and digitally depicting the incomplete, subjective, volatile, and/or imprecise nature of cultural information to support manual and automated analysis.		0.326	0.000	0.000
FY 2012 Accomplishments: Identified concepts for human-system interaction (HSI) capabilities that will enable an interactive exploration environment. Developed general and area of responsibility (AOR)-specific tools that enable U.S. government personnel to display hybrid sources of geospatially referenced data relating to Humanitarian Assistance and Disaster Relief (HADR) and other whole-of-government activities. Matured techniques for visualizing terrorist rhetoric and network dynamics. Developed approaches for graphical representation of extremist narrative structures.				
Title: Sociocultural Competencies and Training Methods Description: Define sociocultural behavior competencies, tailored to Military Occupational Specialties. Develop conceptual model for sociocultural training of military personnel, including specification of competencies focused on relevant operational		0.180	0.000	0.000

PE 0602670D8Z: *Human Social Culture Behavior (HSCB) Modeling*
 Appl...

Office of Secretary Of Defense

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense			DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 2: <i>Applied Research</i>	R-1 ITEM NOMENCLATURE PE 0602670D8Z: <i>Human Social Culture Behavior (HSCB) Modeling Applied Research</i>	PROJECT P270: <i>Human Social Culture Behavior (HSCB) Modeling Applied Research</i>	

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2012	FY 2013	FY 2014
scenarios. Develop methods and resources to support training of personnel, including non-experts, in most appropriate and effective use of computational models and model-based tools.			
<i>FY 2012 Accomplishments:</i> Developed a framework and characterized the sociocultural knowledge, skills, and ability to enable virtual training of culture-general capabilities.			
<i>Title:</i> Data Collection Methods	2.645	1.400	0.000
<i>Description:</i> Develop scientifically validated strategies to collect cultural and societal information in denied or difficult to penetrate areas. Develop methodologies and supporting technologies capable of extracting relevant data into databases for further modeling to support denied, restricted, or unavailable area sociocultural data. Develop technologies capable of leveraging extracted data, and processing and validating it, with a particular focus on data from social media.			
<i>FY 2012 Accomplishments:</i> Researched multi-scale analysis of conflict and stability based upon micro-scale geographical data on violent events and potential causal factors. Developed automated machine learning coding techniques for detecting bias (sentiment) in data.			
<i>FY 2013 Plans:</i> Complete development and deliver assessment of the HSCB factors that can be inferred from overhead imagery and the limitations of imagery-derived data. Complete automated methods for determining sentiment in social media/news to support counterinsurgency courses of action. Test and validate new methods for collection of data from open sources, including emerging media.			
Accomplishments/Planned Programs Subtotals	7.658	6.771	0.000

C. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2012</u>	<u>FY 2013</u>	<u>FY 2014</u> <u>Base</u>	<u>FY 2014</u> <u>OCO</u>	<u>FY 2014</u> <u>Total</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• PE 0603670D8Z BA 3 : <i>HSCB Advanced Development</i>	12.153	8.235	0.000		0.000	0.000	0.000	0.000		Continuing	Continuing
• PE 0604670D8Z BA 4 : <i>HSCB Research and Engineering</i>	7.037	5.131	0.000		0.000	0.000	0.000	0.000		Continuing	Continuing

Remarks

PE 0602670D8Z: *Human Social Culture Behavior (HSCB) Modeling Appl...*
Office of Secretary Of Defense

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 2: <i>Applied Research</i>	R-1 ITEM NOMENCLATURE PE 0602670D8Z: <i>Human Social Culture Behavior (HSCB) Modeling Applied Research</i>	PROJECT P270: <i>Human Social Culture Behavior (HSCB) Modeling Applied Research</i>
D. Acquisition Strategy N/A		
E. Performance Metrics N/A		

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE							
0400: Research, Development, Test & Evaluation, Defense-Wide BA 2: Applied Research					PE 0602751D8Z: Software Engineering Institute (SEI) Applied Research							
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
Total Program Element	-	0.000	0.000	11.107	-	11.107	11.330	11.614	11.766	11.970	Continuing	Continuing
P278: Software Engineering Institute (SEI) Applied Research	-	0.000	0.000	11.107	-	11.107	11.330	11.614	11.766	11.970	Continuing	Continuing

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

Note

This is a new start program in FY 2014. To ensure that the Department of Defense (DoD) retains a differential advantage over potential adversaries, the Department will split funding for Defense-wide software research at the Software Engineering Institute (SEI) Federally Funded Research and Development Center (FFRDC) across two program elements (PEs): this new Budget Activity (BA) 2 PE 0602751D8Z and the continuing BA 3 PE 0603781D8Z. The goals are to address both longer-term challenges in software technology and engineering (PE 0602751D8Z) and to continue to benefit from the proven experience the SEI FFRDC has with developing and transitioning advanced technology (PE 0603781D8Z).

A. Mission Description and Budget Item Justification

Software is key to meeting the DoD's increasing demand for high-quality, affordable, and timely national defense systems. With growing global parity in software engineering, the DoD must maintain leadership to avoid strategic surprise. To assist the DoD in retaining a long-term differential advantage over potential adversaries, the SEI Applied Research PE will develop and evaluate the feasibility and practicality of software and computer science concepts with the potential to improve future DoD systems.

This PE represents a pivot toward more fundamental research that will enable the DoD to address longer-term challenges in software technology and engineering. The SEI Applied Research PE will fund the SEI Federally Funded Research and Development Center (FFRDC) as the leading DoD center for addressing these longer term challenges. The SEI Applied Research PE will bolster the organic research at the SEI FFRDC, enable stronger collaborations between the SEI FFRDC and academia, attract top researchers to the SEI, and generally enhance the DoD's ability to benefit from the military applications of research in software and computer science.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense	DATE: April 2013
-------------------------------------------------------------------------------------------------	-------------------------

APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 2: <i>Applied Research</i>	R-1 ITEM NOMENCLATURE PE 0602751D8Z: <i>Software Engineering Institute (SEI) Applied Research</i>
--------------------------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------

B. Program Change Summary (\$ in Millions)	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total
Previous President's Budget	0.000	0.000	0.000	-	0.000
Current President's Budget	0.000	0.000	11.107	-	11.107
Total Adjustments	0.000	0.000	11.107	-	11.107
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Baseline Adjustments	-	-	11.107	-	11.107

Change Summary Explanation

FY 2014 baseline adjustments are in compliance with the Department of Defense new Strategic Guidance on the Asia-Pacific re-balance.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE				PROJECT			
0400: Research, Development, Test & Evaluation, Defense-Wide BA 2: Applied Research					PE 0602751D8Z: Software Engineering Institute (SEI) Applied Research				P278: Software Engineering Institute (SEI) Applied Research			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
P278: Software Engineering Institute (SEI) Applied Research	-	0.000	0.000	11.107	-	11.107	11.330	11.614	11.766	11.970	Continuing	Continuing
[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012												
^{##} The FY 2014 OCO Request will be submitted at a later date												
A. Mission Description and Budget Item Justification												
Software is key to meeting the Department of Defense’s (DoD’s) increasing demand for high-quality, affordable, and timely national defense systems. With growing global parity in software engineering, the DoD must maintain leadership to avoid strategic surprise. To assist the DoD in retaining a long-term differential advantage over potential adversaries, the Software Engineering Institute (SEI) Applied Research Program Element (PE) seeks to establish a program of applied research that will develop and evaluate the feasibility and practicality of software and computer science concepts with the potential to improve future DoD systems.												
The SEI Applied Research PE will initially have four main research thrusts: (1) measurement techniques for the effectiveness of software technologies and methods; (2) design principles and tools for evolvable, scalable ecosystems; (3) models of computational behaviors; and (4) cyber-tradecraft and analytics. These thrusts have known military applications and can be associated with active areas of basic research. The SEI Applied Research PE seeks to translate this promising basic research into solutions for broadly defined military needs. This PE will leverage the expertise of the SEI Federally Funded Research and Development Center (FFRDC) in advanced technology development and technology transition to design, develop, and improve tools, prototypes, and new processes that meet general requirements for software-intensive DoD systems.												
The SEI Applied Research PE will also conduct research in multicore computing, architecture-led iterative incremental development (Agile at scale); and emerging software and computer science areas that can act as catalysts for acquiring DoD systems with improved performance.												
B. Accomplishments/Planned Programs (\$ in Millions)									FY 2012	FY 2013	FY 2014	
Title: Software Engineering Institute Applied Research									0.000	0.000	11.107	
Description: Research projects at the SEI FFRDC will be awarded under this PE beginning in FY 2014 on a competitive basis across the SEI. The “Heilmeyer” assessment criteria will form the basis for selection at the SEI FFRDC. Therefore, funding levels in each thrust area may vary from year to year. Research will address the PE goal of assisting the DoD to retain a long-term differential advantage over potential adversaries in the area of software-intensive systems.												
The four main thrust areas are:												
1) Design principles and tools for evolvable, scalable ecosystems. The commercial world has many successful examples of software ecosystems, but the DoD has not capitalized on these to the same extent. This thrust looks beyond implementing												

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense			DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 2: <i>Applied Research</i>		R-1 ITEM NOMENCLATURE PE 0602751D8Z: <i>Software Engineering Institute (SEI) Applied Research</i>		PROJECT P278: <i>Software Engineering Institute (SEI) Applied Research</i>	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2012	FY 2013	FY 2014
<p>ecosystems in a DoD context and seeks to implement the underlying principles in a way that makes automated creation, evolution, and scaling of ecosystems easier.</p> <p>2) Measurement techniques for the effectiveness of software technologies and methods. Modern tools, integrated development environments, and software engineering processes have captured large data sets about development activities. This thrust seeks to study the metrics that affect cost, schedule, quality, and performance based on real-world observation and experiment.</p> <p>3) Models of Computational Behaviors. System performance depends on end-to-end models of computational behavior that include the user, architecture, source and object code, firmware components, and processor hardware. This thrust seeks to study emerging ideas that better model end-to-end computational behavior.</p> <p>4) Cyber-tradecraft and analytics. Cyberwarfare is an increasingly important and rapidly evolving dimension on the modern battlefield. This thrust seeks to investigate methods that will give the DoD enduring advantages in the cyber battlespace such as reverse software engineering, automated code & malware analysis, code-level software resiliency (e.g., randomizing and time variant techniques), and other techniques such as those found in the Software Security Assurance State-of-the-Art Report.</p> <p>The SEI Applied Research PE will also conduct research in multicore computing, architecture-led iterative incremental development (Agile at scale); and emerging software and computer science areas that can act as catalysts for acquiring DoD systems with improved performance.</p> <p>FY 2014 Plans:</p> <ul style="list-style-type: none"> • Begin research on the design principles and tools for evolvable, scalable ecosystems. • Begin research on measurement techniques for the effectiveness of software technologies and methods. This effort creates an applied research component to complement the measurable analysis of value-driven incremental development started under the SEI PE (0603781D8Z). • Begin research on measurement techniques for the effectiveness of software technologies and methods. • Begin research on models of computational behaviors. • Begin research on cyber-tradecraft and analytics. • Begin research on assurance-at-scale. This effort creates an applied research component to compliment work started under the SEI PE (0603781D8Z). • Begin research on quality-attribute analyses for high-confidence timing of multicore software systems with greater scalability. This effort creates an applied research component to compliment work started under the SEI PE (0603781D8Z). • Make competitive awards within the SEI for novel research under this project. 					

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 2: Applied Research				R-1 ITEM NOMENCLATURE PE 0602751D8Z: Software Engineering Institute (SEI) Applied Research				PROJECT P278: Software Engineering Institute (SEI) Applied Research				
B. Accomplishments/Planned Programs (\$ in Millions)										FY 2012	FY 2013	FY 2014
• Broadly investigate emerging software and computer science areas that can act as catalysts for acquiring DoD systems with improved performance.												
Accomplishments/Planned Programs Subtotals										0.000	0.000	11.107
C. Other Program Funding Summary (\$ in Millions)												
Line Item	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost	
• BA 3, PE# 0603781D8Z: Software Engineering Institute (SEI)	27.189	30.036	19.008		19.008	19.522	20.162	18.528	18.953	Continuing	Continuing	
Remarks												
Together with PE 0603781D8Z, Software Engineering Institute (SEI), the SEI Applied Research PE represents a pivot toward more fundamental research that will enable the DoD to address longer-term challenges in software technology and engineering. The SEI Applied Research PE will fund the SEI FFRDC as the leading DoD center for addressing these longer term challenges. The SEI Applied Research PE will bolster the organic research at the SEI FFRDC, enable stronger collaborations between the SEI FFRDC and academia, attract top researchers to the SEI, and generally enhance the DoD's ability to benefit from the military applications of research in software and computer science.												
D. Acquisition Strategy												
N/A												
E. Performance Metrics												
• Transition of tools, methods, and practices for use in DoD technology development programs and programs of record.												
• Transition of tools, methods, and practices to the Defense Industrial Base to support DoD technology development programs and programs of record.												
• Number of citations in peer reviewed journals and reports.												
• Number of external research collaborations and interactions with the broader software and computer science community.												

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE							
0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>					PE 0603000D8Z: <i>Joint Munitions Advanced Technology</i>							
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
Total Program Element	-	14.590	25.612	26.646	-	26.646	30.040	30.924	31.428	32.039	Continuing	Continuing
P002: <i>Insensitive Munitions Advanced Technology</i>	-	13.515	20.819	20.224	-	20.224	22.153	22.812	23.055	23.503	Continuing	Continuing
P301: <i>Enabling Fuze Advanced Technology</i>	-	1.075	4.793	6.422	-	6.422	7.887	8.112	8.373	8.536	Continuing	Continuing

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

This program addresses advanced technology development associated with improving the lethality, reliability, safety, and survivability of munitions and weapon systems. The goal is to develop and demonstrate joint enabling technologies that can be used by the Program Executive Officers as they develop their specific weapon programs. The program invests in and demonstrates technologies from a Joint Service perspective, thus ensuring the development of technology with the broadest applicability while avoiding duplication of efforts.

Munition Area Technology Groups (MATGs) and Fuze Area Technology Groups (FATGs) have been established for each munition and capability area and are tasked with: 1) coordinating, establishing, and maintaining five, ten, and fifteen year technology development plans and roadmaps, 2) coordinating biannual meetings to review technical and programmatic details of each funded and proposed effort, 3) developing and submitting Technology Transition Agreements in coordination with appropriate Program Executive Offices (PEO) for insertion in their Insensitive Munition (IM) Strategic Plans / Fuze Technology Development Plan, and 4) interfacing with other MATGs / FATGs and IM / fuze science and technology projects as appropriate. The Joint Insensitive Munitions Technical Program (JIMTP) and Joint Fuze Technical Program (JFTP) will utilize a Technical Advisory Committee (TAC) (consisting of senior DoD and DOE laboratory representatives and senior Munitions PEO representatives) to provide program oversight, policy, direction, and priorities during its annual meeting.

The Insensitive Munitions effort will demonstrate enabling technologies needed to develop weapons in compliance with Insensitive Munitions requirements established in United States Code, Title 10, Chapter 141, Section 2389 and DoDI 5000.1. This effort will take promising technologies demonstrated at the laboratory scale and transition them into demonstration programs utilizing generic hardware based on priority munitions identified in the PEO IM Strategic Plans. Mature and demonstrated IM technology can be transitioned, thereby decreasing their program costs and schedule risk and facilitating spin-offs to other non-compliant munitions within their portfolios.

The JIMTP investments focus on five Munition Areas: 1) High Performance Rocket Propulsion, 2) Minimum Signature Rocket Propulsion, 3) Blast and Fragmentation Warheads, 4) Anti-Armor Warheads, and 5) Gun Propulsion. Munition Area Technology Groups (MATG), under tri-service leadership, have developed technology roadmaps for each Munition Area which are used to guide investments based on goals consistent with the PEO IM Strategic Plans. These IM technologies, alone or in

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense	DATE: April 2013
-------------------------------------------------------------------------------------------------	-------------------------

APPROPRIATION/BUDGET ACTIVITY

0400: *Research, Development, Test & Evaluation, Defense-Wide*
 BA 3: *Advanced Technology Development (ATD)*

R-1 ITEM NOMENCLATURE

PE 0603000D8Z: *Joint Munitions Advanced Technology*

combination, will be incorporated in hardware, simulating real-world munitions, to demonstrate their utility and feasibility as part of Technology Transition Agreements with PEOs.

The Enabling Fuze Advanced Technology effort will also demonstrate fuze enabling technologies needed to develop weapons that address priority capability areas identified in the Guidance for Development (GDF) of the Force, the Secretary of Defense Memorandum, DoD Policy on Cluster Munitions and Unintended Harm to Civilians, and shortfalls in current weapon systems. This effort will take promising technologies demonstrated at the laboratory scale and transition them into demonstration weapons and programs based on priority capabilities and technology needs identified and validated by the PEOs and the Heads of the Service Science and Technology (S&T) communities. In this way, promising multi-point initiation architectures, high reliability fuze architectures, survivable components, modular fuze packaging, and components produced based on ease of manufacturing can be integrated into munitions applications and its ability to address required capability needs will be validated. Mature fuze technologies will be transitioned to Weapon PEO's and/or Industry, thereby decreasing program costs and schedule risk while facilitating technology into potentially broader range of munitions applications.

The JFTP investments focus on four specific capability areas that have been identified by the Department strategic guidance and current shortfalls in weapon systems and as validated by the PEOs and the Service S&T communities. These capability areas are: 1) Hard Target Survivable Fuzing, 2) Tailorable Effects Weapon Fuzing, 3) High Reliability Fuzing, and 4) Enabling Fuze Technologies and Common Architecture. These Fuzing technologies will be incorporated in weapon applications to demonstrate their maturity and utility as part of Technology Transition Agreements with PEOs.

B. Program Change Summary (\$ in Millions)	<u>FY 2012</u>	<u>FY 2013</u>	<u>FY 2014 Base</u>	<u>FY 2014 OCO</u>	<u>FY 2014 Total</u>
Previous President's Budget	15.606	25.612	27.326	-	27.326
Current President's Budget	14.590	25.612	26.646	-	26.646
Total Adjustments	-1.016	0.000	-0.680	-	-0.680
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-1.011	-			
• SBIR/STTR Transfer	-	-			
• Baseline Adjustments	-	-	-0.680	-	-0.680
• Other Adjustments	-0.005	-	-	-	-

Change Summary Explanation

FY 2014 baseline adjustments are reflective of DoD S&T priorities and requirements.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 3: Advanced Technology Development (ATD)					R-1 ITEM NOMENCLATURE PE 0603000D8Z: Joint Munitions Advanced Technology				PROJECT P002: Insensitive Munitions Advanced Technology			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
P002: Insensitive Munitions Advanced Technology	-	13.515	20.819	20.224	-	20.224	22.153	22.812	23.055	23.503	Continuing	Continuing
[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012												
^{##} The FY 2014 OCO Request will be submitted at a later date												
A. Mission Description and Budget Item Justification												
The Insensitive Munitions effort addresses advanced technology development associated with improving the lethality, reliability, safety, and survivability of munitions and weapon systems. The goal is to develop and demonstrate joint enabling technologies that can be used by program managers as they develop their specific weapon programs. The program invests in and demonstrates technologies from a Joint Service perspective, thus ensuring the development of technology with the broadest applicability while avoiding duplication of efforts.												
This effort will demonstrate enabling technologies needed to develop weapons in compliance with Insensitive Munitions requirements established in United States Code, Title 10, Chapter 141, Section 2389 and DoDI 5000.1. This effort will take promising technologies demonstrated at the laboratory scale and transition them into demonstration programs utilizing generic hardware based on priority munitions identified in the PEO IM Strategic Plans. Mature demonstrated IM technology can be transitioned, thereby decreasing their program costs and schedule risk and facilitating spin-offs to other non-compliant munitions within their portfolios.												
The Joint Insensitive Munitions Technology Program investments focus on five Munition Areas: 1) High Performance Rocket Propulsion, 2) Minimum Signature Rocket Propulsion, 3) Blast and Fragmentation Warheads, 4) Anti-Armor Warheads, and 5) Gun Propulsion. Munition Area Technology Groups (MATG), under tri-service leadership, have developed technology roadmaps for each Munition Area which is used to guide investments based on goals consistent with the DoD IM Strategic Plan. These IM technologies, alone or in combination, will be incorporated in hardware, simulating real-world munitions, to demonstrate their utility and feasibility as part of Technology Transition Agreements with PEOs.												
B. Accomplishments/Planned Programs (\$ in Millions)									FY 2012	FY 2013	FY 2014	
Title: High Performance Rocket Propulsion (HPP)									2.858	4.232	4.169	
Description: High Performance Rocket Propulsion (HPP) focus on the development and demonstration of technologies to improve the IM response of HPP systems (rocket motors with Ammonium Perchlorate and with or without a metal fuel) for rockets and missiles launched from air, ground, and sea platforms. These technologies, when applied to rocket motors, improve IM response to one or more threats, while not degrading the response to other IM threats and at least maintaining munition performance. Technologies include, but are not limited to, rocket propellant ingredients (including synthesis, characterization and scale-up), reduced smoke or smokey propellants (including formulation, characterization and scale-up), rocket motor case design, materials for active and passive thermal mitigation, shock mitigation materials and techniques, passive and active coatings, active and passive venting techniques for motor cases or containers, ignition systems, sensors and thrust mitigation techniques.												

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603000D8Z: <i>Joint Munitions Advanced Technology</i>	PROJECT P002: <i>Insensitive Munitions Advanced Technology</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
<p>Operating conditions may be controlled or widely varying in both temperature and vibration. The five, ten, and fifteen year goals of the HPP MATG are concentrated on solving the IM response of missile propulsions systems due to Fragment Impacts and Slow Cook Off for the majority of High Performance Propulsion rocket motors, and solving the Fast Cook Off response of very large High Performance Propulsion motors.</p> <p>FY 2012 Accomplishments:</p> <ul style="list-style-type: none"> Conducted aging study and full scale Insensitive Munition (IM) demonstration tests on new propellant filled rocket cases. Conducted 70 pound BATES motor static test firing to demonstrate propellant performance. Fabricated five-inch rocket motors using novel rocket motor design, and conducted IM testing to include bullet and fragment impact, and fast and slow cook off. <p>FY 2013 Plans:</p> <ul style="list-style-type: none"> Contract award to manufacture seven inch diameter rocket motor cases using novel technique and load with propellant to support baseline IM testing. Integrate components of delivered assets and finalize motor fabrication for testing. Conduct IM testing. Manufacture motor cases, demonstrate five-gallon mix process, and perform initial aging and thermal/mechanical studies on an extinguishable rocket propellant. Scale up to 50 gallon mix a high energy propellant, fill three uniquely manufactured cases and conduct IM testing. Conduct IM testing on rocket motor equipped with unique safety device. Finalize rocket motor design for high performance solid propellant. <p>FY 2014 Plans:</p> <ul style="list-style-type: none"> Conduct baseline slow cook off and fragment impact IM testing in seven inch diameter rocket motors. Receive additional rocket motors, prepare and conduct baseline fast cook off and bullet impact IM tests. Integrate IM mitigation technologies and perform final IM testing. Complete bondline evaluation and demonstrate 30 gallon mix process. Perform testing of 30 gallon mix properties. Prepare, load, and conduct IM testing on novel small diameter missile propellant formulation in manufactured motor cases. Procure rocket motor materials, cast motors, and conduct component testing to validate proof of concept. 			
Title: Minimum Signature Rocket Propulsion (MSP)		3.171	4.629
Description: Minimum Signature Rocket Propulsion (MSP) focus on the development and demonstration of technologies to improve the IM response of MSP systems. The development and demonstration of minimum signature (MS) rocket technologies, when applied to munition systems, will improve munition IM response to one or more threats, while not degrading the response to other IM threats and at least maintaining munition performance. Technologies include but are not limited to MS rocket propellant formulations, ingredients for MS propellant formulations (including synthesis, characterization and scale-up), case and packaging			2.504

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603000D8Z: <i>Joint Munitions Advanced Technology</i>	PROJECT P002: <i>Insensitive Munitions Advanced Technology</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
design, active and passive venting techniques, rocket motor case design, ignition systems and thrust mitigation techniques. Of particular interest are technologies toward higher burning rate MS propellants with state-of-the-art energy and reduced shock sensitivity. The five, ten, and fifteen year goals of the MSP MATG are concentrated on solving the IM response of missile propulsion systems due to Fragment Impact, Slow Cook Off, and Shaped Charge Jet (SCJ) threats.			
FY 2012 Accomplishments:			
<ul style="list-style-type: none"> Conducted slow cook off and fragment impact reliability testing of motor designs. Manufactured test motor hardware and conducted propellant down-select testing. Prepared, loaded, and conducted IM tests on propellant candidates in metal and composite cases, for direct comparison with baseline propellants. Scaled-up additional novel propellant formulation to five gallon scale and conducted physical property tests and prepared samples for seven-inch rocket motor testing. Refined vent mechanism design, manufactured and tested components to validate precision and accuracy. Conducted slow cook off testing on large scale motor. Conducted aging and environmental tests of rocket motor thermal ring venting mechanism. Modified containers with venting system and conducted fast and slow cookoff tests using inert as well as live rocket motors modified with the case venting mechanism to determine benefits of both systems. Manufactured and conducted characterization testing of unique propellant for man-portable weapons with minimum signature and operator-friendly properties. 			
FY 2013 Plans:			
<ul style="list-style-type: none"> Load demonstrator motor with down-selected propellant formulation, incorporate case enhancements, and prepare to conduct IM tests. Conduct full-scale motor static tests of IM propellants. Prepare to demonstrate reduced sensitivity minimum signature propellant IM and ballistic properties in full-scale test. Complete initial motor designs and hardware production in order to conduct IM evaluations for fielded munition designs. Demonstrate enhanced insensitive propellant readiness for motor design. Complete venting design to include propellant fabrication, acquisition of hardware, assembled and tested for man-portable weapon, and subsequent munition scale slow cook off and bullet impact testing, demonstrating improved IM response with minimum signature and operator-friendly properties. 			
FY 2014 Plans:			
<ul style="list-style-type: none"> Demonstrate reduced sensitivity minimum signature propellant ballistic and IM properties in full-scale test and transition to 6.4 Insensitive Munition Technology Transition Program and insertions into weapon systems. Conduct IM, structural, and ballistic testing on full-scale demonstrator motor to validate that design meets defined requirements. 			
Title: Blast and Fragmentation Warheads (BFW)		2.942	7.203
			7.686

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603000D8Z: <i>Joint Munitions Advanced Technology</i>	PROJECT P002: <i>Insensitive Munitions Advanced Technology</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
<p>Description: Blast and Fragmentation Warheads (BFW) focus on the development and demonstration of technologies to improve the IM response of BFW munitions. The development and demonstration of explosive ingredients, explosives, and warhead and fuze technologies that, when applied to munitions, improve IM response to one or more threats, while not degrading the response to other IM threats and at least maintaining munition performance are of particular interest. Technologies include but are not limited to new ingredient synthesis and characterization, initial formulation development, scale-up, warhead/charge configuration, venting techniques for both munitions and their containers, protection / packaging materials and systems, shock mitigation liners, initiation devices, techniques, and technologies. Applications vary but include high performance warhead fills, booster explosives, bulk demolition charges, and bulk fills for blast and/or fragmentation charges. Munition operating conditions may be controlled or have widely varying environmental conditions, such as temperature and vibration, and other factors such as cost, availability, and reliability may be critically important depending on the intended munition application. The five, ten, or fifteen year goals of the BFW MATG are concentrated on solving the IM response of blast fragment warheads to the Sympathetic Detonation, Fast Cook Off, and SCJ threats.</p> <p>FY 2012 Accomplishments:</p> <ul style="list-style-type: none"> • Conducted full scale IM and performance tests on unique 500 pound bombs and completed manufacturing study to prepare for selection of final candidate for transition to responsible program manager. • Completed validation testing using unique explosives to ensure functionality of initiator. • Completed initiation system environmental survivability testing and prepared for IM tests using system level hardware. • Conducted characterization tests to ensure purity and particle size of materials. Conducted environmental and IM tests to include full scale slow cook off test in various warhead sizes. • Performed high explosive testing to compare subject materials against baseline bomb fill materials. Used sympathetic reaction models to assess new Insensitive High Explosive (IHE) fills and selected appropriate formulation for refinement. • Prepared and conducted sub-scale performance testing using candidate formulations to compare to baseline fills. <p>FY 2013 Plans:</p> <ul style="list-style-type: none"> • Complete large scale testing of initiator using novel explosive. Fabricate initiation systems and conduct IM tests using system level hardware to transition to IM technology transition program. • Conduct formulation refinements and subscale IM tests. Prepare assets for full-scale IM tests. • Integrate initiation designs with explosive fill candidate and conduct small-scale tests as well as full Bucket Test series. • Conduct testing to demonstrate that unique initiation system components can pass impact survivability requirements and sympathetic detonation testing. • Manufacture novel bomb fill for initial characterization testing and loading to determine baseline formulation. • Conduct "quick look" performance testing on prototype unique warheads to determine baseline performance and to ensure acceptable initiation and fragmentation performance has been obtained, prior to initiating design optimization efforts. 			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603000D8Z: <i>Joint Munitions Advanced Technology</i>	PROJECT P002: <i>Insensitive Munitions Advanced Technology</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
<ul style="list-style-type: none"> Conduct full-scale 500 pound bomb demonstration lethality testing to include horizontal and vertical arena testing and subsequent analysis. <p>FY 2014 Plans:</p> <ul style="list-style-type: none"> Demonstrate fault tolerant redundant initiation system capable of passing shaped charge jet testing and capable or reliably initiating unique explosive formulation at hot and cold temperatures. Conduct bullet impact, fragment impact, and slow cook off testing with production representative grenade assembly using novel explosive. Conduct modeling and simulation effort on novel bomb fill to optimize formulation, scale up best candidates, and fill representative articles for testing. Conduct slow and fast cook off, plus bullet impact Insensitive Munition (IM) testing on 500 pound bomb unique fills in half-fill configuration with new booster initiation systems. Computational analysis will be applied as a design tool to substantiate the feasibility of meeting IM and performance requirements with less sensitive explosives and other mechanical IM design features in unique warheads. Hardware will be fabricated for testing and IM mitigation designs will be tested against slow and fast cook off, fragment impact, sympathetic reaction, and shaped charge jet threats. 			
<p>Title: Anti-Armor Warheads (AAW)</p> <p>Description: Anti-Armor Warheads (AAW) focus on the development and demonstration of explosive ingredients, explosives, warhead and fuze technologies for improving IM of AAW munitions. The development of explosive ingredients, explosives, and warhead and fuze technologies that, when applied to munitions, improve IM response to one or more threats, while not degrading the response to other IM threats and at least maintaining munition performance. Technologies include but are not limited to new ingredient synthesis and characterization, initial formulation development, scale-up, warhead/charge configuration, venting techniques for both munitions and their containers, protection/packaging materials and systems, shock mitigation liners, initiation devices, techniques, and technologies. Applications vary but include high performance warhead fills, booster explosives, and all other technology to mitigate the violent response of Anti-Armor Warhead munitions to IM threats. Munition operating conditions may be controlled or have widely varying environmental conditions, such as temperature and vibration, and other factors such as cost, availability, and reliability may be critically important depending on the intended munition application. The five, ten, and fifteen year goals of the AAW MATG are concentrated on solving the IM response of anti-armor warheads to the Fragment Impact and Slow Cook Off threats and a five year goal of solving Sympathetic Detonation threats, with a five to fifteen year goal of resolving the IM response to the Shaped Charge Jet threat.</p> <p>FY 2012 Accomplishments:</p> <ul style="list-style-type: none"> Loaded hardware and conducted IM and performance tests to validate performance and finalize recommended solutions for transition to a program of record. 		2.322	2.457
			3.789

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603000D8Z: <i>Joint Munitions Advanced Technology</i>	PROJECT P002: <i>Insensitive Munitions Advanced Technology</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
<ul style="list-style-type: none"> Optimized phase one designs based upon small and large warhead tests. Conducted modeling and simulation of phase two designs and optimized design for fast and slow cook off and bullet and fragment impact testing. <p>FY 2013 Plans:</p> <ul style="list-style-type: none"> Conduct modeling and simulation down-selection of candidate technologies to determine fragment impact technologies suitable for higher velocity munition requirements. Fabricate, load, inspect, and conduct limited IM and performance testing on representative articles. Conduct synthesis and production of two unique energetic materials and conduct initial performance validation studies for a medium caliber munition. Conduct synthesis and production of two unique energetic materials and conduct initial performance validation studies for a replacement munition booster. <p>FY 2014 Plans:</p> <ul style="list-style-type: none"> Finalize higher velocity munition IM design, fabricate, load, and conduct shock and thermal assessments. Continue performance validation studies, and initial IM testing on two unique energetic materials for a medium caliber munition. Continue performance validation studies, and initial IM testing on two unique energetic materials for a replacement munition booster. 			
<p>Title: Gun Propulsion (GP)</p> <p>Description: Gun Propulsion (GP) focuses on the development and demonstration of technologies in the area of Gun Propulsion systems. The development and demonstration of gun propulsion technologies, when applied to munition systems, will improve munition IM response to one or more threats, while not degrading the response to other IM threats and at least maintaining munition performance. Technologies include but are not limited to gun propellant formulations, ingredients for gun propellant formulations (including synthesis, characterization and scale-up), cartridge case and packaging design, active and passive venting techniques, reduced sensitivity primer propellant and primer systems, and robust primers for insensitive propellants. Applications vary, but include both large and medium caliber munitions, as well as propelling charges for mortars and shoulder launched munitions. Operating requirements vary, and other factors such as barrel life and operation over varying environmental conditions may be critically important depending on the intended munition application. The five, ten, and fifteen year goals of the GP MATG are concentrated on solving the IM response of gun propulsion munitions to Fragment Impact, and Slow Cook Off threats.</p> <p>FY 2012 Accomplishments:</p> <ul style="list-style-type: none"> Conducted primer testing and final IM testing of propellant and primer optimization formulations less sensitive to fragment impact, shaped charge jet impacts and slow and fast cook off. <p>FY 2013 Plans:</p> <ul style="list-style-type: none"> Scale-up two propellant formulations for use in shoulder fired weapon system. 		2.222	2.298
			2.076

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense								DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>				R-1 ITEM NOMENCLATURE PE 0603000D8Z: <i>Joint Munitions Advanced Technology</i>			PROJECT P002: <i>Insensitive Munitions Advanced Technology</i>		

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2012	FY 2013	FY 2014
<ul style="list-style-type: none"> Conduct engineering and sensitivity testing. <p><i>FY 2014 Plans:</i></p> <ul style="list-style-type: none"> Conduct full-scale fast and slow cook off and fragment impact testing of two propellant formulations for use in shoulder fired weapon systems. Conduct initial container venting design, manufacture, and tests. 			
Accomplishments/Planned Programs Subtotals	13.515	20.819	20.224

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
• 0602000D8Z P000: <i>BA2 Insensitive Munitions</i>	14.495	14.216	13.588		13.588	14.615	15.041	15.220	15.516	Continuing	Continuing
Remarks											
D. Acquisition Strategy N/A											
E. Performance Metrics											
1) Transitions of technologies developed by the program are tracked and documented using DoD/NASA Technical Readiness Level (TRL) scale. 2) MATG Technology Roadmaps are prepared, evaluated, and analyzed by JIMTP management and technical staff. 3) Chairman's Annual Assessments for each MATG are critically reviewed by the TAC to determine progress, transition plans, and relevance of each project. 4) Projects progress toward goals and milestones is assessed at each MATG meeting. 5) Annual technical reports and papers are tracked and documented for the Program. 6) External Peer Reviews of Projects are conducted as part of Joint Army/Navy/NASA/Air Force meetings. 7) Technology Transition Agreements are in place with Munition programs.											

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 3: Advanced Technology Development (ATD)					R-1 ITEM NOMENCLATURE PE 0603000D8Z: Joint Munitions Advanced Technology				PROJECT P301: Enabling Fuze Advanced Technology			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
P301: Enabling Fuze Advanced Technology	-	1.075	4.793	6.422	-	6.422	7.887	8.112	8.373	8.536	Continuing	Continuing
[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012												
^{##} The FY 2014 OCO Request will be submitted at a later date												
A. Mission Description and Budget Item Justification												
This effort will demonstrate fuze enabling technologies needed to develop weapons that address priority capability areas identified in the Guidance for Development of the Force, the Secretary of Defense Memorandum, DoD Policy on Cluster Munitions and Unintended Harm to Civilians, and shortfalls in current weapon systems. This effort will take promising technologies integrated and tested to Technical Readiness Level (TRL) five and demonstrate the technologies to a TRL-six utilizing weapon hardware based on priority capabilities and technology needs identified and validated by the Program Executive Officers (PEOs) and the Heads of the Service S&T communities. Mature demonstrated fuze technology will be transitioned, thereby decreasing their program costs and schedule risk and facilitating spin-offs to other munitions within their portfolios. Under the Joint Fuze Technology Program (JFTP), investments are focused on specific capability areas that have been identified by Department strategic guidance and current shortfalls in weapon systems and validated by the PEOs and Heads of the Service S&T communities. These four capability areas are: 1) Hard Target Survivable Fuzing, 2) Tailorable Effects (TE) Weapon Fuzing, 3) High Reliability Fuzing, and 4) Enabling Fuze Technologies and Common Architecture.												
B. Accomplishments/Planned Programs (\$ in Millions)										FY 2012	FY 2013	FY 2014
Title: Hard Target Fuzing										0.326	1.123	1.726
Description: The Hard Target Fuzing challenges are grouped into three Technology Areas. First, improved modeling and simulation capabilities provide the validated computational tools necessary for hard target applications. Second, basic phenomenology & understanding of the Fuze Environment is the science-based endeavor of providing the test equipment, instrumentation, and analysis techniques for experimentation and data gathering necessary for next generation fuzing. Third, hard target survivable fuze components are developed to increase the effectiveness of facility denial munitions by improving the prediction tools and testing methodologies to evaluate the survivability and functionality of legacy and future fuzes. Development of these technologies will enable next generation boosted and hypersonic penetrators to execute missions against hardened and deeply buried targets.												
FY 2012 Accomplishments: - Built Hardened Miniature Fuze Technology (HMFT) hardware for survivability and functionality evaluation in sled testing against complex penetration targets.												

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 3: Advanced Technology Development (ATD)	R-1 ITEM NOMENCLATURE PE 0603000D8Z: Joint Munitions Advanced Technology	PROJECT P301: Enabling Fuze Advanced Technology		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
<p>- Developed and applied advanced fuze modeling and simulation tools for Service applications including Air Force High Velocity Penetrating Weapon.</p> <p>FY 2013 Plans:</p> <p>- Conduct validation experiments on advanced fuze High-G modeling and simulation tools.</p> <p>- Continue to develop survivable modular fuze technology for application into multi-role common miniature munitions with distributed/embedded fuzes.</p> <p>FY 2014 Plans:</p> <p>- Conduct high speed weapon hard target tests, to include high shock data recorders, to validate High-G fuze models.</p> <p>- Transition survivable modular fuze technology for application into multi-role common miniature munitions with distributed/embedded fuzes.</p>				
<p>Title: Tailorable Effects Fuzing</p> <p>Description: Develop fuzing for tailorable effects weapons that encompasses the ability to selectively vary the output of the weapon (Dial-a-Yield) and/or the ability to generate selectable effects (directed blast, fragmentation). Develop initiation and multi-point technologies; electronic safe and arm based multi-point initiators for tunable output – scalable yield warheads; MicroElectro-Mechanical Systems (MEMS) based multi-point initiators for tunable output/scalable yield warheads; and smart fuzing for tailorable effects weapons. These technologies will enable weapons that can effectively defeat a variety of targets while minimizing unintentional collateral effects.</p> <p>FY 2012 Accomplishments:</p> <p>- Developed variable yield warhead initiation architecture and control technologies. Conducted tri-Service evaluation of designed for warhead applications.</p> <p>- Completed advanced micro-transformer tests to enable Industry transition and production of transformer into Service miniature high voltage firing systems.</p> <p>FY 2013 Plans:</p> <p>- Conduct tests of warhead initiation architecture and control technologies into warheads. Specifically, weapons capable of reducing collateral damage will benefit using tailorable effects technologies.</p> <p>FY 2014 Plans:</p> <p>- Conduct demonstration tests of warhead initiation and selectable architecture and control technologies in live explosive tests.</p>		0.430	1.220	1.494
<p>Title: High Reliability Fuzing</p> <p>Description: Develop high reliability fuzing architectures, fuzing components, and unexploded ordnance (UXO) reduction features. These technologies will enable the next generation of cluster munitions to achieve the required greater than 99%</p>		0.119	1.310	1.746

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603000D8Z: <i>Joint Munitions Advanced Technology</i>	PROJECT P301: <i>Enabling Fuze Advanced Technology</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
<p>reliability goal. Evolving DoD emphasis on increased weapon system reliability is driving the need to consider new and novel approaches for achieving increased fuze reliability while maintaining or enhancing fuze design safety. DoD policy, higher weapon reliability expectations and harsher weapon system operational requirements are dictating the need for higher fuze reliability than available using current technologies.</p> <p>FY 2012 Accomplishments:</p> <ul style="list-style-type: none"> - Built and tested high reliability fuze architecture technology initial prototypes that satisfy reliability while maintaining safety by eliminating single-point and common-mode failures. - Integrated phase one MEMS fuze device components and fabrication processes for high reliability fuze applications. <p>FY 2013 Plans:</p> <ul style="list-style-type: none"> - Refine design, along with increasing level of integration, and test high reliability fuze prototypes that satisfy reliability while maintaining safety by eliminating single-point and common-mode failures. - Demonstrate high reliability miniature fuzes in air-gun testing, that simulate cluster munitions environments, to achieve Technical Readiness Level (TRL) five. <p>FY 2014 Plans:</p> <ul style="list-style-type: none"> - Develop and demonstrate phase two high reliability MEMS fuze technology prototypes: wafer level packaging MEMS safety and arming (S&A) in Guided Mortar round and bomb fuze bellows motors. 			
<p>Title: Enabling Fuze Technologies</p> <p>Description: Develop common / modular fuze architectures; innovative fuze component technologies; sensors; next generation fuze setting capability, tools and modeling; and fuzing power sources. These fuzing technologies will provide smaller, more cost effective solutions while meeting or exceeding the performance of existing technologies. Development of these technologies will enable future weapon applications to be more mission adaptive and smaller along with improve target detection capabilities.</p> <p>FY 2012 Accomplishments:</p> <ul style="list-style-type: none"> - Built and tested second phase miniature retard and impact sensors for bomb and air dropped munitions. Testing will be in relevant environments simulating bomb deployment. - Conducted functional and safety assessment and testing of common fuze architecture technologies: safety components, modular electronics, sensors, interfaces, and packaging. <p>FY 2013 Plans:</p> <ul style="list-style-type: none"> - Begin joint program with Industry to develop sensor technology into bomb fuzing applications. 		0.200	1.140
			1.456

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense							DATE: April 2013				
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>				R-1 ITEM NOMENCLATURE PE 0603000D8Z: <i>Joint Munitions Advanced Technology</i>			PROJECT P301: <i>Enabling Fuze Advanced Technology</i>				
B. Accomplishments/Planned Programs (\$ in Millions)							FY 2012	FY 2013	FY 2014		
<ul style="list-style-type: none"> - Begin (transition from 6.2 efforts) of advanced, exploitation resistant proximity sensor advanced technology development. FY 2014 Plans: <ul style="list-style-type: none"> - Conduct air-drop demonstration testing miniature retard and impact sensors. Partner with Industry to transition sensor technology into bomb fuzing applications. - Conduct testing of advanced, exploitation resistant proximity sensor advanced technology development. 											
Accomplishments/Planned Programs Subtotals							1.075	4.793	6.422		
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
• 0602000D8Z P204: <i>BA2 Enabling Fuze Technology</i>	5.833	6.399	5.977		5.977	6.941	7.131	7.316	7.458	Continuing	Continuing
Remarks											
D. Acquisition Strategy N/A											
E. Performance Metrics											
1) Transitions of technologies developed by the Program are tracked and documented using DoD/NASA TRL scale. 2) FATG Technology Roadmaps are prepared, evaluated, and analyzed by JFTP management and technical staff. 3) Chairman's Annual Assessments for each FATG are critically reviewed by the Technical Advisory Committee (TAC) to determine progress, transition plans, and relevance of each project. 4) Project progress toward goals and milestones is assessed at each FATG meeting. 5) Annual technical reports and papers are tracked and documented for the Program. 6) Technology Transition Agreements are in place with Munition programs.											

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE							
0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>					PE 0603121D8Z: <i>SO/LIC Advanced Development</i>							
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013[#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
Total Program Element	-	44.186	26.324	19.420	-	19.420	9.889	0.000	0.000	0.000	Continuing	Continuing
206: <i>Explosive Ordnance Disposal/Low-Intensity Conflict</i>	-	7.520	4.544	3.374	-	3.374	1.718	0.000	0.000	0.000	Continuing	Continuing
207: <i>Special Reconnaissance Capabilities</i>	-	20.461	12.239	8.963	-	8.963	4.564	0.000	0.000	0.000	Continuing	Continuing
208: <i>Information Dissemination Concepts</i>	-	3.175	1.919	1.425	-	1.425	0.725	0.000	0.000	0.000	Continuing	Continuing
209: <i>Irregular Warfare Support (IWS)</i>	-	13.030	7.622	5.658	-	5.658	2.882	0.000	0.000	0.000	Continuing	Continuing

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

P206, Explosive Ordnance Disposal/Low-Intensity Conflict (EOD/LIC). The EOD/LIC Program develops and delivers advanced capabilities for military Explosive Ordnance Disposal (EOD) operators and Special Operations Forces (SOF) to meet the challenges of improvised explosive devices (IEDs), force protection, and the war on terrorism. EOD/LIC efforts focus in two areas: support to SOF to combat terrorism; and access, detection, identification, and neutralization of all types of conventional explosive ordnance and improvised explosive devices. Requirements submitted by the Joint Service EOD and Service Special Operations communities are prioritized and approved by OASD (SO/LIC). With a decreased budget, CTTSO will proceed with The Improvised Device Defeat (IDD) subgroup expanding its inclusion of joint service EOD operators in its efforts since the Department's announcement to cancel PE 0603121D8Z. IDD will absorb the appropriate joint service EOD requirements for prioritization and interagency coordination going forward. IDD will use the limited resources it possesses to provide the broadest possible capability improvement to the community.

P207, Special Reconnaissance Capabilities (SRC). The SRC Program exploits, leverages, and integrates DoD's service and agency efforts to improve surveillance and reconnaissance tools (unattended sensors, tagging and tracking devices, data infiltration/exfiltration, remote delivery, and mobility/delivery of sensors), while providing risk reduction for DoD and other agency technology and development programs. The SRC Program identifies, integrates, and operationalizes the technical tools for the collection of actionable information against a variety of targets and mission requirements, including emerging requirements, and maintains DoD's on-line catalog of tools in order to minimize crisis response time for special reconnaissance and surveillance.

P208, Information Dissemination Concepts (IDC). The IDC Program addresses technology capabilities necessary to enable sustained information dissemination campaigns in denied areas. The IDC program, working as necessary with DoD and the interagency, develops, modifies, and demonstrates concepts, mechanisms, platforms and payloads to propagate themes and messages that convince target audiences to take action favorable to the United States and its allies. The

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY

0400: *Research, Development, Test & Evaluation, Defense-Wide*
BA 3: *Advanced Technology Development (ATD)*

R-1 ITEM NOMENCLATURE

PE 0603121D8Z: *SO/LIC Advanced Development*

Surveillance, Collection, and Operations Support (SCOS) subgroup has managed the IDC project for CTTSO since gaining oversight of the funding. The language program orchestrated by SCOS will remain, albeit with a drastic reduction in funding without PE 0603121D8Z.

P209, Irregular Warfare Support (IWS). The IWS Program (IWSP) develops adaptive and agile capabilities and methodologies to support irregular warfare in the current and evolving strategic environments. IWSP supports joint, interagency, and other partners who conduct or counter irregular warfare through indirect and asymmetric approaches, though they may employ a full range of military and other capabilities, in order to erode an adversary's power, influence, and will. Solutions include material and non-material operational analysis, concept development, field experimentation, and delivery of capabilities, to defeat the motivations, sanctuaries, and enterprises of targeted state and non-state actors. As evidenced by every applicable Defense and National Security strategy document, (e.g., 2012 Defense Strategic Guidance (DSG), "Sustaining U.S. Global Leadership: Priorities for 21st Century Defense, Irregular Warfare capabilities are vital to U.S. security. CTTSO, in coordination with the ASD (SO/LIC), is in the process of reviewing options to continue the IWS capability that is critical to the combating terrorism community.

B. Program Change Summary (\$ in Millions)	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total
Previous President's Budget	44.199	26.324	19.544	-	19.544
Current President's Budget	44.186	26.324	19.420	-	19.420
Total Adjustments	-0.013	0.000	-0.124	-	-0.124
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Other Adjustments	-0.013	-	-0.124	-	-0.124

Change Summary Explanation

The FY 2014 baseline budget was reduced due to fiscal constraints and higher priorities within the Department.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE				PROJECT			
0400: Research, Development, Test & Evaluation, Defense-Wide BA 3: Advanced Technology Development (ATD)					PE 0603121D8Z: SO/LIC Advanced Development				206: Explosive Ordnance Disposal/Low-Intensity Conflict			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
206: Explosive Ordnance Disposal/Low-Intensity Conflict	-	7.520	4.544	3.374	-	3.374	1.718	0.000	0.000	0.000	Continuing	Continuing
[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012												
^{##} The FY 2014 OCO Request will be submitted at a later date												
A. Mission Description and Budget Item Justification												
P206, Explosive Ordnance Disposal/Low-Intensity Conflict (EOD/LIC). The EOD/LIC Program develops and delivers advanced capabilities for military Explosive Ordnance Disposal (EOD) operators and Special Operations Forces (SOF) to meet the challenges of improvised explosive devices (IEDs), force protection, and the war on terrorism. EOD/LIC efforts focus in two areas: support to SOF to combat terrorism; and access, detection, identification, and neutralization of all types of conventional explosive ordnance and improvised explosive devices. Requirements submitted by the Joint Service EOD and Service Special Operations communities are prioritized and approved by OASD (SO/LIC). With a decreased budget, CTTSO will proceed with The Improvised Device Defeat (IDD) subgroup expanding its inclusion of joint service EOD operators in its efforts since the Department’s announcement to cancel PE 0603121D8Z. IDD will absorb the appropriate joint service EOD requirements for prioritization and interagency coordination going forward. IDD will use the limited resources it possesses to provide the broadest possible capability improvement to the community.												
B. Accomplishments/Planned Programs (\$ in Millions)										FY 2012	FY 2013	FY 2014
Title: Explosive Ordnance Disposal/Low-Intensity Conflict (EOD/LIC)										7.520	4.544	3.374
Description: P206, Explosive Ordnance Disposal/Low-Intensity Conflict (EOD/LIC). The EOD/LIC program develops and delivers advanced capabilities for military EOD operators and Special Operations Forces (SOF) to meet the challenges of improvised explosive devices (IEDs), force protection, and the war on terrorism. EOD/LIC efforts focus in two areas: support to SOF to combat terrorism; and access, detection, identification, and neutralization of all types of conventional explosive ordnance and improvised explosive devices. Requirements submitted by the Joint Service EOD and Service Special Operations communities are prioritized and approved by Office of the Assistant Secretary of Defense (OASD)(SO/LIC).												
FY 2012 Accomplishments:												
Efforts were focused on Countering Improvised Explosive Devices (C-IED) and Electronic Countermeasures (ECM). Evaluated and validated an electronic countermeasures system for suppression of radio frequencies of radio controlled improvised explosive devices without interrupting friendly and benign communications. Develop an electromagnetic, non-lethal capability to disrupt outboard engines of small craft. Developed a global database of commercially manufactured electro–explosive devices, beginning with electric detonators containing characteristics to assist with identification and vulnerability assessment for future research and development efforts. Developed a method to deliver explosive charges that are deployable by mobile platforms												

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense			DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>		R-1 ITEM NOMENCLATURE PE 0603121D8Z: <i>SO/LIC Advanced Development</i>		PROJECT 206: <i>Explosive Ordnance Disposal/Low-Intensity Conflict</i>	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2012	FY 2013	FY 2014
and established protocols for effectively neutralizing defined IED threats. Evaluated a lightweight, back-packable robot for use in counter improvised explosive device operations in austere locations.					
<i>FY 2013 Plans:</i> Efforts will focus on tools and equipment to enhance situational awareness and operational capability during incident response, render safe or direct action operations. Demonstrate a remote missile launch pod module to provide a precision engagement capability on unmanned surface vehicles or other small craft. Continue development of an electromagnetic, non-lethal capability to disrupt outboard engines of small craft. Design a compact, high-power next generation x-ray generator for EOD use. Develop common test standards and assessment methods for the full spectrum of EOD disruptors. Develop techniques and concept render safe tool(s) capable of achieving high order or low order disposal of insensitive high explosive (IHE) munitions. Develop small, directional antennas to improve gain and bandwidth and extend frequencies down into the UHF TACSAT and JTRS bands. Demonstrate a method to deliver explosive charges that are deployable by mobile platforms and protocols for effectively neutralizing defined IED threats. Develop a Smartphone application and distribution system for EOD and Public Safety Bomb Technicians that provides immediate on-site access to required technical and tactical information. Develop a suite of tools for Render Safe Procedures against underwater explosive devices. Develop a multi-purpose advanced tactical timer.					
<i>FY 2014 Plans:</i> Efforts will focus on tools and equipment to enhance situational awareness and operational capability during incident response, render safe or direct action operations. Demonstrate an electromagnetic, non-lethal capability to disrupt outboard engines of small craft. Evaluate a compact, high-power next generation x-ray generator for EOD use. Demonstrate techniques and concept render safe tool(s) capable of achieving high order or low order disposal of insensitive high explosive (IHE) munitions. Demonstrate small, directional antennas to improve gain and bandwidth and extend frequencies down into the UHF TACSAT and JTRS bands. Validate common test standards and assessment methods for the full spectrum of EOD disruptors. Demonstrate a Smartphone application and distribution system for EOD and Public Safety Bomb Technicians that provides immediate access to required technical and tactical information. Demonstrate a suite of tools for Render Safe Procedures against underwater explosive devices. Demonstrate and evaluate a multi- purpose advanced tactical timer.					
Accomplishments/Planned Programs Subtotals			7.520	4.544	3.374
C. Other Program Funding Summary (\$ in Millions) N/A					
Remarks					
D. Acquisition Strategy N/A					

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603121D8Z: <i>SO/LIC Advanced Development</i>	PROJECT 206: <i>Explosive Ordnance Disposal/Low-Intensity Conflict</i>
E. Performance Metrics N/A		

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE				PROJECT			
0400: Research, Development, Test & Evaluation, Defense-Wide BA 3: Advanced Technology Development (ATD)					PE 0603121D8Z: SO/LIC Advanced Development				207: Special Reconnaissance Capabilities			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
207: Special Reconnaissance Capabilities	-	20.461	12.239	8.963	-	8.963	4.564	0.000	0.000	0.000	Continuing	Continuing
[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012												
^{##} The FY 2014 OCO Request will be submitted at a later date												
A. Mission Description and Budget Item Justification												
Special Reconnaissance Capabilities (SRC). The SRC Program exploits, leverages, and integrates DoD’s service and agency efforts to improve surveillance and reconnaissance tools (unattended sensors, tagging and tracking devices, data infiltration/exfiltration, remote delivery, and mobility/delivery of sensors), while providing risk reduction for DoD and other agency technology and development programs. The SRC Program identifies, integrates, and operationalizes the technical tools for the collection of actionable information against a variety of targets and mission requirements, including emerging requirements , and maintains DoD’s on-line catalog of tools in order to minimize crisis response time for special reconnaissance and surveillance.												
B. Accomplishments/Planned Programs (\$ in Millions)										FY 2012	FY 2013	FY 2014
Title: SPECIAL RECONNAISSANCE CAPABILITIES (SRC).										20.461	12.239	8.963
Description: P207, Special Reconnaissance Capabilities (SRC). The primary objective of the SRC program is to seek out and identify technical tools for the collection of actionable data and information which will assist DoD in its execution of operations against violent extremist organizations. To accomplish this objective, the program leverages emerging and existing developmental technologies from government and commercial ventures and operationalizes them to meet near term reconnaissance and surveillance operational requirements. The operational tools transition unattended sensors, tagging devices, data transfer, remote delivery, and mobility/delivery of sensors into established Programs of Record throughout the DoD. The program evaluates new and existing technical surveillance technologies and incorporates results into a reference database for future access.												
FY 2012 Accomplishments:												
SRC continued to identify, develop, integrate, and field promising persistent intelligence, surveillance, and reconnaissance (ISR) advanced technologies and capabilities. High payoff technologies that have been researched and transitioned include: audio and optical technologies; improvement in flexibility and accuracy through integration of disparate technologies into single devices; ultra high speed data processing and transmission; next-generation nanotechnology/miniaturization; affordable Application Specific Integrated Circuit (ASIC) technology; low profile enhanced micro-optics; next-generation precision Hostile Forces Tagging, Tracking, and Locating capabilities; low profile, advanced material miniature antennas; placement and concealment of unattended ground sensors; and low power, high bandwidth data transmission sub-systems.												
FY 2013 Plans:												

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>		R-1 ITEM NOMENCLATURE PE 0603121D8Z: <i>SO/LIC Advanced Development</i>	PROJECT 207: <i>Special Reconnaissance Capabilities</i>
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
<p>Continue to identify, develop, integrate, and field promising persistent intelligence, surveillance, and reconnaissance (ISR) advanced technologies and capabilities. High payoff technologies that will be researched and transitioned include: audio and optical technologies; improvement in flexibility and accuracy through integration of disparate technologies into single devices; ultra high speed data processing and transmission; next-generation nanotechnology/miniaturization; affordable Application Specific Integrated Circuit (ASIC) technology; low profile enhanced micro-optics; next-generation precision Hostile Forces Tagging, Tracking, and Locating capabilities; low profile, advanced material miniature antennas; placement and concealment of unattended ground sensors; and low power, high bandwidth data transmission sub-systems.</p> <p><i>FY 2014 Plans:</i></p> <p>Continue to identify, develop, integrate, and field promising persistent intelligence, surveillance, and reconnaissance (ISR) advanced technologies and capabilities. High payoff technologies that will be researched and transitioned include: audio and optical technologies; improvement in flexibility and accuracy through integration of disparate technologies into single devices; ultra high speed data processing and transmission; next-generation nanotechnology/miniaturization; affordable Application Specific Integrated Circuit (ASIC) technology; low profile enhanced micro-optics; next-generation precision Hostile Forces Tagging, Tracking, and Locating capabilities; low profile, advanced material miniature antennas; placement and concealment of unattended ground sensors; and low power, high bandwidth data transmission sub-systems.</p>			
Accomplishments/Planned Programs Subtotals		20.461	12.239
C. Other Program Funding Summary (\$ in Millions)			
N/A			
Remarks			
D. Acquisition Strategy			
N/A			
E. Performance Metrics			
N/A			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 3: Advanced Technology Development (ATD)					R-1 ITEM NOMENCLATURE PE 0603121D8Z: SO/LIC Advanced Development				PROJECT 208: Information Dissemination Concepts			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
208: Information Dissemination Concepts	-	3.175	1.919	1.425	-	1.425	0.725	0.000	0.000	0.000	Continuing	Continuing

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

P208, Information Dissemination Concepts (IDC). The IDC Program addresses technology capabilities necessary to enable sustained information dissemination campaigns in denied areas. The IDC program, working as necessary with DoD and the interagency, develops, modifies, and demonstrates concepts, mechanisms, platforms and payloads to propagate themes and messages that convince target audiences to take action favorable to the United States and its allies. The Surveillance, Collection, and Operations Support (SCOS) subgroup has managed the IDC project for CTTSO since gaining oversight of the funding. The language program orchestrated by SCOS will remain, albeit with a drastic reduction in funding without PE 0603121D8Z.

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2012	FY 2013	FY 2014
Title: INFORMATION DISSEMINATION CONCEPTS	3.175	1.919	1.425
Description: Respond to emerging needs for advanced language solutions in the operational environment including data exploitation and analysis of information in languages other than English and technology to enhance language proficiency and cultural skills.			
FY 2012 Accomplishments: Enhanced language learning tools capabilities. Adapted and integrated existing foreign language applications, practices, and tools into a tactical site exploitation capability. Improved the timely collection of intelligence and evidence to support follow-on targeting, effective detainee prosecution, and theater-wide exploitation of tactical intelligence. Deployed capabilities to enrich language packet creation with a variety of media sources. Delivered a capability that supports the automated inbound and outbound integration of available video and audio sources. Developed novel approaches to query, track, and exploit multimedia from broadcast, radio, offline videos, and web sources.			
FY 2013 Plans: Develop tools that assist the military in foreign language training courses. Improve foreign language applications, practices, and tools that are deployed in theater. Expedite methods of collecting and analyzing media sources and evidence more efficiently and timely. Enhance triage capabilities to store, organize, and query multimedia acquired from various sources. Deploy automated technologies capable of ingesting and translating video and audio sources for analysts to effectively report intelligence findings.			
FY 2014 Plans:			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>		R-1 ITEM NOMENCLATURE PE 0603121D8Z: <i>SO/LIC Advanced Development</i>	PROJECT 208: <i>Information Dissemination Concepts</i>
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
Enhance cultural and language technologies for military educational purposes. Implement multilingual and multimedia technologies in support of language learning for operational deployment. Rapidly exploit speech from large volumes of sources in foreign languages. Deliver analytic and linguistic tools for operators. Field capabilities for collecting and analyzing media sources and evidence.			
Accomplishments/Planned Programs Subtotals		3.175	1.919
C. Other Program Funding Summary (\$ in Millions) N/A			
Remarks			
D. Acquisition Strategy N/A			
E. Performance Metrics N/A			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE				PROJECT			
0400: Research, Development, Test & Evaluation, Defense-Wide BA 3: Advanced Technology Development (ATD)					PE 0603121D8Z: SO/LIC Advanced Development				209: Irregular Warfare Support (IWS)			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
209: Irregular Warfare Support (IWS)	-	13.030	7.622	5.658	-	5.658	2.882	0.000	0.000	0.000	Continuing	Continuing
[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012												
^{##} The FY 2014 OCO Request will be submitted at a later date												
A. Mission Description and Budget Item Justification												
P209, Irregular Warfare Support (IWS). The IWS Program (IWSP) develops adaptive and agile capabilities and methodologies to support irregular warfare in the current and evolving strategic environments. IWSP supports joint, interagency, and other partners who conduct or counter irregular warfare through indirect and asymmetric approaches, though they may employ a full range of military and other capabilities, in order to erode an adversary’s power, influence, and will. Solutions include material and non-material operational analysis, concept development, field experimentation, and delivery of capabilities, to defeat the motivations, sanctuaries, and enterprises of targeted state and non-state actors. As evidenced by every applicable Defense and National Security strategy document, (e.g., 2012 Defense Strategic Guidance (DSG), “Sustaining U.S. Global Leadership: Priorities for 21st Century Defense, Irregular Warfare capabilities are vital to U.S. security. CTTSO, in coordination with the ASD (SO/LIC), is in the process of reviewing options to continue the IWS capability that is critical to the combating terrorism community.												
B. Accomplishments/Planned Programs (\$ in Millions)										FY 2012	FY 2013	FY 2014
Title: IRREGULAR WARFARE SUPPORT (IWS)										13.030	7.622	5.658
Description: P209, Irregular Warfare Support (IWS). The IWS Program (IWSP) develops adaptive and agile capabilities and methodologies to support irregular warfare in the current and evolving strategic environments. IWSP supports joint, interagency, and other partners who conduct or counter irregular warfare through indirect and asymmetric approaches, though they may employ a full range of military and other capabilities, in order to erode an adversary’s power, influence, and will. Solutions include material and non-material operational analysis, concept development, field experimentation, and delivery of capabilities, to defeat the motivations, sanctuaries, and enterprises of targeted state and non-state actors.												
FY 2012 Accomplishments:												
Initiated a critical training capability within a matter of months in response to “green on blue” attacks on ISAF personnel. Developed an Advanced Situational Awareness Capability that included instructor-led training and supporting publications for tactical unit leaders at the Maneuver Center of Excellence, Ft. Benning, GA. Modeled on the groundbreaking United States Marine Corps “Combat Hunter” program, this capability led to trained units achieving the highest IED discovery rates in the OEF theater and saving coalition lives. Expanded and enhanced Project LEGACY, significantly improving host-nation police counterinsurgency and military intelligence capabilities. Initiated a spiral effort of Legacy to institutionalize within U.S. Forces and the Interagency the capability developed by the Legacy Program to deliver police/military investigative training to host nation security forces. Expanded Project LOCHAN, increasing												

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013						
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603121D8Z: <i>SO/LIC Advanced Development</i>	PROJECT 209: <i>Irregular Warfare Support (IWS)</i>						
B. Accomplishments/Planned Programs (\$ in Millions)								
<p>Special Operations Forces (SOF), Interagency, and Partner Nation Irregular Warfare knowledge management, communications and C2 capability through rapid adaptation, experimentation and fielding of Commercial off the Shelf (COTS)/ Government off the Shelf (GOTS) software, hardware tools and novel concepts. Fielded a cross-platform communication capability known as MutualLink in support of International Security and Assistance Force (ISAF) and SOF, enabling any coalition or host-nation communication device to communicate in OEF and Jackal Stone (combined SOF exercises). Transitioned the MutualLink technology to end users as their standard cross-platform communications solution.</p> <p>Initiated Project HOPLITE, which prototyped Digital Joint Task Force capabilities for Theater Special Operations Commands (TSOCs) that enables sub-SIPR and BICES, unconstrained but highly secure operational collaboration for mission effect.</p> <p>Explored new concepts for non-standard aviation support to SOF in Irregular Warfare environments, to include low cost aviation support for small units in remote and austere environments. Developed and expanded a Countering Violent Extremism community of interest, resulting in three new R&D projects that will be initiated in FY13 that represent the mutual/overlapping research interests of disparate Interagency and DoD partners. Developed Enhanced Cultural Support Team training which will allow for development of capability and skill sets for female operators to better engage with indigenous populations in support of Village Stability Operations (VSO) and other missions as required. Researched and developed threat group assessments based on open source information that allows operators and decision makers to understand the threats associated within their various areas of operation globally and how these threat groups affect the global security of the US and its allies. Developed an effort that integrated and fused heterogeneous social media data for use in strategic and tactical operational planning and preparation of the battlefield in support of large international events. This effort provided real time data and analysis capability along with mentorship and training that allowed for end-users to understand and monitor critical events in open source social media.</p> <p>Initiated development of frameworks and training to better understand and implement Combatant Command (COCOM) level Communication Activities. Known as CERTAIN ECHO, this effort delivered Return on Investment Analytic Framework(s) for the COCOM VOICE Programs in order to provide quantifiable measurements of performance, measurements of effectiveness and methods of determining overall return on investment (ROI) of program dollars. Additionally, this effort developed and delivered training designed to equip decision makers and operators with the knowledge and skills necessary to properly utilize population data and avoid common traps and risks in order to assess and appropriately interpret the population research required in support of these Communications Activities.</p> <p>FY 2013 Plans:</p> <p>Continuing under IW Joint Operational Concept (JOC 2.0) and DODD 3000.07 on IW, the IWS Program will continue the research and development path in order to conduct operational analysis, concept design, and pilot-project experimentation efforts in support of 2010 QDR and current NSS/NSCT lines of engagements. Deploy training capability and transition a program of record a counter- "green on blue" capability for ISAF and U.S. forces to help warfighters detect and mitigate insider threat attacks in partner, COIN and contingency operations. Conduct research and analysis to assist in further development and enhancement</p>		<table border="1"> <thead> <tr> <th>FY 2012</th><th>FY 2013</th><th>FY 2014</th></tr> </thead> <tbody> <tr> <td></td><td></td><td></td></tr> </tbody> </table>	FY 2012	FY 2013	FY 2014			
FY 2012	FY 2013	FY 2014						

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603121D8Z: <i>SO/LIC Advanced Development</i>	PROJECT 209: <i>Irregular Warfare Support (IWS)</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
<p>of training capabilities aimed at preventing green on blue violence, a serious issue that undercuts efforts at training host nation security forces, one of the pillars of Irregular Warfare.</p> <p>Continue to support an Advanced Situational Awareness Capability that includes instructor-led training and supporting publications for tactical unit leaders at the Maneuver Center of Excellence, Ft. Benning, GA. This capability led to trained units achieving the highest IED discovery rates in the OEF theater and saving coalition lives.</p> <p>Continue to support Project LEGACY, significantly improving host-nation police counterinsurgency and military intelligence capabilities.</p> <p>Continue the spiral effort of Legacy was initiated to provide training that institutionalizes within U.S. Forces and the Interagency the capability developed by the Legacy Program to deliver police/military investigative training to host nation security forces.</p> <p>Assess relevance and applicability of specialized Security Force Assistance doctrine and operational approach for environments outside Operation Enduring Freedom. Continue to elicit and refine requirements for users within rapid assessment framework in order to successfully pair SOF and Interagency users with off the shelf, high performance technologies and novel capabilities that fulfill specific requirements to share and analyze operational data better and faster. Continue to develop analysis to pursue, prevent and deter conflict through analysis that supports U.S. diplomatic and development efforts to foster a range of governance efforts to counter radicalization, including working with civilian agencies on security assistance and police training programs.</p> <p>Continue to develop and conduct Enhanced Cultural Support Team training which allows female operators to better engage with indigenous populations in support of Village Stability Operations (VSO) and other missions as required. Continue research and development of threat group assessments based on open source information that allows operators and decision makers to understand the threats associated within their various areas of operation globally and how these threat groups affect the global security of the US and its allies. Continue to Develop and expand an effort that integrates and fuses heterogeneous social media data for use in strategic and tactical operational planning and preparation of the battlefield with new end users and different support environments. This effort provides real time data and analysis capability along with mentorship and training that provides end-users with a methodology and the necessary tools to understand and monitor critical events in open source social media.</p> <p>Continue to develop frameworks and training to better understand and implement Combatant Command (COCOM) level Communication Activities. Deliver Return on Investment Analytic Framework(s) for the COCOM VOICE Program in order to provide quantifiable measurements of performance, measurements of effectiveness and methods of determining overall return on investment (ROI) of program dollars. Additionally, this effort will deliver training designed to equip decision makers and operators with the knowledge and skills necessary to properly utilize population data and avoid common traps and risks in order to assess and appropriately interpret the population research required in support of these Communications Activities. Conduct deep-dive research and analysis aimed at defining today's and the near future's typology of adversaries, their capabilities, intentions, use of terrain, weapons, technologies, proliferation schemes, U.S. technology and operational advantages adversaries will work to offset, and what the U.S. should be looking for to be better prepared when it faces off with these types of threats. Assist with further development and understanding of the US Marine Corps concept of the Intelligence Driven Combat. Develop and test enhanced MISO/PSYOP capabilities in planning, targeting and execution for support to special and unconventional warfare</p>			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603121D8Z: <i>SO/LIC Advanced Development</i>	PROJECT 209: <i>Irregular Warfare Support (IWS)</i>
B. Accomplishments/Planned Programs (\$ in Millions)		
mission requirements. Explore the opportunities and challenges posed by advanced additive manufacturing technologies for U.S. efforts to combat terrorism and confront irregular threats. Research and develop enhanced mobile capabilities for assessing and surveying assault and landing zones to support small units conducting distributed operations in remote and austere environments (to include resupply/drop zones, refueling, and helicopter landing zones). Conduct research, development, operational analysis, and field experimentation of efforts intended to counter emerging and extant threats in the intersection of the digital-physical domains (such as understanding the usage of social media by transnational criminal organizations in order to predict changes in support and influence; measures of effectiveness of social media and understanding how to use this media for intended effects). Initiate the Secure Unclassified Network (SUNet), which will provide protected dynamic enclaves of capability for multi-agency users (TSOCs, Law Enforcement, Coalition, and Foreign Nationals) in order to provide inter-organizational collaborative areas and enhanced capabilities of data upload, searching and sharing from headquarters down to smartphones, tablets or laptops.		
FY 2014 Plans: Continue research and development of material and non-material solutions, promising capabilities, and continuation of project development, delivery, and transition to support the Department of Defense and Interagency Irregular Warfare mission. Research, design and spiral development of program to assist military commands in building host-nation intelligence capacity and capability to include the feasibility of migrating to other areas of operation the unique doctrine and lessons learned during support to Operation Iraqi Freedom and Operation Enduring Freedom (LEGACY). Deliver enhanced mobile capabilities for assessing and surveying assault and landing zones to support small units conducting distributed operations in remote and austere environments (to include resupply/drop zones, refueling, and helicopter landing zones). Deliver research, operational analysis, and field experimentation of multiple efforts intended to counter emerging and extant threats in the intersection of the digital-physical domains (e.g. understanding the usage of social media by transnational criminal organizations in order to predict changes in support and influence; measuring the of effectiveness of social media and understanding how to use this media for intended effects). Continue to develop and deliver Secure Unclassified Network (SUNet) which provides a unique virtualization of a single hardware suite of servers and software that will provide protected dynamic enclaves of capability for multi-agency users (TSOCs, Law Enforcement, Coalition, and Foreign Nationals). This effort enables an inter-organizational collaborative area and enhanced capabilities of data upload, searching and sharing from headquarters down to smartphones, tablets or laptops. Research, develop, test and evaluate material and non-material solutions that build and/or enhance Military Information Support Operations (MISO) forces' capabilities that are essential to unconventional warfare missions.		
Accomplishments/Planned Programs Subtotals		
C. Other Program Funding Summary (\$ in Millions)		
N/A		

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603121D8Z: <i>SO/LIC Advanced Development</i>	PROJECT 209: <i>Irregular Warfare Support (IWS)</i>
C. Other Program Funding Summary (\$ in Millions)		
Remarks		
D. Acquisition Strategy N/A		
E. Performance Metrics N/A		

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense	DATE: April 2013
-------------------------------------------------------------------------------------------------	-------------------------

APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE							
0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>					PE 0603122D8Z: <i>Combating Terrorism Technology Support</i>							
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
Total Program Element	-	74.563	77.144	77.792	-	77.792	79.323	81.924	83.264	84.879	Continuing	Continuing
484: <i>Combating Terrorism Technology Support (CTTS)</i>	-	74.563	77.144	77.792	-	77.792	79.323	81.924	83.264	84.879	Continuing	Continuing

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

The Combating Terrorism Technical Support (CTTS) program developed and delivered capabilities that addressed needs and requirements with direct operational application in the national effort to combat terrorism. Projects are distributed among 9 mission categories: Advanced Analytics and Capabilities, Chemical, Biological, Radiological, Nuclear, and Explosives; Improvised Device Defeat; Investigative Support and Forensics; Personnel Protection, Physical Security; Surveillance, Collection, and Operations Support; Tactical Operations Support; and Training Technology Development. This program is a diverse, advanced technology development effort that capitalizes on interagency and international participation to demonstrate the utility or effectiveness of technology when applied to combating terrorism requirements. It includes technology capability development, proof-of-principle demonstrations in field applications, and coordination to transition from development to operational use. CTTS manages approximately 450 individual projects in support of Defense, federal, state, local, and international customers and partners.

For the Department of Defense, CTTS focused on requirements that support military forces in demanding or hostile environments in Afghanistan, Yemen, Africa, the Philippines, and Colombia; by rapidly developing and delivering leading edge products such as tactical sensors and unmanned vehicles, personal and physical protection, user friendly apps for analytical tools and reference guides, and weapons, sights, and ammo modifications. Several of the highly successful products include Legacy human source information programs in Afghanistan and Mexico, the Lighthouse and PALANTIR information collection and analysis systems, the Enhanced Mortar Targeting System (EMTAS), and Insider Threat Situation Awareness Training.

For U.S. federal, state and local law enforcement and first responders, CTTS improved personal protection equipment for chemical, biological, radiological, nuclear, and high explosive protection; as well as developed apps for interactive reference data to assist in identifying and neutralizing threat agents in the field and in laboratories. CTTS also hosted interagency and foreign partner information exchange seminars and capability exercises to share and enhance response techniques and procedures for first responders.

FY14 plans for CTTS will continue to address combating terrorism requirements from Defense, federal, state, local, and international customers and partners at home and abroad. As U.S. forces are withdrawn from Afghanistan, CTTS will continue to address force protection needs for the remaining forces, as well as develop releasable technology solutions that may assist Afghan security forces. Additionally, CTTS will address technology requirements requested from USSOCOM's field components as they begin to increase their regional operations tempo in other parts of the world. Special emphasis will be for the Theater SOF in Africa and to support Theater SOF in the Pacific in support of the National Strategy to shift focus towards the Pacific. Another areas of increased emphasis will be in the protection

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense	DATE: April 2013
-------------------------------------------------------------------------------------------------	-------------------------

APPROPRIATION/BUDGET ACTIVITY

0400: *Research, Development, Test & Evaluation, Defense-Wide*
 BA 3: *Advanced Technology Development (ATD)*

R-1 ITEM NOMENCLATURE

PE 0603122D8Z: *Combating Terrorism Technology Support*

of U.S. personnel, to include State Department personnel in locations overseas that need increased security. CTTS will also address technology and advanced analytical analysis requirements that will enhance Customs and Border Patrol along the U.S. Southwest Border; and will partner with Homeland Security as they identify requirements that will proactively address improvised explosive devices in a domestic environment.

B. Program Change Summary (\$ in Millions)	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total
Previous President's Budget	74.586	77.144	78.291	-	78.291
Current President's Budget	74.563	77.144	77.792	-	77.792
Total Adjustments	-0.023	0.000	-0.499	-	-0.499
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Other Adjustments	-0.023	-	-0.499	-	-0.499

Change Summary Explanation

The FY 2014 baseline budget was reduced due to fiscal constraints and higher priorities within the Department.

C. Accomplishments/Planned Programs (\$ in Millions)

	FY 2012	FY 2013	FY 2014
Title: Advanced Analytic Capabilities (AAC)	3.660	5.196	5.200
Description: The AAC's Subgroup objective is to become an integral part in the development and deployment of integrated analytic capabilities that enable Warfighters to make better decisions. AAC is developing tools that will assist with interagency requirements to improve sense-making, decision-making, and data management for counterterrorism, counterinsurgency, stabilization/re-construction missions and cyber-defense.			
FY 2012 Accomplishments: Delivered the results of an independent capability assessment of an operational integrated fusion and analysis platform that enables analysts and operators to store, organize, access, retrieve and analyze massive amounts of intelligence information from disparate data sets. Integrated a knowledge discovery tool with geospatial data extraction and viewing capabilities into operational platforms to support intelligence analysis and operational decision making. Continued ongoing spiral development of integrated analytic platforms to enhance analysis of diverse and disparate data sources to support near real-time decision making for specific operational applications. Independently tested and verified the advanced secure industrial control system. Developed an advanced audit tool to determine over network or serial communications the security configuration settings on field devices			

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>		R-1 ITEM NOMENCLATURE PE 0603122D8Z: <i>Combating Terrorism Technology Support</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
<p>in industrial control systems. Initiated the development of a multi-intelligence data fusion and analysis capability for automated behavior and activity identification and exploitation. Initiated the development of a proof of concept for data and network analysis workbench for rapid analysis and understanding of collections of intelligence reports and real-time generation of alarms and warnings for suspicious activity based on incoming streams of surveillance and intelligence data. Initiated the development on multi-model analysis using Model Predictive Controllers to make better decisions and establish measures of effectiveness.</p> <p>FY 2013 Plans: Develop an enhanced integrated analytic platform that enables analysis of diverse and disparate data sources to support near real-time decision making, support new operational applications, and geographic locations. Develop and deliver an advanced audit tool to determine over the network or serial communications for the security configuration settings on field devices in industrial control systems. Develop and deliver an initial version of prototype software that enables fusion of imagery and text-based data for patterns of life analysis. Independently test and verify a proof of concept data and network analysis workbench for rapid analysis and understanding of collections of intelligence reports and real-time generation of alarms and warnings for suspicious activity based on incoming streams of surveillance and intelligence data. Continue development for multi-model analyses using Model Predictive Controllers that provide better decisions and establish measures of effectiveness. Initiate the development of an enhanced Critical Thinking Tool that will support the application of evidence-based reasoning to intelligence questions and capture analytic problem-solving approaches. Initiate development of a program that will provide the commander/executive decision maker with information in both real-world and exercise scenarios within the joint, interagency, intergovernmental, and multinational organizations (JIIM) environment.</p> <p>FY 2014 Plans: Complete the development and transition of an integrated analytic platform that enables analysis of diverse and disparate data sources to support near real-time decision making to support new operational applications and geographic locations to major commands. Continue development and deliver an independently tested and verified proof of concept data and network analysis workbench for rapid analysis and understanding of collections of intelligence reports and real-time generation of alarms and warnings for suspicious activity based on incoming streams of surveillance and intelligence data. Deliver a multi-model analyses tool using Model Predictive Controllers to make better decisions and establish measures of effectiveness. Deliver a refined Critical Thinking Tool that will support the application of evidence-based reasoning to intelligence questions and capture analytic problem-solving approaches. Continue development on a program that will inform commander/executive decision making in both real-world and exercise scenarios within the joint, interagency, intergovernmental, and multinational organizations (JIIM) environment.</p>				
Title: CHEMICAL, BIOLOGICAL, RADIOLOGICAL, NUCLEAR, AND EXPLOSIVES (CBRNE)		13.651	14.556	14.600
Description: The CBRNE subgroup's objective is to improve defense capabilities to meet tomorrow's CBRNE threats. To meet this objective, the subgroup focuses on rapid research, development, test and evaluation on threat characterization; materials				

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>		R-1 ITEM NOMENCLATURE PE 0603122D8Z: <i>Combating Terrorism Technology Support</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
<p>attribution; personal protective equipment; detection of CBRNE materials at trace and bulk levels at point, proximity and stand-off distances; development of information resources and decision support tools to assist response elements with risk-based decision making; and consequence management for post-event activities.</p> <p>FY 2012 Accomplishments: Developed a flexible powered air purifying respirator system for CBRN environments. Developed a protective mask for CBRN environments. Developed enhanced testing procedures that are used to evaluate protective ensembles. Performed heat stress studies on new CBRN protective ensembles. Tested, evaluated, and certified inconspicuous protective garments against evolving threats. Developed and tested protective ensembles that will provide enhanced CBRN protection in tactical environments. Continued developing noise cancelling technology that enhances communication for a person wearing a self contained breathing apparatus in a CBRN environment. Continued development and evaluation of a water desalination filter for military field survival situations. Developed and evaluated tools for the decontamination of infrastructure, personnel, and equipment. Tested and evaluated new materials for field decontamination methods with reduced logistical burden. Continued development of an orthogonal system for the detection and identification of trace levels of toxic industrial chemicals. Continued evaluation of a person portable mass spectrometer with gas chromatograph inlet for the rapid detection and identification of target chemicals. Developed methods for determining the origin of CBRN materials. Evaluated potential methods of production of threat materials and identified key indicators and warnings for response personnel. Developed an enhanced cosmic ray attenuation capability for the detection of special nuclear materials. Continued development with the incorporation of unique explosive spectra into a prototype detection system. Fabricated a prototype orthogonal sensor standoff system. Continued development of systems for sub-millimeter wave imaging of personnel for explosive detection. Continued the fabrication and assessment of prototype expeditionary wet chemical kits for explosives precursor detection. Developed and fielded an explosives detection technologies evaluation guide.</p> <p>FY 2013 Plans: Evaluate a flexible powered air purifying respirator system for CBRN environments. Evaluate and test a protective mask for CBRN environments. Continue testing protective ensembles that provide enhanced CBRN protection in tactical environments. Complete evaluation of noise cancelling technology that enhances communication for a person wearing a self contained breathing apparatus in a CBRN environment. Develop and test an enhanced water filter for military field survival situations. Develop next generation CB glove. Develop enhanced testing procedures for the evaluation of protective ensembles. Evaluate tools for the decontamination of infrastructure, personnel, and equipment. Evaluate and test an orthogonal system for the detection and identification of trace levels of toxic industrial chemicals. Evaluate and test a person portable mass spectrometer with gas chromatograph inlet for the rapid detection and identification of target chemicals. Develop gas chromatograph mass spectrometer quality control field methods. Continue development of methods for determining the origin of CBRN materials. Evaluate potential methods of production of threat materials, and identify key indicators and warnings for response personnel. Develop methods</p>				

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>		R-1 ITEM NOMENCLATURE PE 0603122D8Z: <i>Combating Terrorism Technology Support</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
<p>for the evaluation of CBRN contaminated evidence. Develop decision support tools to provide science-based risk analysis for emergency personnel in the selection of appropriate protective equipment, decontamination techniques, evacuation zones and other data-driven decisions. Develop a miniature hand-portable mass spectrometer for the detection of chemical and explosive threats. Evaluate cosmic ray attenuation capability for the detection of special nuclear materials. Develop explosives detection technology for monitoring cargo containers. Develop training packages for deployed personnel that use explosive detection equipment. Continue testing a prototype of an orthogonal sensor standoff system. Fabricate and test sub-millimeter wave imaging of personnel for explosive detection. Continue assessment of prototype expeditionary wet chemical kits for homemade explosives detection. Develop a portable system to quickly screen personnel for explosive threats at temporary venues. Develop an optimized sampling media for the collection of bulk explosive materials. Develop colorimetric fabrics for the detection of bulk explosive materials. Develop a system capable of identifying materials through containers.</p> <p>FY 2014 Plans:</p> <p>Develop advanced analytical tools for the analysis of chemical and biological agent production methods. Evaluate next generation systems for respiratory protection. Develop decision support tools for providing medical information and advice in hostile environments. Evaluate enhanced testing procedures for the evaluation of protective ensembles. Develop tools for the identification of protective equipment failures. Continue development of gas chromatograph mass spectrometer quality control field methods. Continue development of a portable system to quickly screen personnel for explosive threats at temporary venues. Evaluate an optimized sampling media for the collection of bulk explosive materials. Test and evaluate colorimetric fabrics for the detection of bulk explosive materials. Continue development and test a system capable of identifying materials through containers. Develop next generation sensors for use in trace, bulk, proximity and stand-off detection of explosives-based threats. Develop tools to assist in disaster victim identification. Develop tools for identification of and protection from CBR hazards in the postmortem environment. Develop a portable glove box suitable for working with CBRN materials in field operations. Develop enhanced sampling materials and systems for CBRNE threats.</p>				
<p>Title: IMPROVISED DEVICE DEFEAT (IDD)</p> <p>Description: The IDD Subgroup's objective is to provide rapid prototyping, capability development and delivery of advanced technologies, tools, and information to improve the operational capabilities of federal, state, and local bomb squads and the U.S. military Explosive Ordnance Disposal (EOD) community to defeat and neutralize the full spectrum of terrorist explosive devices. In collaboration with military, federal, state, and local agencies, the IDD Subgroup identifies and prioritizes multi-agency user requirements through joint working groups and then actively works with vendors and end users to deliver an advanced prototype systems that provide more efficiency and a greater degree of safety for bomb Technicians to investigate, access, evaluate and if needed renders safe or dispose of suspect devices whether emplaced, person borne, vehicle borne or water borne.</p> <p>FY 2012 Accomplishments:</p>		4.252	3.967	4.000

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>		R-1 ITEM NOMENCLATURE PE 0603122D8Z: <i>Combating Terrorism Technology Support</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
<p>In accordance with the HSPD 19 - Combating Terrorist Use of Explosives in the United States and the National Strategic Plan for Bomb Squads, the IDD subgroup Delivered and evaluated the Body Bomb Tool Kit to robotically counter person borne IED's. Updated and delivered version two of the IED Tool Characterization Guide allowing for a decision support tool for Bomb squads. Delivered, operationally tested and commercialized the VBIED Tool Kit to aid in the access and defeat of VBIED's. Developed a Bomb Technician Wikipedia for sharing of bomb technician and EOD related information. Developed a video enhancement module for robot cameras allowing a clearer picture in low lighted areas. Completed development and commercialized the Scalable Improvised Device Disruptor to counter VBIED. Developed an IED Instant Notification System Application to provide real time incident notification that will 'Spread the word' between FBI, ATF and Civil and military bomb technicians on device makeup. Characterized common disruptors against homemade explosives (HME). Developed robotically employed forensic collection tools for explosives and other hazardous materials. Develop a VBIED Threat Assessment System to assist in locating unknown hazards in vehicles. Developed improved end effectors for remote controlled vehicles. Delivered an Advanced Diver Display System prototype. Delivered a diver mask-mounted display systems for underwater MCM operations. Delivered and commercialized a VBIED Precision X-ray Targeting Tool Kit to aid in three dimensional imaging and precise targeting of internal IED components used in render safe techniques. Delivered, evaluated, and commercialized the camera blinding system for Special Operations. Delivered and evaluated affordable robust mid-sized unmanned ground vehicles (UGV) for defense and homeland security applications.</p> <p>FY 2013 Plans:</p> <p>To assist in supporting HSPD 19 - Combating Terrorist Use of Explosives in the United States and the National Strategic Plan for Bomb Squads, the IDD subgroup will finalize drawings and commercialize the robotically employed Body Bomb Tool Kit to assist in rendering person born IED's safe. Deliver and evaluate the Bomb Technician Wikipedia to for sharing of Bomb Technician and EOD related information. Evaluate the video enhancement module for robot cameras. Characterize the Scalable Improvised Device Disruptor to counter VBIED. Develop a submersible remotely operated vehicle to counter water borne IEDs. Develop, deliver and evaluate a VBIED threat assessment system. Test and evaluate the forensic collection tools to gather possible DNA and fingerprints on suspect devices before other dynamic procedures are utilized destroying evidence and intelligence on IED's. Miniaturize the IED Diagnostic and Defeat Kit for dismounted operations in Afghanistan and along the southwest border. Develop a remote wire cutting tool that will increase safe separation from command or detonator wires being cut. Develop a remote window breaking tool to ensure breakage of improved safety glass to access VBIED.</p> <p>FY 2014 Plans:</p> <p>To support HSPD 19 - Combating Terrorist Use of Explosives in the United States and the National Strategic Plan for Bomb Squads, Implement online application of the Bomb Technician Wikipedia for sharing of Bomb Technician and EOD related information. Deliver and evaluate a submersible remotely operated vehicle to counter water borne IEDs. Evaluate a robotically deployed three dimensional scanner to image large vehicle cargo areas. Evaluate a low cost disposable remote firing device for special operations use. Commercialize a VBIED threat assessment system. Commercialize the forensic collection tools for</p>				

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>		R-1 ITEM NOMENCLATURE PE 0603122D8Z: <i>Combating Terrorism Technology Support</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
explosives and other hazardous materials. Deliver and evaluate the Mini IED Diagnostic and Defeat Kit for dismounted operations such as in Afghanistan and along the southwest border. Deliver and evaluate a remote wire cutting tool that will increase safe separation from command or detonator wires being cut. Evaluate a remote window breaking tool to ensure breakage of improved safety glass to access VBIED. Develop Robotic End Effectors for the Bob Cat to access and counter large VBIED.				
Title: INVESTIGATIVE SUPPORT AND FORENSICS (ISF) Description: The ISF subgroup's objective is to advance combating terrorism capabilities in investigative and forensic science. ISF supports joint, interagency, and other partners who apply investigative and forensic science methods, means, or practices for forensic intelligence or investigations. To meet this objective, the subgroup focuses on rapid research, development, test and evaluation of new and advanced technology, equipment, forensic techniques, and tools, as well as development of information resources and decision support tools for risk-based decision making and rapid exploitation of evidence. Projects emphasize rapid and field DNA analysis, identification of insider threat within agencies, pre and post-blast forensic examination, electronic evidence data acquisition, sensitive site exploitation, forensic intelligence, and criminalistics. FY 2012 Accomplishments: Established an online forensic digital video player examination site that is accessible and usable by all law enforcement agencies. Developed advanced techniques for more accurate and efficient credibility assessments of subjects through thermal imaging of the face. Completed and disseminated the results of a comprehensive evaluation on the accuracy and functionality of automated facial expression recognition for credibility assessment. Distributed to all US law enforcement agencies an updated, advanced version of a system for witness identification of the makes and models of automobiles involved in terrorist incidents. Established and fielded a new forensic procedure for the detection and verification of altered and tampered terrorist related digital audio records. Completed the development and fielding of a combating terrorism geographic area economic data source tool. Developed and distributed a more accurate and quicker system for credibility assessment through facial expression recognition. FY 2013 Plans: Complete development and field an automated digital communication analysis system that determines persons who are potential insider threats. Develop and distribute an advanced procedure to separate complex DNA mixtures and provide individual identification of each source. Develop and field a new technology to locate, extract, and forensically analyze latent visual images from printer ribbons. Complete development of an automated system to extract and categorize data stored on memory components of damaged electronic equipment. Develop and field a comprehensive method and database to identify and link the origin of materials from homemade explosives. Complete the development of a catalyst based technique for visualizing latent fingerprints. Test and evaluate commercially available rapid DNA systems for adaption to combating terrorism operations. Develop a portable USB-powered instrument with low cost microchips to detect explosive materials and residues. FY 2014 Plans:		4.575	4.229	4.250

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>		R-1 ITEM NOMENCLATURE PE 0603122D8Z: <i>Combating Terrorism Technology Support</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
Complete and validate a forensic technique to visualize latent fingerprints and concurrently recover explosive residues from them. Develop and field a portable three-dimensional identification system for fired cartridge casings. Establish a forensic counterfeit identity and travel document examination system and link-analysis database. Develop a systematic procedure for comprehensive forensic analysis and comparison of ink on questioned documents. Complete and field a stand-off portable scanner that detects disturbed ground for locating human remains, forensic evidence, and IEDs. Develop a field-deployable prototype system for the automated processing of human DNA profiles using analysis of short tandem repeat loci. Develop advanced methods for the analysis of digital communications, visual, verbal, and behavioral cues for the determination of insider threats. Develop advanced interviewing and interrogation methods for human intelligence collection in both law enforcement and tactical intelligence environments. Develop advanced and improved methods for linguistic analysis for credibility assessment and determination of intent. Develop a micro-fluidic portable analytical device based on paper that rapidly detects a wide range of organic explosives. Develop and validate a non-traditional latent fingerprint detection method based on novel antibodies and nano-technology approaches.				
Title: PERSONNEL PROTECTION		8.457	7.004	7.100
Description: The Personnel Protection Subgroup's objective is to develop new equipment, reference tools, and standards to improve the protection of personnel. Projects focus on putting innovative tools such as automated information management systems, communication devices, tagging, tracking and locating devices, mobile surveillance systems, as well as personal and vehicle protection equipment in the hands of personnel.				
FY 2012 Accomplishments: Validated the performance of multi-threat concealable body armor and delivered systems for operational evaluation. Deployed the protective services portal training system at federal law enforcement training centers and deployed the standalone protective services portal. Delivered the canine armor system for operational evaluation with local law enforcement. Developed and delivered a prototype emergency egress system for use in armored vehicles. Delivered a new test rig for the evaluation of behind armor blunt trauma for body armor systems. Tested a novel biofidelic headform for the blast environment to use as a tool to evaluate head protection systems. Delivered inconspicuous vehicle armor kits for operational use. Developed guidelines for tuning anthropomorphic test devices for the blast environment. Developed and delivered a mass alert capability that is an application that runs on a smart phone and provides bidirectional communication and situational awareness. Tested and validated the emergency response capabilities of alternative fuel vehicles. Developed systems to enhance situational awareness, intelligence collection capabilities, and personnel recovery efforts. Evaluated the performance of aged body armor systems to develop guidelines for use and lifetime of body armor systems. Optimized and ruggedized a micro unmanned aerial system for situational awareness enhancement.				
FY 2013 Plans:				

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>		R-1 ITEM NOMENCLATURE PE 0603122D8Z: <i>Combating Terrorism Technology Support</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
<p>Deploy systems to enhance situational awareness, intelligence collection capabilities, and personnel recovery efforts. Develop a multifunctional earpiece that provides in ear hearing protection as well the ability to collect pressure and acceleration data during blast or blunt impact events. Deliver an analysis on the performance of alternative fuel vehicles and their ability to perform emergency operations and recommendations on the use for law enforcement. Design a personal cooling system that can be integrated for use with the current improved outer tactical vest. Develop a whole body deformation tool and analysis for the development of protective solutions for vehicles, ships, and buildings. Design and deliver a novel vehicle armor solution to be deployed on alternative fuel vehicles. Design a tethered aerial platform that is capable of providing enhanced situational awareness and communication capabilities. Deliver an optimized anthropomorphic test device for blast testing and the test evaluation community. Develop and deliver a portable system for vehicle protection in crowds. Test and evaluate a novel biofidelic headform for use in blast testing as a tool to evaluate the performance of head protection. Develop and deliver a mobile surveillance platform that captures, records, encrypts, and streams multi-channel video and audio with associated GPS position information. Design a capability that activates a vehicle tracking, tagging, and locating device upon detection of a blast.</p> <p>FY 2014 Plans:</p> <p>Complete the development of the novel biofidelic headform for blast testing and deliver for test and evaluation of head protection systems. Deliver a multifunctional earpiece that provides in ear hearing protection and the ability to record pressure and acceleration data during blast and blunt impact events. Deploy the mobile surveillance platform to gain situational awareness from moving platforms and man-portable assets. Deliver a personal cooling system for deployment under the improved outer tactical vest. Test and validate the performance of a tethered aerial platform for enhanced situational awareness and communication capabilities. Develop a truly concealable armor system that provides rifle threat protection. Integrate a new tagging, tracking and locating device with an existing back end processing system for enhanced situational awareness and tracking capabilities. Develop a three dimensional personnel tracking and locating system for use within structures. Analyze the performance of hybrid and fuel efficient vehicles that are armored to determine their feasibility for protection operations. Develop a capability for local data storage of maps for operational use in austere environments.</p>				
<p>Title: PHYSICAL SECURITY</p> <p>Description: Develop capabilities to address vulnerabilities associated with forward deployed and domestic U.S. Government facilities and interests, as well as for local responder and interagency requirements while emphasizing rapidly transitioning capabilities to the user.</p> <p>Maximize efficiencies by leveraging relationships and resources across the community of interest while eliminating duplication of projects, pursuing the use of commercial off-the-shelf (COTS) products, ensuring systems integration, and promoting interoperability and sustainability.</p> <p>Posture the Subgroup to address emerging requirements as the Nation pursues new partnerships and as global counter terrorism efforts become more widely distributed, and are characterized by a mix of direct action and security force assistance.</p>		10.676	8.855	9.150

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>		R-1 ITEM NOMENCLATURE PE 0603122D8Z: <i>Combating Terrorism Technology Support</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
Focus efforts along the U.S. borders, at mass transportation and commerce nodes, and in support of large scale public gatherings.				
<p><i>FY 2012 Accomplishments:</i></p> <p>Coordinated test program results to determine best solutions for temporary, semi-permanent, or permanent facilities and deployed decision aids to assist with pre-event, preventative planning. Coordinated design standards with appropriate government agencies for increased force protection. Continued development of an ongoing test program in an urban environment to include novel explosives. Completed the development and deployed tactical and integrated security system concepts. Developed a comprehensive homemade explosives database with multiple levels of access. Demonstrated and delivered a system that provides enhanced night vision capabilities to austere outposts. Provided advanced physical security technologies for operational assessments, field training, and operational support that satisfy requirements in support of deployed forces and interagency operational requirements. Continued development of a rocket detection system that provides warning time sufficient to find cover. Continued development of an on-the-move IED detection capability. Initiated development of a swimmer detection technology based on an electro-optical sensor. Continued development of a next generation Short Wave Infrared (SWIR) capability for use in tactical environments.</p> <p><i>FY 2013 Plans:</i></p> <p>Continue development of a test program in an urban environment using modular configurations to represent urban environments to better understand the impact of fixed urban structures on blast wave propagation for conventional explosives and enhanced novel explosive mixtures. Develop a fast running computational tool to assist DoD and first responder personnel in predictive blast analysis in an urban environment. Develop enhanced video assessment and tracking techniques. Conduct user evaluation of a comprehensive homemade explosives database with multiple levels of access. Operationally test and evaluate a next generation Short Wave Infrared (SWIR) capability for use in tactical environments. Complete construction of an integrated test facility for technology demonstrations and pre-operational testing. Develop and field test a portable persistent surveillance system for covert emplacement and enhanced tracking of suspicious activity. Complete development and transition a security system that contains a camera observation system and a sensor alarm system coupled in an integrated package for concealable installation. Globally support site security implementation and execution and large scale events/large scale public gatherings. Deliver and evaluate a system for detection of rocket attacks. Develop an integrated biometrics solution for deployment in uncontrolled pedestrian traffic scenarios. Continue development of a swimmer detection technology based on an electro-optical sensor. Evaluate a technology demonstrator for on-the-move, standoff IED detection. Evaluate a technology demonstrator for standoff underground void and tunnel detection. Complete development of interagency agreement on protocols as related to safety, testing, measurement and scale-up standards for improvised and homemade explosives.</p> <p><i>FY 2014 Plans:</i></p>				

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>		R-1 ITEM NOMENCLATURE PE 0603122D8Z: <i>Combating Terrorism Technology Support</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
Develop capabilities to address vulnerabilities associated with forward deployed and domestic U.S. Government facilities and interests, as well as for local responder and interagency requirements with a focus of effort along the U.S. borders, at mass transportation and commerce nodes, and in support of large scale public gatherings. Develop technologies for: Tunnel Detection; Video Analytics; Intelligent Sensor Fusion; Simplified Integrated Interface systems; and uncontrolled pedestrian traffic integrated biometrics solutions. Develop a rapidly deployable, non-lethal, temporary barrier system to protect fixed and expeditionary facilities for augmented protection in response to increased threat levels or to support special events. Develop a tool for an absolute understanding of TNT equivalency that will provide operational forces necessary information for protecting personnel and infrastructure. Continue testing explosives effects in an urban environment and provide data/test results required by first responders and military engineers. Complete development of novel explosive characterization and provide test results. Evaluate a swimmer/small vessel detection technology based on Electro Optical sensors to provide situational awareness for port security and open water operations. Emphasize rapidly transitioning capabilities to the user communities.				
Title: SURVEILLANCE, COLLECTION AND OPERATIONS SUPPORT		14.457	15.447	15.492
Description: Identify high-priority user requirements and special technology initiatives focused primarily on countering terrorism through offensive operations. Enhance US intelligence capabilities to conduct retaliatory or preemptive operations and reduce the capabilities and support available to terrorists.				
FY 2012 Accomplishments: Adapted and integrated existing foreign language applications, practices, and tools into a tactical site exploitation capability. Improved the timely collection of intelligence and evidence to support follow-on targeting, effective detainee prosecution, and theatre-wide exploitation of tactical intelligence. Enhanced the capability to identify targets through biometric modalities. Streamlined the processes of data collection, sharing, identity management, mobile identification, and detection of targets of interest. Developed enhanced capabilities, force structures, and training programs to leverage Information Operations capabilities. Provided canine Homemade Explosive (HME) detection capabilities.				
FY 2013 Plans: Develop and deliver field technical surveillance capabilities. Develop and improve operational tactics, techniques, and procedures used by military working dog teams. Complete the development and deploy expeditious foreign language analytical tools in support of tactical exploitation. Continue development and enhance research and technology to assist analysts with biometric intelligence and reporting. Develop advanced Information Operations applications, practices, and tools. Evaluate methods of improving intelligence, surveillance, and reconnaissance technologies in Unmanned Aerial Systems. Expand canine Homemade Explosive (HME) detection capabilities. Develop cyber-related tools for the timely collection of intelligence and evidence to support follow-on targeting, effective detainee prosecution, and theatre-wide exploitation of tactical intelligence.				
FY 2014 Plans:				

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>		R-1 ITEM NOMENCLATURE PE 0603122D8Z: <i>Combating Terrorism Technology Support</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
Continue to develop and enhance technical surveillance capabilities. Continue to improve military working dog scent kits for training and operational tactics, techniques, and procedures. Develop a method to integrate foreign language analytical tools into agile workflow platforms and media monitoring systems. Develop capabilities, force structure, and training programs to leverage information operations and technical site exploitation efforts. Utilize Unmanned Aerial Vehicles platforms as novel communication relay nodes. Enhance cyber-related capabilities in support of tactical intelligence.				
Title: TACTICAL OPERATIONS SUPPORT		9.985	12.043	12.100
<p>Description: The Tactical Operations Support subgroup mission is to identify, prioritize, and execute rapid research and development projects that enhance the capabilities of DoD and Interagency special operations tactical teams engaged in finding, fixing, and finishing terrorists. This includes support to state and local law enforcement agencies to combat domestic terrorism. The development focus is enabling small units of dominance by providing state of the art overmatch capacities in: Communication Systems; Intelligence, Surveillance, Target Acquisition, and Reconnaissance Systems (ISTARS); Offensive Systems; Specialized Access Systems; Survivability Systems; Unconventional Warfare /Counter-Insurgency.</p> <p>FY 2012 Accomplishments:</p> <p>Initiated and completed development of a low-cost cellular tracking device for use in Hostile Force Tagging, Tracking and Locating. Initiated and completed development of a reporting and dissemination system for use on commercial mobile devices to increase situational awareness. Initiated and delivered an offensive tactical cyber program of instruction. Initiated and completed a lightweight micro tactical ground robot with high maneuverability in order to climb complex obstacles for visual and acoustic surveillance and reconnaissance missions. Initiated and completed a mobile mortar targeting systems with an integrated Fire Control System that provides rapid and accurate indirect fire solutions for 81mm mortar systems using legacy U.S. standard mortars and ammunition. Completed development of a comprehensive reference source to summarize the performance characteristics of the available and proven breaching methods, tools, and tactics as they apply in a maritime environment. Completed development of a fully integrated helmet for law enforcement using advanced materials that are capable of withstanding NIJ Level IIIA body armor ballistic threats as well as bodily damage against blast, fragmentation, and blunt force trauma. Developed and delivered low visibility plain clothes audio video collection and recording system.</p> <p>Developed and delivered a lightweight, compact personal infrared emitter capability for viewing with thermal sensors. Completed spiral development of a lightweight, compact system that combines motion-sensing alert with an IR illuminator to provide broader early-warning security for deployed teams. Completed spiral development of a program of instruction and developed new equipment for Special Operations Forces to improve sniper accuracy and efficiency at ranges up to 1,800 meters. Completed development of a small, passive, and affordable imaging device capable of extracting object depth information along with a video stream of scenes. Completed development of a system that provides a self-healing, ad-hoc air-to-ground mesh network for the transmission of real-time voice and data communications. Completed development of a persistent real-time visual surveillance</p>				

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>		R-1 ITEM NOMENCLATURE PE 0603122D8Z: <i>Combating Terrorism Technology Support</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
<p>system that has an integrated power supply and SATCOM/Cellular data link. Completed a low-profile gunshot localization system for use on non-standard vehicles. Completed development of a visual and thermal camouflage system.</p> <p>FY 2013 Plans: Deliver mobile mortar targeting systems with an integrated Fire Control System that provides rapid and accurate indirect fire solutions for 81mm mortar systems using legacy U.S. standard mortars and ammunition. Initiate and complete development of a concealable sniper rifle with all components measuring less than 16.5 inches. Develop and deliver an upper receiver group that provides a significant improvement to suppression of both sound and flash from the current U.S. standard M4 carbine rifle. Deliver a lightweight organic cell phone network that will provide secure voice and secure high speed data services to at least 16 users simultaneously. Deliver a specialized application for commercially available smart phones to provide a rapid mass alert tool that receives or reports incidents for U.S. Border Patrol agents via geo-rectified pictures or SMS messages. Complete spiral development and deliver an offensive tactical cyber program of instruction. Deliver a system that will alert a ground force commander as to the status of his deployed sniper teams in real-time over organic radio links. Deliver in-depth analysis and reference books on activities and motives of specific countries and threat subjects of interest. Deliver ballistic protective eyewear for tactical operators capable of near instantaneous transition from clear to amber, blue, and dark smoke for use in dynamic lighting environments. Deliver a handheld intelligence, surveillance, target acquisition, reconnaissance system. Deliver additional lightweight micro tactical ground robots with high maneuverability in order to climb complex obstacles for visual and acoustic surveillance and reconnaissance missions. Deliver a single man-portable, collapsible-wing tactical micro unmanned aerial system with a secure mobile ad-hoc network data-link that is capable of being hand-launched from a man-portable canister. Deliver a next generation tactical mesh network system that provides a self-healing, ad hoc mesh network for the transmission of real-time communications (voice and data) utilizing the Android platform and applications. Deliver a small, weapon rail mounted, un-cooled long wave infrared detector system that provides snipers with high resolution thermal imagery for distances out to 1,800 meters. Deliver a miniature, highly maneuverable and rugged unmanned ground system capable of being controlled by an Android-based controller with a secure mobile ad-hoc network communications link. Deliver a high-power infrared light array for use on non-standard vehicles to help enable high risk driving in low-light conditions under night vision goggles. Develop and deliver a standoff concealed body worn contraband detector. Develop and deliver a fused thermal and image intensified clip-on small arms night vision weapons sight.</p> <p>FY 2014 Plans: Deliver a vertical take-off and landing small UAS with a secure mobile ad-hoc network data-link. Deliver a rapidly-deployable tethered aerial ISR system that is transported, launched, operated and recovered from a tactical all terrain vehicles. Deliver a low-profile two-way communications device that cannot be observed using visual inspection. Deliver spiral development of next generation tactical mesh network system that provides a self-healing, ad hoc mesh network for the transmission of real-time communications (voice and data) utilizing the Android platform and applications. Develop and deliver a remote audio collection</p>				

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>		R-1 ITEM NOMENCLATURE PE 0603122D8Z: <i>Combating Terrorism Technology Support</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
system capable of operating in austere and outdoor environments. Develop and deliver a clip-on small arms illumination and pointing device that operates in both near and short wave infrared spectra.				
Title: TRAINING TECHNOLOGY DEVELOPMENT		4.850	5.847	5.900
Description: The TTD Subgroup's objective is to provide SOF, DoD, and the interagency community with an agile, rapid response, R&D process and SME resource for increasing readiness for tomorrow's threats. To meet this objective, the subgroup focuses on immersive simulations; augmented reality; advanced training content programs; rapid and adaptive learning environments; and mobile technology.				
FY 2012 Accomplishments: Developed a PC-based simulation tool and realistic driving scenarios within the context of protective details. Developed a series of training videos that profiled ballistics and shooting skill effects. Developed regional and national scenarios for CBRN incident prevention and response training. Conducted an assessment study of existing homemade explosives (HME) training courses. Designed and developed a weapon training aid to improve trigger control.				
FY 2013 Plans: Design and develop a program required to implement and evaluate a training program that improves a soldier's kinetic eye movement and target acquisition skills. Develop a simulated training environment for embassy security. Develop an instructor-led training program and educational resources for small unmanned aerial systems. Develop a distance learning training on the topic of sensitive site exploitation that is not specific to an area of operation. Develop and conduct operational testing of a parachute simulator and integrated head mounted displays. Develop and implement enhancements to the M134 Minigun training simulator system. Develop and update the Vehicle Inspection Guide for a domestic audience including private sector security.				
FY 2014 Plans: Design and develop a close target reconnaissance and physical surveillance course. Develop a course to enhance negotiations skills used during village stability operations. Develop mobile tablet capabilities and apps for village stability operations. Design, develop, and evaluate a system to enhance operator performance and baseline rehabilitative measures for treating Traumatic Brain Injury. Develop mobile resources for CBRN equipment. Design and develop a decision tool for mobile learning efforts.				
Accomplishments/Planned Programs Subtotals		74.563	77.144	77.792
D. Other Program Funding Summary (\$ in Millions)				
N/A				
Remarks				

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>		R-1 ITEM NOMENCLATURE PE 0603122D8Z: <i>Combating Terrorism Technology Support</i>
<u>E. Acquisition Strategy</u> N/A		
<u>F. Performance Metrics</u> N/A		

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE							
0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>					PE 0603200D8Z: <i>Joint Advanced Concepts</i>							
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
Total Program Element	-	7.100	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
P208: <i>Joint Interoperability</i>	-	1.874	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
P209: <i>Math Program</i>	-	3.317	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
P211: <i>Joint Interoperability Technology Development</i>	-	1.909	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

This effort will investigate new concepts and technologies that fill critical warfighter needs with joint and interoperable systems at all echelons of warfare. Through advanced mathematics and engineering methodologies, the Joint Interoperability Directorate will work to institutionalize joint interoperability concepts throughout the DoD to ensure reduced fratricide, increased force effectiveness, and decreased taxpayer cost through fully interoperable weapons remains a focus throughout the acquisition and program development processes. Working closely with programs in the advanced technology development phase, this effort will result in reviews of program technology feasibility from an interoperability perspective and push to proof of concept through prototyping and modeling.

Joint Interoperability has additional efforts to develop advanced mathematics techniques to manage large volumes of sensor data to solve DoD Battlefield challenges, to review new interoperability technologies, and to review program documentation not only to ensure a joint and interoperable approach, but also to mature technologies that advance warfighter effectiveness and that apply technology rapidly to battlespace challenges.

Funding for this Program Element ends in FY 2012.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense	DATE: April 2013
-------------------------------------------------------------------------------------------------	-------------------------

APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603200D8Z: <i>Joint Advanced Concepts</i>
-----------------------------------------------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------

B. Program Change Summary (\$ in Millions)	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total
Previous President's Budget	6.571	0.000	0.000	-	0.000
Current President's Budget	7.100	0.000	0.000	-	0.000
Total Adjustments	0.529	0.000	0.000	-	0.000
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	0.531	-			
• SBIR/STTR Transfer	-	-			
• Other Adjustments	-0.002	-	-	-	-

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 3: Advanced Technology Development (ATD)					R-1 ITEM NOMENCLATURE PE 0603200D8Z: Joint Advanced Concepts				PROJECT P208: Joint Interoperability			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
P208: Joint Interoperability	-	1.874	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

The Director, Joint Interoperability provides oversight and guidance to initiatives and programs that support the joint tactical warfighter to enable reduced fratricide, increased force effectiveness, and decreased taxpayer cost through fully interoperable weapons systems, down to the tactical level of engagement. Joint interoperability is the force multiplier that will enable our warfighters to fight jointly, be more efficient and effective in the battlespace, and allow warfighters to fight in the battle and not the tactical Command, Control, and Communications (C3) displays. Sharing of systems and information across Services, and with coalition and non-DoD partners, has the benefit of a more rapid and better coordinated response to an ever more agile adversary. It also enables the full exploitation of our costly (legacy and future) weapon systems at full kinematic range and makes full use of the assets in theater. The taxpayers also benefit from reducing the cost of weapon system procurement by paying once versus multiple times for weapons systems that are used by Services in the battlespace.

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2012	FY 2013	FY 2014
Title: Joint Interoperability	1.874	0.000	0.000
Description: • Identify Friend or Foe (IFF) Mode Five (Mode 5) Technology Synchronization. • IFF M5 North Atlantic Treaty Organization (NATO) Interoperability and technology export. • Joint Personnel Recovery (JPR) – Demand Assigned Multiple Access-Compatible (DAMA-C) lead with Defense Information Systems Agency (DISA), Services, and Joint Staff; Interoperability of personnel recovery equipment. • Sensor Signatures Oversight. • Interoperability Commission. • Digital Joint Close Air Support – Lead for the Office of the Under Secretary of Defense for Acquisition, Technology & Logistics (OUSD(AT&L)) – interoperability technology. • Command, Control, Computers, and Communications (C4)/Cyber and Battlespace Awareness (BA) Functional Capabilities Boards and Working Group support. • Address policies and procedures used to ensure net-centric joint interoperability. • Model Driven Architecture exploitation in DoD. • Oversight of net-enabled Interoperability technologies. • Lead technology development for an All Domain Tactical Picture. • Perform Capability Development Framework (CDF) Interoperability Assessments for critical capability areas (for example, Base Protection and Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance (C4ISR)).			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603200D8Z: <i>Joint Advanced Concepts</i>	PROJECT P208: <i>Joint Interoperability</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
<i>FY 2012 Accomplishments:</i> <ul style="list-style-type: none"> • Led IFF Mode 5 Technology Synchronization. • Led IFF Mode 5 NATO Interoperability and technology export. • Led JPR – DAMA-C lead with DISA, Services, and Joint Staff to improve Interoperability of personnel recovery equipment. • Provided Sensor Signatures Oversight. • Served as U.S. Chair on the Interoperability Commission for CID bilateral with the United Kingdom. • Served as the AT&L lead for Digital Joint CAS interoperability technology. • Revised policies and procedures used to ensure net-centric joint interoperability. • Led efforts on Model Driven Architecture and Open Architecture exploitation in DoD. • Provided oversight of net-enabled Interoperability technologies. • Led technology development for an All Domain Tactical Picture. • Performed CDF Interoperability Assessments for critical capability areas (for example: Base Protection and C4ISR). • Enhanced the interface of Joint Capabilities Integration and Development System (requirements) with early stage system engineering. • Discovered, analyzed, and documented best practices for development planning and system of systems engineering. • Analyzed and documented interdependencies between DoD systems and mission areas. 			
Accomplishments/Planned Programs Subtotals		1.874	0.000
C. Other Program Funding Summary (\$ in Millions)			
N/A			
Remarks			
D. Acquisition Strategy			
Not applicable for this item.			
E. Performance Metrics			
Not applicable for this item.			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>					R-1 ITEM NOMENCLATURE PE 0603200D8Z: <i>Joint Advanced Concepts</i>				PROJECT P209: <i>Math Program</i>			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013[#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
P209: <i>Math Program</i>	-	3.317	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012 ^{##} The FY 2014 OCO Request will be submitted at a later date												
A. Mission Description and Budget Item Justification Advances in mathematics must be applied to DoD systems in order to provide a common tactical picture for real-time, tactical operations with near-term potential for application to solve the Department's most pressing operational problems. They will develop novel approaches to implement non-classical methods to solve computationally intensive problems like fusing numerous sensors that are generating terabytes of data in Afghanistan. Our ability to sense has far exceeded our ability to process data into information. Developing algorithms that are more computationally efficient at discerning information from large datasets will place smaller demands on our limited bandwidth and better enable the disadvantaged user to get information down to the tactical level. This effort includes tests against recorded live data to demonstrate relevance to identified military needs.												
B. Accomplishments/Planned Programs (\$ in Millions)										FY 2012	FY 2013	FY 2014
Title: Math Program										3.317	0.000	0.000
Description: This effort will develop advanced mathematical software algorithms and components in DoD-relevant areas such as topological evaluation and visualization of massive and high dimensional data sets, topological data analysis, and enhanced data extraction and filtering and fusion algorithms.												
FY 2012 Accomplishments: Continued to work with the following Advanced Mathematics Teams to ensure all DoD math challenge goals and milestones are met; to include their accomplishment of demonstrations on the Bluegrass Data: (1) Pennsylvania State University Team Members; (2) BAE Team Members; (3) Johns Hopkins University/Applied Physics Laboratory Team; (4) Raytheon Team; and (5) Toyon Research Corporation. Coordinated among the Advanced Mathematics teams and with the Bluegrass data team to ensure they continue to: (1) meet the technical challenge requirements; (2) meet their program milestones; (3) meet the needs of the warfighters and the developers of the warfighting systems; and (4) work effectively with Service labs throughout DoD to facilitate transition of the advanced mathematics topological methods to warfighting systems.												
Accomplishments/Planned Programs Subtotals										3.317	0.000	0.000
C. Other Program Funding Summary (\$ in Millions) N/A												
Remarks												

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603200D8Z: <i>Joint Advanced Concepts</i>	PROJECT P209: <i>Math Program</i>
D. Acquisition Strategy N/A		
E. Performance Metrics Successful demonstration using Bluegrass data no later than 1Q FY 2013 of either 1) Creating the elements of a common tactical picture in the low/slow air and ground domain, or 2) Optimizing Sensor Placement and Management, depending on which challenge problem is being addressed.		

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE				PROJECT			
0400: Research, Development, Test & Evaluation, Defense-Wide BA 3: Advanced Technology Development (ATD)					PE 0603200D8Z: Joint Advanced Concepts				P211: Joint Interoperability Technology Development			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
P211: Joint Interoperability Technology Development	-	1.909	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012												
^{##} The FY 2014 OCO Request will be submitted at a later date												
Note Funds re-aligned for higher priorities.												
A. Mission Description and Budget Item Justification Based on recent Assistant Secretary of Defense (Research and Engineering) reorganization, the requirements of the Joint Interoperability program have grown and evolved to cover areas beyond what they had been previously. Joint Interoperability removes barriers to communication and acts as a force multiplier to enable our warfighters to fight more efficiently and effectively across the spectrum of operations and is focused on maturing technologies that advance warfighter effectiveness and that apply technology rapidly to battlespace challenges. Examples of the types of projects that are envisioned under this Program Element will focus on reducing fratricide, increasing force effectiveness, and reducing major acquisition program costs through fully interoperable weapons systems operating at tactical levels. Typically these projects are on the technology maturity scale where an idea or technology opportunity is proven and demonstrated.												
B. Accomplishments/Planned Programs (\$ in Millions)										FY 2012	FY 2013	FY 2014
Title: Joint Interoperability Technology Development										1.909	0.000	0.000
Description: This project will focus on reducing fratricide, increasing force effectiveness, and reducing major acquisition program costs through fully interoperable weapons systems operating at tactical levels. Typically these projects are on the technology maturity scale where an idea or technology opportunity is proven and demonstrated.												
FY 2012 Accomplishments: This project supported focus areas in portfolio management and activities associated with our program evaluation responsibilities providing for early shaping of Pre-Milestone A programs. The effort provided early shaping of Department-wide portfolio based investment decisions, development, coordination, and institutionalization of enterprise wide Business Rules and procedures for investment strategies and resource balancing, integration of the requirements process with the acquisition process to bridge our military and civilian areas of responsibility with all Combatant Command, Services and Agencies. In addition, provided Deputy Secretary of Defense and DoD Components advice on how to maximize capability investment to meet warfighter needs. Led the development of integrated capability roadmaps, and supported acquisition program reviews and development of Guidance												

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>		R-1 ITEM NOMENCLATURE PE 0603200D8Z: <i>Joint Advanced Concepts</i>	PROJECT P211: <i>Joint Interoperability Technology Development</i>
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
for Development of the Force. Represented Acquisition and Technology interests in requirements for future acquisition systems. Developed and updated capability roadmaps to inform decision makers for portfolio investment decisions and DoD Requirements.			
Accomplishments/Planned Programs Subtotals		1.909	0.000
C. Other Program Funding Summary (\$ in Millions) N/A			
Remarks			
D. Acquisition Strategy Not applicable for this item.			
E. Performance Metrics Not applicable for this item.			

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense	DATE: April 2013
-------------------------------------------------------------------------------------------------	-------------------------

APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE							
0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>					PE 0603225D8Z: <i>Joint DOD/DOE Munitions Technology Development</i>							
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
Total Program Element	-	19.538	20.032	19.305	-	19.305	20.628	20.332	20.664	21.065	Continuing	Continuing
P225: <i>Joint DOD/DOE Munitions</i>	-	19.538	20.032	19.305	-	19.305	20.628	20.332	20.664	21.065	Continuing	Continuing

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

The mission of the Department of Defense (DoD)/Department of Energy (DOE) Joint Munitions Technology Development Program (JMP) is to develop new and innovative warhead, explosive, fuzing, and lifecycle technologies and tools to enable major improvements in conventional munitions. The JMP supports the development and exploration of advanced munitions concepts and enabling technologies that precede Service-specific system engineering. A Memorandum of Understanding signed in 1985 by DoD and DOE provides the basis for the cooperative effort and for cost-sharing the long-term commitment to this effort. The JMP funds budgeted in this justification are matched dollar for dollar by DOE funds. Through this interdepartmental cooperation, DoD's relatively small investment leverages DOE's substantial investments in intellectual capital and highly specialized skills, advanced scientific equipment and facilities, and computational tools not available within DoD. Under the auspices of the JMP, the integration of DOE technologies with Joint and Individual Services' needs has provided major advances in warfighting capabilities over many years and continues to play a crucial role in the exploration, development, and transition of new technologies needed by the Services.

The JMP seeks to develop: improved modeling and simulation tools for munitions design and evaluation, including evaluation of vulnerability (for example: design of insensitive munitions (IM)); novel experimental techniques and material property databases to support modeling and simulation; higher power and safer explosives and propellants; miniaturized, lower-cost, and higher reliability fuzes, initiators, power systems, and sensors; design tools to enable development of higher performance warheads and weapons—such as penetrators—that are hardened against high impact loads; and tools to assess the health and reliability of the munitions stockpile and predict lifetimes based on these assessments.

The JMP is aligned with Department strategic plans and policies such as:

- Munitions for contingency operations, particularly for the reduction of unintended collateral effects.
- Reducing time and cost for acquisition of munitions.
- Rapidly transitioning science and technology (S&T) to support the warfighter in today's conflicts.
- Establishing future core capabilities and maintaining our national S&T capabilities through joint investment and interagency cooperation and teaming.
- Aiding in recruiting and retaining high-caliber scientists and engineers at DoD S&T organizations.
- Developing advanced munitions technologies to support the increased role of conventional weapons to deter and respond to non-nuclear attack, as described in the Nuclear Posture Review report.
- Developing safer munitions that are compliant with IM standards to meet statutory and Department policy requirements.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY		R-1 ITEM NOMENCLATURE
0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>		PE 0603225D8Z: <i>Joint DOD/DOE Munitions Technology Development</i>
<p>The JMP has established a successful collaborative community of DoD and DOE scientists and engineers. This community develops technologies of interest to both Departments within a structured framework of technical reviews and scheduled milestones. The JMP is administered and monitored by the Office of the Secretary of Defense (OSD) and reviewed annually by the Technical Advisory Committee (TAC), which is comprised of over 25 senior executives from the Army, Navy, Air Force, Special Operations Command, the Defense Threat Reduction Agency, OSD, and DOE. Projects are organized in eight Technology Coordinating Groups (TCG) that bring together the disciplines necessary to properly evaluate technical content, relevance, and progress. The TCG conduct semi-annual technical peer reviews of JMP projects and plans. DoD Service laboratory technical experts lead each of the TCG to ensure that the technologies under development address high-priority DoD needs. The JMP also promotes more in-depth technical exchange via short-term visiting scientist and engineer assignments at both the DOE and the DoD laboratories.</p> <p>The JMP has a long history of successful transitions and significant Return on Investment (ROI).</p> <ul style="list-style-type: none"> – The JMP is the primary provider of high performance structural mechanics computer codes used by DoD. According to the FY 2010 High Performance Computing Modernization Program (HPCMP) Requirements Analysis Report, the DOE computer codes are used for over 70 percent of all (classified and unclassified) structural mechanics simulations and for virtually all of the classified calculations run by DoD on HPCMP platforms. The Department expects this heavy reliance on DOE codes to grow for several reasons including: preference for using DOE codes because they are export-controlled; DOE codes are scalable, incorporate multiphysics, and run on massively parallel computer systems; and the Department can obtain source codes to modify for individual Service needs. – A significant number of defense industrial contractors also use the DOE structural mechanics computer codes. – CHEETAH, a standalone thermochemical computer code, is the most widely used code by DoD and defense contractors for predicting performance of energetic materials. – The Army Research & Engineering Development Center (ARDEC) has stated that the DOE computer codes are now routinely used to design all new warheads. The use of these tools has reduced the number of validation tests required for each new warhead from about five to one with concomitant cost and time savings. – The Army Research Laboratory has used DOE computer codes to develop and deploy new armor solutions to Iraq and Afghanistan with unprecedented speed. – New munitions' case material and explosive fill technologies provide the warfighter with a lethal and low collateral damage capability. These technologies have been transitioned to the Focused Lethality Munition variant of the Small Diameter Bomb, which is currently fielded. The technologies are also the basis for a new GBU 129 weapon that is currently under rapid development to meet a Joint Urgent Operational Need requirement for a low-collateral Mk-82 class weapon. – The Joint Improvised Explosive Device Defeat Organization (JIEDDO) has supported applications of JMP technologies, including: compact synthetic aperture radar (SAR) systems for counter-Improvised Explosive Device (IED) efforts; pre-deployment training of military personnel by DOE explosive experts on how to recognize feed stocks and processes for homemade explosives; and use of massively parallel, multiphysics computer codes to understand how explosive blast waves cause brain injury and how to mitigate these injuries. – An erosive initiator technology developed under the JMP has been transitioned to the Services for use in selectable output weapons and self-destruct capabilities. – A novel approach to controlling the sensitivity and therefore the initiability of explosives using microwave energy, as well two new, insensitive energetic materials have transitioned to development projects in the Joint IM Technology and Joint Fuze Technology Programs. – Reliability analysis tools were used by Army Missile Command to assess Rolling Airframe Missile (RAM), Advanced Medium Range Air to Air Missile (AMRAAM), and Tube-launched, Optically-tracked, Wire command data-linked guided Missile (TOW). – Robotic demilitarization processing systems were installed at several locations, including a system at Hawthorne Army Depot to recover copper shape charge liners, Comp A5, and grenade bodies. 		

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY

0400: Research, Development, Test & Evaluation, Defense-Wide
BA 3: Advanced Technology Development (ATD)

R-1 ITEM NOMENCLATURE

PE 0603225D8Z: Joint DOD/DOE Munitions Technology Development

The JMP also works with the Defense Ordnance Technology Consortium (DOTC) and the National Warheads and Energetics Consortium (NVEC) of industrial suppliers to equitably and efficiently transition JMP technologies to defense industrial contractors. In addition to the computer codes mentioned earlier, the JMP has transitioned case technology for low-collateral weapons, low-temperature co-fired ceramic technology for smaller, less expensive fuze electronic components, and erosive initiator technology for selectable effects weapons to defense industrial suppliers.

The integrated DoD and DOE efforts within the JMP are transitioning new munitions' technologies to the Department and the defense industrial base through the advanced development process. The JMP is a focal point for collaborative work by nearly 300 DoD and DOE scientists and engineers. Technical leaders from both Departments consider the JMP a model of cooperation, both within their respective departments and between departments. The highly challenging technical objectives of the approximately 35 JMP projects require multi-year efforts and sustained, long-term investments to achieve success.

The JMP projects are divided into five technical focus areas: Computational Mechanics and Material Modeling; Energetic Materials; Initiators, Fuzes, and Sensors; Warhead and Penetration Technology; and Munitions Lifecycle Technologies.

B. Program Change Summary (\$ in Millions)	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total
Previous President's Budget	19.651	20.032	19.965	-	19.965
Current President's Budget	19.538	20.032	19.305	-	19.305
Total Adjustments	-0.113	0.000	-0.660	-	-0.660
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-0.107	-			
• SBIR/STTR Transfer	-	-			
• Baseline Adjustments	-	-	-0.660	-	-0.660
• Other Adjustments	-0.006	-	-	-	-

Change Summary Explanation

FY 2014 baseline adjustments are reflective of DoD S&T priorities and requirements.

C. Accomplishments/Planned Programs (\$ in Millions)

	FY 2012	FY 2013	FY 2014
Title: Computational Mechanics and Material Modeling	6.576	7.331	6.981
Description: Projects in this technical focus area develop computational tools, material models, and calibration and validation databases which support the design and development of weapon systems. These capabilities are intended to predict the complex			

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>		R-1 ITEM NOMENCLATURE PE 0603225D8Z: <i>Joint DOD/DOE Munitions Technology Development</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
<p>phenomena across significant length (meso to continuum) and time (microsecond to minute) scales. The tools will provide coupled, multi-physics and chemistry modeling capabilities that are scalable to massively parallel architectures for solving very diverse problems across the weapons systems' research and development and acquisition communities. Numeric tools are the foundation that makes possible the integration of mechanics, materials science, physics, and chemistry.</p> <p>This focus area also includes an extensive experimental component consisting of phenomenological or "discovery" experiments that drive model development; calibration experiments to compliment models; and experiments for model and code validation.</p> <p>The specific projects in computational mechanics and material modeling are:</p> <ul style="list-style-type: none"> – CTH, SIERRA shock physics code & model development, and experiments: impact initiation of high explosives; composite material modeling; mesoscale experiments, model development, and analysis; coupled physics code development; and models for localization and failure. – Arbitrary Lagrangian-Eulerian (ALE3D) code and model development. – Composite case technology and modeling. – Dynamic properties of materials. – Energetic materials and polymers under dynamic and thermal loading. – Fragment impact and response experiments. <p>FY 2012 Accomplishments:</p> <ul style="list-style-type: none"> – Applied damage model to experimental data to discern propagation and interaction of shock waves in damaged material. – Gained insight into preferred dynamic damage initiation sites from interrogation of shocked copper polycrystal via High Energy Diffraction Microscopy. – Applied CartaBlanca to three-dimensional (3D) fracture and fragmentation problems. – Completed ball impact test series on covered PBXN-9 charges. – Completed preliminary tests to assess utility of extended Floret test to determine explosive initiation and performance data. – Completed multi-scale analysis of underlying fiber failure physics in composites. – Developed a reliable, low-cost and low-variance compression test specimen for measuring composite compression strength. – Next release of ALE3D with improvements in: two-dimensional (2D) and 3D detonation shock dynamics (DSD); smooth particle hydrodynamics (SPH); glassy amorphous polymer model; material property database; and embedded grids. – Completed validation and verification of AMC 2D hydrodynamic-structure coupling and 2D hydrodynamic-light rigid body coupling. – Completed next generation high explosive mechanical models. – Coupled ViscoSCRAM micro-damage to Finite Element Model macro-damage. – Completed initial study of shock shear initiation of explosives. 				

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>		R-1 ITEM NOMENCLATURE PE 0603225D8Z: <i>Joint DOD/DOE Munitions Technology Development</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
<ul style="list-style-type: none"> – Released CTH versions 10.2 and 10.3 with: physics-based fracture; material interface improvements; and material property consolidation. – Demonstrated embedded beam/spar elements for modeling composite structures such as reinforced concrete. – Implemented new statistical models for shock analysis of reactive composite energetic materials. – Completed shock characterization of fiber composite materials. – Completed shockless dynamic compression of heated and cooled explosive materials. <p>FY 2013 Plans:</p> <ul style="list-style-type: none"> – 2D and 3D simulation using Tonks model and experimentally determine microstructure. – Incorporate interface particles into CartaBlanca. – Complete tests to determine influence of temperature on impact response of pristine and damage energetic materials. – Thermal sensitivity models of composite materials implemented into ALE3D or other coders and validated against experimental data. – Microstructurally-based damage models of composite materials implemented into ALE3D or other codes. – Next release of ALE3D with improvements in: implicit beams / shells; embedded grids; coupled element erosion with SPH; and DSD of inert boundaries. – Implement next generation high explosive mechanical model into ABAQUS and EPIC codes. – Develop polymer constitutive model with improved damage physics. – Generalize and extend SIERRA explosives finite element model (XFEM) capabilities to model pervasive failure mechanisms. – Release CTH versions 11.0 and 11.1 with: energy/momentum discards; new tabular equation of state format; adaptive mesh refinement compatible with manual rezone; and a model for non-ideal explosive behavior. – Compete line velocity interferometer system for any reflector (VISAR) measurements of high explosive to support heterogeneous material modeling and statistical analysis. <p>FY 2014 Plans:</p> <ul style="list-style-type: none"> - Incorporate shear into two-component localization model to move toward a general damage model capability. - Incorporate phase transitions in material models to increase accuracy of constitutive models in any calculations involving high-pressure shocks. - Perform impact and direct initiation experiments on off-specification PBXN-9 to ascertain change in performance and safety. - Complete analysis of PBXN-9 data set to provide consistent parameter sets for DoD and the DOE codes. - Implement rate-sensitive damage model into ALE3D or other codes validated against experimental data. - Complete initial manufacturing variable study of composite materials. - Release of ALE3D with improvements in: updated high explosive lighting times with detonation shock dynamics as the analysis progresses. - Enhance the ALE3D/ALE3D code coupling through FEusion interface by providing a parallel implementation. 				

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>		R-1 ITEM NOMENCLATURE PE 0603225D8Z: <i>Joint DOD/DOE Munitions Technology Development</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
<ul style="list-style-type: none"> - Complete energetics damage experiments (rubbery tear, interfacial damage, friability). - CTH Versions 11.2 and 11.3 Released: Improved memory management, and improved parallel processing/communications. - Implement robust and accurate coupling between Sierra/SM and CTH. 				
<p>Title: Energetic Materials (EM)</p> <p>Description: The goals of this technical focus area are to develop new energetic materials (EM) and supporting technologies to satisfy the competing requirements for smaller, more lethal, and safer munitions. Work is primarily focused on explosives, gun and rocket propellants, and, to a lesser extent, pyrotechnics. The projects include development of: new EM, including new molecules in a range of particle size and morphologies; new EM formulations; a fundamental understanding of energetic properties and performance; and computational tools for analysis of performance and sensitivity. New materials and formulations are developed with the recognition that cost must be feasible, chemical feed stocks reliable, and manufacturing processes suitable for scale-up to production levels.</p> <p>Both federal statute and Department policy direct the development of safer, less sensitive munitions. Making munitions less sensitive while maintaining explosive or propellant performance is a difficult challenge. This goal is best attained through a combination of new EM development, EM characterization, and more sophisticated modeling and simulation tools. It is cost-prohibitive to qualify weapons for compliance with insensitive munitions requirements through testing alone. A better, in many cases, the only means to qualify these weapons is with the combination of analysis based on validated computational tools and a few well-designed tests.</p> <p>The Department requires munitions that provide selectable effects. To achieve these effects, weapons designers need to thoroughly understand the performance of EM used in both the main weapon fill and the initiation systems. Distributed fuzing systems can provide selectable effects as well as safer munitions, but such complex small-scale systems require more complete knowledge of EM detonation physics and in, some cases, new EM designed for this application.</p> <p>The desire for smaller and lighter munitions is driven in large part by the increasing dependence on unmanned weapons platforms and to some extent by the need to reduce logistical burden, especially energy consumption. New EM are needed to meet the munitions weight and size requirements while maintaining lethality and safety.</p> <p>The Department is working to increase the range and velocity of weapons and to develop weapons against hardened targets. These applications subject the EM to high accelerations and shock loads. To support the development of these new systems, we need to improve our ability to model EM under impact loads and to characterize relevant properties to determine their ability to survive in these aggressive environments. We may also need to develop new, more robust EM that survive impact loads while maintaining lethality and initiability.</p>		4.457	4.479	4.305

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>		R-1 ITEM NOMENCLATURE PE 0603225D8Z: <i>Joint DOD/DOE Munitions Technology Development</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
<p>The specific projects in the energetic materials technical focus area are:</p> <ul style="list-style-type: none"> – Synthesis, properties, and scale-up of new energetic compounds. – Insensitive munitions and surety. – New energetic materials formulation and characterization. – CHEETAH thermochemical code development and experiments. – Micro- and nano-energetics synthesis and initiation. – Hazards analysis of energetic materials. – Reaction processes of energetic materials. – Microfluidic reactor synthesis of sensitive explosives. – Energetics chemistry and properties. – Microstructural and kinetic effects on energetic materials behavior. – Microwave sensitization and initiation of energetic materials. <p>FY 2012 Accomplishments:</p> <ul style="list-style-type: none"> – Synthesized insensitive energetic materials. – Implemented full thermal kinetic model for high melting explosives (HMX) into ALE3D. – Established relationships between internal pressure and convective and conductive burn rates in PBX 9501. – Lab-scale production, dielectric property characterization, and energetic performance testing of microwave-sensitive energetic materials. – Developed preliminary model for microwave sensitivity of filled IMX-101. – Constructed CTH model of a hemispherical microwave-sensitized explosive system using a kinetics-based burn model and compared to a preliminary onionskin experiment. – Synthesized new oxadiazole-based explosives using tricyclic nitrofurazan derivatives. – Calibrated and validated new precision rate-stick design to extract reliable equation of state data. – Implemented, calibrated, and tested ionic equilibrium option in CHEETAH for ideal explosives and halogenated explosives. – Expanded liquids and solids equation of state (EOS) library in CHEETAH for more accurate modeling of metal-loaded explosives. – High pressure and temperature EOS data for acid mixtures, oxides, and silicon compounds added to support further development of CHEETAH. – Implemented multiphase convective burn model spiral two and HERMES spiral two model for impact response of energetic materials in latest release of ALE3D. – Completed shock initiation measurements of PBXN-112 and AFX-757 at different pressures to refine ignition and growth model parameters. 				

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>		R-1 ITEM NOMENCLATURE PE 0603225D8Z: <i>Joint DOD/DOE Munitions Technology Development</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
<ul style="list-style-type: none"> – Deposited a large area of thin-film explosive with good uniformity. – Completed multi-point detonation transfer in the thin explosive films. – Developed cook-off pre-ignition models that incorporate pressure dependence and gas generation and validated the models for triaminotrinitrobenzene (TATB) explosives and ammonium perchlorate (AP) propellants. – Determined the effect of confinement on ignition in fast cook-off. – Demonstrated use of Simultaneous Thermogravimetric Modulated Beam Mass Spectrometry and Chemical Imaging Precision Mass Analysis to ignition and initiation processes of energetic materials at low and moderate temperatures. – Prepared and characterized modified AP for IM propellants. – Completed preliminary microfluidic nitration reactor design. <p>FY 2013 Plans:</p> <ul style="list-style-type: none"> – Complete synthesis and characterization of insensitive energetic materials for booster applications. – Design deflagration to detonation transition experiments for proton radiography. – Compare simulations with pop plot behavior and onionskin experiments for microwave-sensitized explosives. – Release CHEETAH version seven, which will provide enhanced accuracy for a wide range of energetic formulations, including those containing fluorine, chlorine, bromine, boron, silicon, and tungsten. – Expand detonation calorimetry capabilities with post-shot analysis techniques. – Complete mesoscale simulations of energetic materials under stress and pressure/confinement. – Develop technique to characterize high-pressure deflagration. – Scale-up the syntheses of new energetic material compounds to produce 20-30 grams for performance testing and heat of formation measurements. – Scale thin-film deposition of explosives to gram scale. – Develop and validate models for thermally induced damage in TATB explosives and AP propellants. – Complete thermal decomposition study of propellant binder PNO with and without candidate stabilizers. – Determine low and moderate temperature reaction networks for pyrotechnic actuator materials. – Complete initial microfluidic nitration reactor experiments. <p>FY 2014 Plans:</p> <ul style="list-style-type: none"> - Complete characterization of trinitromethyl and dinitromethyl compounds. - Perform burn rate studies on N4BIM salts. - Collect thermal data on IMX formulation. - Complete analysis of pre-ignition behavior and ignition timing data for IMX-101. - Develop CHEETAH thermochemistry for major metallic additives and other relevant elements and compounds to enable thermochemical predictions for complex and novel formulations. 				

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>		R-1 ITEM NOMENCLATURE PE 0603225D8Z: <i>Joint DOD/DOE Munitions Technology Development</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
<ul style="list-style-type: none"> - Systematically evaluate and improve CHEETAH code predictions at low pressures and high temperature for specific impulse calculations. - Release CHEETAH version 8.0. - Validate new heat of detonation experiment by comparing to data from trinitrotoluene (TNT) and triaminotrinitrobenzene (TATB). - Perform simulation of shock to detonation transition (SDT) in minimum smoke propellant (MSP) Army Burn-to-Violent Reaction (ABVR) test for Insensitive Munitions Project Arrangement (IM PA) with the United Kingdom. - Synthesize new tri-, quadri- and pentacyclic oxadiazoles as both high-power and insensitive target molecules. - Synthesize 25-50 grams of LLM-196 and LLM-198 and their nitrogenous salts. - Complete characterization of damage evolution of PBX 9502 and ammonium perchlorate (AP) propellant. - Complete aging study to determine how particular lots of RDX powder display enhanced shock sensitivity. - Complete initial nitration reactor experiments for energetic material synthesis. 				
<p>Title: Initiators, Fuzes, and Sensors</p> <p>Description: The goals of this technical focus area are to develop new materials, components, diagnostic techniques, and modeling and simulation tools for fuzing systems. Initiators, fuzes, and sensors must work reliably together to prevent unintended detonation, to correctly detect intended targets, and to initiate detonation when required. Projects in this focus area support the Department's needs to miniaturize fuzing systems. Smaller systems are required for several reasons including: compatibility with smaller and lighter weapons systems; trading volume in munitions for other components such as additional explosive, larger power sources, or guidance systems; increasing reliability through redundancy (use two or more smaller initiating systems); and upgrading existing sub-munitions with smarter and more reliable fuzing systems. The miniaturization of fuzing systems requires new material and components, new power systems, new diagnostic techniques, and improved modeling tools for microdetonics. The Department also needs weapons systems with selectable effects and these effects can be achieved with multi-point initiation systems. Such systems are inherently more complex and require improved characterization of initiator materials and components as well as more sophisticated modeling and simulation tools. To attain greater precision and to avoid unintended collateral effects when weapons are used in the complex environment of counter-insurgency or counter-terrorist operations, target sensors must be reliable and provide high-fidelity discrimination. Two projects in this focus area are developing technologies to achieve this level of performance in compact packages.</p> <p>The specific projects in the initiators, fuzes, and sensors technical focus area are:</p> <ul style="list-style-type: none"> - Firing systems technology: FireMod firing set code model development and validation, 1.6 hazard classification detonator development, and initiation and detonation physics on the millimeter scale. - Safe, Arm, Fuze and Fire Technology: Initiation & Detonation; Advanced Firing System Components. - Advanced initiation systems: diagnostics development, microdetonics, miniature initiation systems, and detonators for enhanced safety. - Thermal Battery Performance Modeling. 		3.444	3.351	3.246

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>		R-1 ITEM NOMENCLATURE PE 0603225D8Z: <i>Joint DOD/DOE Munitions Technology Development</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
<ul style="list-style-type: none"> – MESASAR synthetic aperture radar (SAR) sensors. – Vertical cavity surface emitting laser (VCSEL) sensors for proximity fuzing. <p>FY 2012 Accomplishments:</p> <ul style="list-style-type: none"> – Completed large-scale Schlieren diagnostic capability for initiation systems. – Completed study of detonation transfer across gaps. – Continued to collect and catalog Schlieren images of DoD detonators. – Measured RSI-007 detonator threshold parameters for electric gun-launched flyer plates. – Measured EDF-11 detonator threshold parameters and detonation velocity as a function of charge diameter. – Completed study of RSI-007 run-to-detonation distances. – Incorporated experimental data into reactive flow models for RSI-007 and EDF-11 detonators. – Final summary of novel heat source development and increased power capability for advanced thermal batteries released. – Completed thermal battery electrochemical model for single cell battery. – Released thermal battery thermal modeling capability within SIERRA simulation suite of codes. – Developed thermal battery thermo-mechanical modeling for a single cell battery. – Measured ignition and growth in the thin-film energetic materials. – Evaluated deflagration to detonation transition (DDT) in polymer-bound thin-film explosives. – Completed performance testing as a function of morphology for hexanitrostilbene (HNS) explosive. – Summarized equation of state (EOS) data for HNS based on density function theory molecular dynamics simulations and diamond anvil cell experiments. – Compared two processes for producing small particle size triaminotrinitrobenzene (TATB). – Performed chip slapper initiation threshold testing of micronized TATB. – Developed and scaled-up synthesis of tetragonal barium titanate nanoparticles. – Developed process for tape casting nanoparticle lead zirconate titanate into devices. – Completed simulations of different packaging methods to improve survivability of a single electronic component under harsh thermal and mechanical environments. – Completed a design for improved flux coupling in flyback transformers. – Built and tested first prototype flyback transformer using new tape-cast materials. – Built and range-tested a prototype Ku-Band active antenna array. – Mature technology and fabrication processes for low-temperature co-fired ceramic multi-chip modules for insertion into radar fuze systems completed. – Demonstrated Geiger mode detection operation of vertical cavity surface emitting laser detector arrays. <p>FY 2013 Plans:</p>				

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>		R-1 ITEM NOMENCLATURE PE 0603225D8Z: <i>Joint DOD/DOE Munitions Technology Development</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
<ul style="list-style-type: none"> – Validate thermal battery thermo-mechanical model for single cell battery. – Implement thermal battery electrochemical model into SIERRA code. – Create validated tabular equation of state for the explosive HNS. – Determine burn model parameters (reaction rates, run distance) for the explosive HNS. – Determine initiation threshold and performance data for micronized TATB. – Develop physics-based ALEGRA model of exploding foil initiator (EFI) bridge burst and flyer launch. – Develop a methodology to assess the safety and reliability of slapper-based fuze systems based on initiation threshold criterion. – Develop physics-based ALEGRA model of EFI bridge burst and flyer launch. – Build and test second prototype flyback transformer using new tape-cast materials. – Demonstrate ALE3D model of Department of Defense (DoD) slapper detonator. – Complete optimization of 3D chip slapper shape optimization. – Assess modified three phase equation of state for metals (GRAY EOS) for predicting slapper performance. – Perform experiments to assess the effect of spot size on LX-10 (high explosive). – Integrate Schlieren Inverse Analysis Software (SIAS) with ALE3D. – Perform a full series of 2-D axi-symmetric small-scale gap tests to study detonation across gaps for explosive materials. – Utilize photonic doppler velocimetry (PDV) diagnostic suite to characterize the output of large size detonators in order to provide baseline performance data. – Develop and range-test a prototype Ku-Band active antenna array. – Complete the conceptual design of Ka-Band active antenna array. – Improve the power density of 980 nm vertical cavity surface laser emitter arrays. <p>FY 2014 Plans:</p> <ul style="list-style-type: none"> – Demonstrate electrochemical modeling for single cell battery. – Increase the mechanical robustness of explosives for incorporation into MEMS. – Validate tabular equations of state for CL-20, TATB and other explosives. – Perform experimental validation of flyer state predictions and trends for detonators. – Investigate coupled physics (thermal stress plus dynamics), modal response, impact, and preloads for predicting the response of electrical components. – Build and test third prototype flyback transformer using new tape-cast materials. – Perform Hugoniot measurement of using gas-gun experiments to improve unreacted equations of state on high explosives (HE). – Create theoretical model of wave divergence using Probabilistic Shock Threshold Criterion to account for the spot-size effect on the explosive threshold. – Complete testing of the next generation transmit and receive test circuits for a Ka-Band active array antenna (AAA). – Build the first prototype of a Ku-Band low temperature co-fired ceramic (LTCC) multi chip transmit / receive module. 				

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>		R-1 ITEM NOMENCLATURE PE 0603225D8Z: <i>Joint DOD/DOE Munitions Technology Development</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
<ul style="list-style-type: none"> – Complete a conceptual design for a miniaturized, broadband digitally steered array antenna. – Develop mass-replicated micro-optics for detectors and lasers for a VCSEL based proximity fuze. 				
Title: Warhead and Penetration Technology Description: This focus area supports the development of new warheads and penetrator weapons through advances in materials processing and characterization, instrumentation, and computational codes. In recent years there have been very large increases in warhead performance directly attributed to our ability to understand and accurately model the physics and fine details of new warhead designs, and to advances in increasingly sophisticated material processing. The Department's requirement to achieve more precise weapon effects with minimum collateral damage is supported by work on controlled fragmentation, non-fragmenting warhead cases, and multiphase blast explosives (MBX). More recently, increases in performance and reductions in vulnerability are being achieved through improved warhead integration into munitions using a systems-oriented approach. The goals for penetrator weapons are to investigate, develop, and transition advanced technologies for the design, development, and performance assessment of the next generation of high performance, precision strike weapons. This effort directly supports national initiatives to defeat hard and deeply buried targets, which are proliferating worldwide, and to deny/defeat weapons of mass destruction. The work addresses high-velocity penetration into granular materials (sand and soil), penetration into advanced concrete, new penetrator materials and designs, and non-inertial onboard instrumentation. The specific projects in the warhead and penetration technology focus area are: <ul style="list-style-type: none"> – Multiphase blast munitions (MBX) technology. – Erosive initiation technology. – Dynamic behavior of sand. – Integrated munitions modeling & experimentation. – Modeling of strategic structures. – Concrete perforation and penetration modeling & experiments. – High-g MEMS (micro electrical mechanical system) sensor development. – Structural dynamics and vibration effects. – High-speed pressure-shear experiments on granular materials. – Explosive/metal interactions. – Structure, mechanical & shock-loading response, & modeling of materials. – Controlled effects warhead materials. FY 2012 Accomplishments: <ul style="list-style-type: none"> – Created a model to provide a deterministic physical description of a metal expanding under the action of explosive drive. 		3.850	3.758	3.628

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>		R-1 ITEM NOMENCLATURE PE 0603225D8Z: <i>Joint DOD/DOE Munitions Technology Development</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
<ul style="list-style-type: none"> – Completed initial characterization / constitutive modeling of HF-1 steel and Cast Ductile Iron (CDI) warhead materials. – Completed initial dynamic tensile extrusion experiments on Zr, Ta, depleted uranium (DU), and U-6Nb as function of temperature. – Completed shear localization studies of high purity Fe as a function of stress state. – Developed a multiphase explosive burn model guided by mesoscale simulations and experiments. – Transitioned the standalone KRAKEN code to the larger Department of Energy (DOE) code SIERRA. – Implemented markers with deviatoric stress capability in CTH for the analysis of the blast and/or penetration of reinforced concrete and thin walled structures. – Performed dynamic friction measurements with modified torsional bar. – Performed perforation experiments through high-strength concrete. – Provided high strength concrete model to Sandia CTH development team. – Completed quasi-static and dynamic testing of new MEMS sensor package for recording the local force on the surface of the projectile during ballistic events. <p>FY 2013 Plans:</p> <ul style="list-style-type: none"> – Complete baseline data collection on 4340, Ti, and copper. – Perform initial shock experiments on Ag-Cu eutectic, dynamic melting. – Complete Oblique HE-driven shock hardening and damage microstructural quantification on Cu and Ta and complete initial oblique HE-driven spall on U-6Nb. – Conduct sweeping detonation-wave loading experiment on Fe to quantify the effect on phase transition. – Identify key mechanisms in particle-target interaction in multiphase blast explosives. – Perform code verification and validation for multiphase blast explosives model. – Complete quasi-static and laser-driven shock experiments on controlled microstructure materials made from alloy mixture and from W/Bi. – Simulate laser-based shock experiments with ALE-3D. – Perform KRAKEN simulations of spall, Taylor impact, cylinder expansion. – Initial release of KRAKEN fragmentation analysis system. – Implement first part of mixture theory in CTH. – Apply enhanced sand model in impact simulations. – Complete dynamic friction study. – Perform first suite of penetration and perforation experiments into complex targets. <p>FY 2014 Plans:</p> <ul style="list-style-type: none"> – Apply high magnification imaging infrared to dynamic defect studies. – Implement multi-field techniques into Pagosa+. 				

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>		R-1 ITEM NOMENCLATURE PE 0603225D8Z: <i>Joint DOD/DOE Munitions Technology Development</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
<ul style="list-style-type: none"> – Improve modeling of sweeping detonation-wave loading spallation and dynamic sphere extrusion experiments. – Complete oblique high explosive (HE) driven shock hardening and damage microstructural characterization on Zr and Cu-Pb alloy. – Enhance predictive capability of multiphase blast explosives model. – Perform quasi-static and laser-based shock experiments on first batch of samples of W-Fe-Ni alloy powders with dilute concentrations of low melting point Bi-Sn alloy powders. – Simulate engineering microstructures with multi-phase material fragmentation simulations. – Acquire data from fragmentation tests for validation of KRACKEN code. – Implement second part of mixture theory in CTH. – Deliver improved constitutive sand model to the GEODYN material library. – Perform field scale penetrator tests into sand and update model. – Conduct probabilistic studies of projectile penetration/perforation into complex targets. – Perform compression, shear, and tensile experiments in order to investigate a variety of interface configurations including friction, preload effects, interface orientation, and shock mitigating materials. 				
<p>Title: Munitions Lifecycle Technologies</p> <p>Description: This focus area supports improving the Department's ability to understand, measure, predict, and mitigate safety and reliability problems caused by materials aging and degradation in weapons systems. Current stockpile assessment methods typically focus on addressing materials aging and reliability problems after they occur, rather than anticipating and avoiding future problems or failure mechanisms. The overall objective of this work is to develop a toolset of computational models that are able to quantitatively predict materials aging processes and ultimately improve the long-term reliability of weapons systems, sub-assemblies, and/or components. These objectives are achieved by: identifying aging mechanisms, quantifying the rates at which those aging mechanisms occur, developing predictive models, and using these models to predict the munitions stockpile reliability. An additional objective of this work is to develop technologies and methodologies to enable munitions health management and condition-based maintenance.</p> <p>The specific projects in the warhead and penetration technology focus area are:</p> <ul style="list-style-type: none"> – Predictive materials aging including: solder interconnect reliability, corrosion of electronics, and adhesive degradation. – MEMS reliability. – Military use of commercial, off the shelf (COTS) electronics. – Complex system health assessment. <p>FY 2012 Accomplishments:</p>		1.211	1.113	1.145

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>		R-1 ITEM NOMENCLATURE PE 0603225D8Z: <i>Joint DOD/DOE Munitions Technology Development</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
<ul style="list-style-type: none"> – Developed methodology to identify best resource allocation using Pareto front approach to design of experiments for weapon system health assessment. – Developed methodology for optimizing weapon system usage pattern based on health assessment. – Developed method to characterize adhesive degradation to due temperature and humidity changes. – Demonstrated success in mitigating thermal degradation of Silicon used for MEMS fabrication via forming a protective oxide on the devices. <p>FY 2013 Plans:</p> <ul style="list-style-type: none"> – Couple environmental data to weapon system reliability in health assessment. – Initiate accelerated aging studies of glassy, rubbery, and nickel platelet-filled rubbery coatings for tin whisker mitigation on Sn-plated components. – Validate and calibrate engineered aging structures to collect environmental data at the bondpad surface for Cu and Al corrosion in electronics. – Determine silicon on insulator (SOI) sidewall and high temperature degradation of MEMS silicon at high temperatures. – Publish best practices for trusted COTS process that include avoidance and detection of counterfeit and adversarial threats. <p>FY 2014 Plans:</p> <ul style="list-style-type: none"> – Validate bondpad corrosion model with modified plastic encapsulated microelectronics (PEM) parts. – Asses the role of adhesive swelling due to water absorption on the stress state of the adhesive. – Quantify initial predictive aging and reliability model with results from COTS MEMS device testing. – Methodology and software to perform multiple objective assessments of resource allocation and general management strategies of weapon system usage. – Validation of a general model to connect condition-based measures (age, environmental factors) at the component level failure mode to system reliability. 				
Accomplishments/Planned Programs Subtotals		19.538	20.032	19.305
D. Other Program Funding Summary (\$ in Millions) N/A				
Remarks				
E. Acquisition Strategy N/A				

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>		R-1 ITEM NOMENCLATURE PE 0603225D8Z: <i>Joint DOD/DOE Munitions Technology Development</i>
F. Performance Metrics 1) Transitions of technologies developed by the Program are tracked and documented. In FY 2010 there were more than 25 transitions to DoD. 2) Attendance and technical interactions at the biannual meetings of the nine Technology Coordinating Groups (TCGs) are tracked and documented. 3) Laboratory Five Year Plans are prepared, evaluated, and analyzed by management and technical staff. 4) TCG Chairmen's Annual Assessments for each TCG are critically reviewed by the Technical Advisory Committee to determine progress, validate transition plans, and verify relevance of each project. 5) Project progress toward goals and milestones is assessed at each biannual TCG meeting and critically reviewed annually by the Technical Advisory Committee. 6) Annual technical reports and papers are tracked and documented.		

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE							
0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>					PE 0603618D8Z: <i>Joint Electronic Advanced Technology</i>							
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
Total Program Element	-	6.588	6.983	9.009	-	9.009	14.196	14.474	13.613	10.281	Continuing	Continuing
P619: <i>Joint Electronic Advanced Technology</i>	-	6.588	6.983	9.009	-	9.009	14.196	14.474	13.613	10.281	Continuing	Continuing

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

The Department of Defense must be ready to meet the widespread and growing proliferation of asymmetric electronic threats that are proliferating at an alarming rate, enabled by widely available commercial electronic components and devices. These range from improvised devices constructed from commercially available electronic and industrial components to dedicated military devices that could be used in ways that diminish our technological advantage in conflicts with nation-states. The surprisingly fast appearance of these threats is accelerating and is now happening faster than the requirements and acquisition process can respond.

The use of asymmetric devices is well understood by terrorists and nation-states alike. Using man portable air defense systems, mortars, and improvised explosive devices actuated by electronics components terrorists have attacked both air and ground forces and pose a threat in any region due to their portability. Unmanned aircraft systems, also strongly enabled by electronics components are proliferating and pose a threat both as a military capability and as a potential terrorist weapons delivery mechanism.

Technological surprise and speed of appearance are two asymmetries that highlight the need to rapidly develop and field Electronic Warfare, Information Operations and Asymmetric Warfare capabilities capable of neutralizing such threats in ways that are both fiscally and temporally responsive. This program element investigates means to rapidly mitigate asymmetric threats by integrating advanced commercial and military off-the-shelf technologies in innovative ways and rapidly demonstrating new technological capabilities to augment and/or reduce risk when inserted into service programs of record. Efforts will also look for methods to employ asymmetric principles against our adversaries.

Beginning in FY 2014, the Joint Electronic Advanced Technology (JEAT) project reorganized to be in better alignment with Assistant Secretary of Defense for Research and Engineering electronic warfare research priorities. Particularly, JEAT establishes three pillars that will support the JEAT approach to innovation: 1) experimentation, 2) advanced concepts development/demonstration, and 3) innovative technology exploration. The overarching JEAT philosophy is to be adaptive and to help lead the pace of rapid electronic systems development and the evolving threat picture.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense	DATE: April 2013
-------------------------------------------------------------------------------------------------	-------------------------

APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603618D8Z: <i>Joint Electronic Advanced Technology</i>
-----------------------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------

B. Program Change Summary (\$ in Millions)	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total
Previous President's Budget	7.112	6.983	7.634	-	7.634
Current President's Budget	6.588	6.983	9.009	-	9.009
Total Adjustments	-0.524	0.000	1.375	-	1.375
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-0.522	-			
• SBIR/STTR Transfer	-	-			
• Baseline Adjustments	-	-	1.375	-	1.375
• Other Adjustments	-0.002	-	-	-	-

Change Summary Explanation

FY 2014 baseline adjustments are reflective of DoD S&T priorities and requirements.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE				PROJECT			
0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>					PE 0603618D8Z: <i>Joint Electronic Advanced Technology</i>				P619: <i>Joint Electronic Advanced Technology</i>			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
P619: <i>Joint Electronic Advanced Technology</i>	-	6.588	6.983	9.009	-	9.009	14.196	14.474	13.613	10.281	Continuing	Continuing

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

The Department of Defense (DoD) must be ready to meet the widespread and growing proliferation of asymmetric electronic threats that are proliferating at an alarming rate, enabled by widely available commercial electronic components and devices. These range from improvised devices constructed from commercially available electronic and industrial components to dedicated military devices that could be used in ways that diminish our technological advantage in conflicts with nation-states. The surprisingly fast appearance of these threats is accelerating and is now happening faster than the requirements and acquisition process can respond.

The use of asymmetric devices is well understood by terrorists and nation-states alike. Using man portable air defense systems, mortars, and improvised explosive devices actuated by electronics components terrorists have attacked both air and ground forces and pose a threat in any region due to their portability. Unmanned Aircraft Systems (UAS), also strongly enabled by electronics components are proliferating and pose a threat both as a military capability and as a potential terrorist weapons delivery mechanism.

Technological surprise and speed of appearance are two asymmetries that highlight the need to rapidly develop and field Electronic Warfare, Information Operations and Asymmetric Warfare capabilities capable of neutralizing such threats in ways that are both fiscally and temporally responsive. This program element investigates means to rapidly mitigate asymmetric threats by integrating advanced commercial and military off-the-shelf technologies in innovative ways and rapidly demonstrating new technological capabilities to augment and/or reduce risk when inserted into service programs of record. Efforts will also look for methods to employ asymmetric principles against our adversaries.

Beginning in FY 2014, the Joint Electronic Advanced Technology (JEAT) project reorganized to be in better alignment with Assistant Secretary of Defense for Research and Engineering (ASD(R&E)) electronic warfare research priorities. Particularly, JEAT establishes three pillars that will support the JEAT approach to innovation: 1) experimentation, 2) advanced concepts development/demonstration, and 3) innovative technology exploration. The overarching JEAT philosophy is to be adaptive and to help lead the pace of rapid electronic systems development and the evolving threat picture.

Experimentation:

Distributed Electronic Effects Delivery (DEED) – An experimental venue (live, virtual and constructive) to assess emerging Electronic Warfare (EW) effects coordination and sensor technologies and catalyze the rapid creation of multi-point, collaborative delivery of EW services to warfighters. This effort promotes innovative networked systems management capabilities to provide broad situational awareness and manage EW services delivery in a coordinated and collaborative manner. All impacts

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 3: Advanced Technology Development (ATD)	R-1 ITEM NOMENCLATURE PE 0603618D8Z: Joint Electronic Advanced Technology	PROJECT P619: Joint Electronic Advanced Technology		
on the ability to precisely deliver EW effects (environment, adversary spectrum activities, dynamic platform motion, etc.) while minimizing blue force side effects will be assessed. Because this venue will employ many developmental and existing UAS, a goal is to include a component to allow assessment of the vulnerability of these UAS to EW effects.				
Advanced Concepts Development/Demonstration:				
Advanced Threat Countermeasures – This effort focuses on the investigation of innovative, low cost, near-term Countermeasures (CM) solutions that can be rapidly fielded to counter new classes of advanced missile seekers. It builds on prior work with the Services (signature collections and analyses of CM delivery mechanisms) to begin the process of assessing potential CM solutions.				
Software Programmable/Spectrum Diverse Electronic Attack (EA) Capability – Opportunities exist to adapt existing technology used for communication and other purposes into highly configurable EA capability. This technology will help counter adversary movement into advanced military purpose digital electronic systems. Beginning in FY 2014 JEAT will begin to adapt software configurable communications technology to be used as part of a distributed, networked, EA capability that can be readily adapted for installation in a wide variety of host platforms.				
Innovative Technology Exploration:				
Adaptive/Asymmetric Technology – This effort directly supports ASD(R&E), EW and CM by performing analyses and studies of emerging asymmetric threats. Past efforts under this JEAT project include the Aircraft Survivability Equipment Joint Analysis Team and the Helicopter Survivability Task Force, both of which resulted in significant strategic technology investments by the Department.				
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
Title: Integrated Situational Awareness and Countermeasures		2.712	3.000	0.000
Description: DoD aircraft currently use a federated architecture of sensors and CM to protect themselves against guided and unguided hostile threats while simultaneously avoiding collisions with the ground and other obstacles. These sensors typically provide the pilot with separate displays of radar warning and missile warning to guide the pilot in selecting automatic or manual countermeasures against radar, laser, or radio frequency guided threats. These unfused sensors create a serial information stream which can induce an inadequate response to the threat. Federated systems consume weight, space, and power which are at a premium in small platforms. Additionally, there currently is no coordinated effort to develop integrated situational awareness or control CM that include off-board systems.				
FY 2012 Accomplishments: In FY 2012 Integrated Situational Awareness and Countermeasures efforts focused laying the groundwork for integrating the magnetic mirror technology into a multi-functional system that provides non-lethal hostile fire CM as well as Infrared CM. Initial integration studies for feeding the magnetic mirror subsystem with information from advanced threat detectors were accomplished.				

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603618D8Z: <i>Joint Electronic Advanced Technology</i>	PROJECT P619: <i>Joint Electronic Advanced Technology</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
Also, parametric studies of the ability to provide free space laser communications and situational awareness in degraded visual environments were conducted, providing valuable information for future planning for an integrated capability.			
FY 2013 Plans: Include efforts to study integration of free space laser communications capability based upon magnetically actuated optics and study/begin to demonstrate feasibility of combining design elements with Infrared CM, Hostile Fire Detection/CM and obstacle avoidance systems into an integrated package. Rotorcraft Aircraft Survivability Equipment (RASE) Experiment – JEAT will complete its objectives during a RASE experiment in FY 2013, conducting the third and final annual RASE event. Objectives for this event include geo-location of the point of origin of a hostile projectile, networking the point of origin information off-board and demonstrating the technical feasibility of delivering non-lethal countermeasures to the shooter.			
Title: Low Cost/Near Term Counter Asymmetric Systems Description: Low cost, near term technologies solutions to asymmetric EW threats. FY 2012 Accomplishments: In FY 2012 this project included evaluation of two advanced technology CM, Special Materials Aero Urban Decoy which was tested on the H-60 aircraft with positive results, and signature measurement of aircraft in a way that will support development of CM to a new group of advanced threats. Finally, EW Systems Engineering Analysis focused on building knowledge base for decision makers in a critical area of interest. FY 2013 Plans: Complete JEAT funded efforts to gather information necessary to develop CM to an advanced new category of threats to fixed wing aircraft and rotorcraft. Based upon the Office of the Secretary of Defense Advanced Threat study, completed in FY 2010, JEAT will continue efforts to study possible solutions to emerging threats. JEAT will begin efforts to evaluate techniques to rapidly develop CM to advanced, fourth and fifth generation Infrared Missiles. This will support signature measurements, modeling, technique development and evaluation as well as laboratory trials. Create and populate data into the CM database available for broad joint service use.		0.996	1.000
Title: Disruptive Technology Defeat and Utilization Description: Emerging and disruptive technologies analysis; rapid prototyping of technologies required to adapt counter-terrorism techniques to threats in Overseas Contingency Operations (OCO). Primary payoff is an assessment of current system capabilities and limitations against the threat and capture of baseline system performance against the threat set for developing technologies.		2.880	2.983
			0.000

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603618D8Z: <i>Joint Electronic Advanced Technology</i>	PROJECT P619: <i>Joint Electronic Advanced Technology</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
<p>JEAT will demonstrate rapid prototyping of technologies required to combat adaptive threats. In FY 2013 the efforts of this mostly government team will include novel techniques to detect and locate the signatures of terrorist activities using electronic means. Trident Spectre provides a venue for various members of Special Forces, Conventional Forces and Intelligence Community to collaborate on and evaluate technologies and techniques related to "Tactical Intelligence" in a technical, operational, and safe environment. Trident Spectre provides an opportunity for capability developers (scientists, engineers, designers) to interact directly with tactical operators, collectors and analysts; and a process that correctly and efficiently reviews potential Tactical Intelligence technologies and techniques that will enhance the operational capability of the DoD activities in OCO. Primary payoff is improved connectivity and more efficient collection and dissemination of Tactical Intelligence. Customers include United States Central Command, Special Operations Command (SOCOM), ASD(R&E), DoD Conventional/Special Forces, and members of the Intelligence Community. Products include an after action report and a transition plan moving management activities from ASD(R&E).</p> <p>FY 2012 Accomplishments: The primary achievement in this project in FY 2012 was the sponsorship of the Trident Spectre demonstration where a diverse set of technology (more than 100 experiments) from the DoD, Intelligence Community and industry was evaluated in a large, free play, demonstration. This demonstration has in the past produced numerous direct technology insertions into the hands of warfighters.</p> <p>FY 2013 Plans: Primary focus of FY 2013 efforts in Disruptive Technology Defeat and Utilization is sponsorship of the Trident Spectre demonstration for the final time before it transitions to SOCOM sponsorship in FY 2014. Past Trident Spectre events have included more than 100 experiments and have produced technical solutions that transition directly and nearly immediately into the hands of warfighters and intelligence professionals.</p>			
<p>Title: Experimentation</p> <p>Description: FY 2014 efforts will leverage the methodologies of past, successful JEAT experimentation efforts including the Black Dart counter UAS demonstration and the RASE to establish a new venue to investigate ways of providing distributed delivery of electronic effects. This new venue called DEED will evaluate the ability to provide EW effects using a collaborative, distributed set of electronic systems which can provide a robust, adaptive and effective network of electronic attack delivery methods. FY 2014 DEED participation will emphasize UAS, with future years adding surface and other delivery platforms.</p> <p>FY 2014 Plans: DEED – A demonstration venue (live, virtual and constructive) to assess emerging EW effects coordination and sensor technologies and catalyze the rapid creation of multi-point, collaborative delivery of EW services to warfighters. This effort promotes innovative networked systems management capabilities to provide broad situational awareness and manage</p>		0.000	2.376

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 3: Advanced Technology Development (ATD)	R-1 ITEM NOMENCLATURE PE 0603618D8Z: Joint Electronic Advanced Technology	PROJECT P619: Joint Electronic Advanced Technology		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
EW services delivery in a coordinated and collaborative manner. All impacts on the ability to precisely deliver EW effects (environment, adversary spectrum activities, dynamic platform motion, etc.) while minimizing blue force side effects will be assessed. Because this venue will employ many developmental and existing UAS, a goal is to include a component to allow assessment of the vulnerability of these UAS to EW effects is included.				
Title: Advanced Concepts Development/Demonstration Description: Investigate low cost, near term technologies that could solve rapidly emerging, asymmetric EW problems and provide new advanced capabilities to United States forces. Foci include threats, technological opportunity space and approaches that are not covered by existing programs of record, and include, but will not be limited to: assessment of existing military systems vulnerability to degradation by electronic attack (both air and surface domain) and UAS electronic attack vulnerability assessments. FY 2014 Plans: Advanced Threat Countermeasures - Focuses on the development of innovative, low cost, near-term CM solutions that can be rapidly fielded to counter new classes of advanced missile seekers. Builds on prior work with the Services (signature collections and analyses of CM delivery mechanisms) to begin the process of assessing potential CM solutions. Software Programmable/Spectrum Diverse Electronic Attack (EA) Capability – Opportunities exist to adapt existing technology used for communication and other purposes into highly configurable EA capability. This technology will help counter adversary movement into advanced military purpose digital electronic systems. Beginning in FY 2014 JEAT will begin to adapt software configurable communications technology to be used as part of a distributed, networked, EA capability that can be readily adapted for installation in a wide variety of host platforms.		0.000	0.000	5.000
Title: Innovative Technology Exploration Description: This effort directly supports ASD(R&E), EW and CM through analyses and studies of emerging asymmetric threats. Past efforts under this JEAT project include the Aircraft Survivability Equipment Joint Analysis Team and the Helicopter Survivability Task Force, both of which resulted in significant strategic technology investments by the Department. FY 2014 Plans: Innovative Technology Exploration efforts will focus on creating an adjunct to the DEED venue which will seek to provide more direct and immediate use of Intelligence Community technology and capability in spectrum warfare. Of particular emphasis is the use of near-real time analysis of an environment full of diverse commercial and military purpose emitters and quickly producing actionable, decision quality information that allows us to use the spectrum to our advantage. The objective of this effort is to		0.000	0.000	1.633

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>		R-1 ITEM NOMENCLATURE PE 0603618D8Z: <i>Joint Electronic Advanced Technology</i>	PROJECT P619: <i>Joint Electronic Advanced Technology</i>
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
encourage better collaboration and capability development including the military services and the Intelligence Community. In this first year of effort, JEAT will study opportunities for better utilization of Intelligence Community derived information and capability.			
Accomplishments/Planned Programs Subtotals		6.588	9.009
C. Other Program Funding Summary (\$ in Millions) N/A			
Remarks			
D. Acquisition Strategy N/A			
E. Performance Metrics N/A			

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE							
0400: Research, Development, Test & Evaluation, Defense-Wide BA 3: Advanced Technology Development (ATD)					PE 0603648D8Z: Joint Capability Technology Demonstration (JCTD)							
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
Total Program Element	-	192.297	158.263	174.428	-	174.428	156.756	171.491	166.970	164.221	Continuing	Continuing
P648: Joint Capability Technology Demonstration (JCTD)	-	192.297	158.263	152.428	-	152.428	135.756	150.491	146.970	145.221	Continuing	Continuing
P264: Disruptive Demonstrations	-	0.000	0.000	22.000	-	22.000	21.000	21.000	20.000	19.000	Continuing	Continuing

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

Note

In FY 2014, the "Disruptive Demonstrations" project was inserted to support development and demonstration of time-sensitive capabilities that address Secretary/ Department Strategic Vectors and Chairman's Gap Assessment of capability shortfalls. As a result, we anticipate less partner funding for those strategic investment areas and will have to rely on greater partner funding for other Joint Capability Technology Demonstration (JCTD) projects. Overall, we envision fewer JCTD projects that will be longer in duration.

Today's operations require faster delivery of new capabilities. Therefore, the JCTD Program works to accelerate project selection, encourage capability demonstration of less than two years where possible, but supports longer term projects (three years or more) when technical challenges warrant it. This revised process includes: streamlined project approval and initiation; clear one-year deliverables and decision points for projects greater than a year in duration; and annual reviews of ongoing JCTDs to assess deliverables and continuation of the project.

A. Mission Description and Budget Item Justification

The JCTD Program directly addresses Joint, Coalition, and/or Interagency capability needs expressed by Combatant Commands (COCOMs). Due to significant successes since inception of the program (initially the Advanced Capability Technology Demonstration (ACTD) Program), the JCTD Program is often viewed by COCOMs as a primary means to rapidly develop, assess, and transition time-sensitive capability solutions into operations. Through partnering with other solution providers and resource sponsors, the JCTD Program typically leverages two dollars in partner funding for every one dollar in the JCTD budget. Thus, the value and impact of JCTDs to the COCOMs is significantly greater than a traditional Research and Development (R&D) program.

Key values demonstrated by the JCTD program are:

- The program has a long history of providing enduring capabilities: to date, over 80 percent of completed JCTDs have successfully transitioned capabilities to warfighters. 70 percent of completed ACTD projects successfully transitioned their products. See "Section D. Acquisition Strategy" for transition discussion.
- The program delivers capabilities rapidly; projects execute quicker than the Department of Defense (DoD) Planning, Programming, Budgeting, and Execution (PPBE) process. The result is that 74 JCTD/ACTD projects delivered capabilities used in Operation Iraqi Freedom, and 57 projects delivered capabilities to Operation Enduring Freedom. Most of those capabilities would not have been delivered – or would have been significantly delayed – without the JCTD program. Recent examples are:

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>		R-1 ITEM NOMENCLATURE PE 0603648D8Z: <i>Joint Capability Technology Demonstration (JCTD)</i>
<p>sensor capabilities for finding and interdicting tunnels delivered to Afghanistan to address a Joint Urgent Operational Needs Statement (JUONS) requirement and to interdict tunnels on the US-Mexico border; autonomous technologies for unmanned aerial resupply of forward operating bases; a sensor capability to provide situational awareness in the riverine environment; and a deployable, integrated system to provide essential services in the immediate aftermath of a crisis event, to include renewable-powered water desalination deployed to all the COCOMs.</p> <p>-The program enables Coalition cooperative development by leveraging partner nation expertise and resources; approximately one-third of JCTD projects involve some degree of coalition partner participation. As a result of successful past collaborations, the program now enjoys routine interactions with the United Kingdom, Canada, Australia, the Republic of Korea, and the Republic of Singapore.</p> <p>- The program enables development and execution of interdepartmental cooperation projects, such as projects with the Department of Homeland Security (DHS), Department of State (DOS), and Department of Transportation (DOT). Recent examples are interdepartmental collaborations for maritime awareness, air domain information sharing, tunnel detection and characterization, and Arctic awareness.</p> <p>- The program enables rapid response to new DoD priorities before Service PPBE cycles can respond. For example, the DoD has recently established priorities for Anti-Access/Area-Denial, Building Partner Capacity, understanding human terrain, and nuclear forensics. The JCTD Program quickly responded to the new priorities and is providing initial capabilities that are transitioning to Service efforts.</p> <p>MEASURABLE OUTCOMES: Metrics include all JCTDs will have deliverables within 15 months (analyses, designs, models, etc.) to enable assessment for project continuation; 50 percent of JCTDs will provide an operationally-relevant prototype within 18 months; and 75 percent will complete final demonstration within 24 months of receiving funding. JCTDs will spiral products and deliverables during the demonstration to meet COCOM needs. Capabilities delivered and technologies transitioned are additional key metrics.</p> <p>Transition Achievement: The JCTD program has been achieving actual transition rates of over 80 percent, well in excess of the DoD Strategic Objective 3.5.2D, Performance Measure 3.5.1-2D, goal of 40 percent. The JCTD Program defines transition as all or components of the demonstrated JCTD going to a new or existing Program of Record (POR), providing fieldable-prototypes (residual capabilities) sustained by non-JCTD funds in direct support of operations in theater, or commodity-type capabilities entered onto General Service Administration (GSA) schedule for procurement by DOD users. 13 of 16 completions in FY 2012 were successfully transitioned.</p>		

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense	DATE: April 2013
-------------------------------------------------------------------------------------------------	-------------------------

APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603648D8Z: <i>Joint Capability Technology Demonstration (JCTD)</i>
-----------------------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------

B. Program Change Summary (\$ in Millions)	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total
Previous President's Budget	171.807	158.263	155.198	-	155.198
Current President's Budget	192.297	158.263	174.428	-	174.428
Total Adjustments	20.490	0.000	19.230	-	19.230
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	20.543	-			
• SBIR/STTR Transfer	-	-			
• Baseline Adjustments	-	-	19.230	-	19.230
• Other Adjustments	-0.053	-	-	-	-

Change Summary Explanation

FY 2012: Net increase of \$20.490 million due to a remuneration of \$21.300 million from the High Performance Computing Modernization program and net adjustments of -\$0.810 million in reprogrammings and other adjustments to support OSD efforts.

FY 2014: Baseline adjustments reflective of DoD priorities and requirements.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 3: Advanced Technology Development (ATD)					R-1 ITEM NOMENCLATURE PE 0603648D8Z: Joint Capability Technology Demonstration (JCTD)				PROJECT P648: Joint Capability Technology Demonstration (JCTD)			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
P648: Joint Capability Technology Demonstration (JCTD)	-	192.297	158.263	152.428	-	152.428	135.756	150.491	146.970	145.221	Continuing	Continuing

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

Note

Today's operations require faster delivery of new capabilities. Therefore, the Joint Capability Technology Demonstration (JCTD) Program works to accelerate project selection, encourage capability demonstration of two years where possible, but supports longer term projects (three years or more) when technical challenges warrant it. This revised process includes: streamlined project approval and initiation; clear one-year deliverables and decision points for projects greater than a year in duration; and annual reviews of ongoing JCTDs to assess deliverables and continuation of the project.

A. Mission Description and Budget Item Justification

The JCTD Program directly addresses Joint, Coalition, and/or Interagency capability needs expressed by Combatant Commands (COCOMs). Due to significant successes since inception of the program (initially the Advanced Capability Technology Demonstration (ACTD) Program), the JCTD Program is often viewed by COCOMs as a primary means to rapidly develop, assess, and transition time-sensitive capability solutions into operations. Through partnering with other solution providers and resource sponsors, the JCTD Program typically leverages two dollars in partner funding for every dollar in the JCTD budget. Thus, the value and impact of JCTDs to the COCOMs is significantly greater than a traditional Research and Development (R&D) program.

Key values demonstrated by the JCTD program are:

- The program has a long history of providing enduring capabilities: to date, over 80 percent of completed JCTDs have successfully transitioned capabilities to warfighters. 70 percent of completed ACTD projects successfully transitioned their products. See "Section D. Acquisition Strategy" for transition discussion.
- The program delivers capabilities rapidly; projects execute quicker than the traditional Department of Defense (DoD) Planning, Programming, Budgeting, and Execution (PPBE) process. The result is that 74 JCTD/ACTD projects delivered capabilities used in Operation Iraqi Freedom, and 57 projects delivered capabilities to Operation Enduring Freedom. Most of those capabilities would not have been delivered – or would have been significantly delayed – without the JCTD program. Recent examples are: sensor capabilities for finding and interdicting tunnels delivered to Afghanistan to address a Joint Urgent Operational Needs Statement (JUONS) requirement and to interdict tunnels on the US-Mexico border; autonomous technologies for unmanned aerial resupply of forward operating bases; a sensor capability to provide situational awareness in the riverine environment; and a deployable, integrated system to provide essential services in the immediate aftermath of a crisis event, to include renewable-powered water desalination deployed to all the COCOMs.
- The program enables coalition cooperative development by leveraging partner nation expertise and resources; approximately one-third of JCTD projects involve some degree of coalition partner participation. As a result of successful past collaborations, the program now enjoys routine interactions with the United Kingdom, Canada, Australia, the Republic of Korea, and the Republic of Singapore.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 3: Advanced Technology Development (ATD)	R-1 ITEM NOMENCLATURE PE 0603648D8Z: Joint Capability Technology Demonstration (JCTD)	PROJECT P648: Joint Capability Technology Demonstration (JCTD)	
<p>- The program enables development and execution of interdepartmental cooperation projects, such as projects with the Department of Homeland Security (DHS), Department of State (DOS), and Department of Transportation (DOT). Recent examples are interdepartmental collaborations for maritime awareness, air domain information sharing, tunnel detection and characterization, and Arctic awareness.</p> <p>- The program enables rapid response to new DoD priorities before Service PPBE cycles can respond. For example, the Department has recently established priorities for Anti-Access/Area-Denial, Building Partner Capacity, understanding human terrain, and nuclear forensics. The JCTD Program quickly responded to the new priorities and is providing initial capabilities that are transitioning to Service efforts.</p> <p>MEASURABLE OUTCOMES: Metrics include: all JCTDs will have deliverables within 15 months (analyses, designs, models, etc.) to enable assessment for project continuation; 50 percent of JCTDs will provide an operationally-relevant prototype within 18 months; and 75 percent will complete final demonstration within 24 months of receiving funding. JCTDs will spiral products and deliverables during the demonstration to meet COCOM needs. Capabilities delivered and technologies transitioned are additional key metrics.</p> <p>Transition Achievement: The JCTD program has been achieving actual transition rates of over 80 percent, well in excess of the DoD Strategic Objective 3.5.2D, Performance Measure 3.5.1-2D, goal of 40 percent. The JCTD Program defines transition as all or components of the demonstrated JCTD going to a new or existing Program of Record (POR), providing fieldable-prototypes (residual capabilities) sustained by non-JCTD funds in direct support of operations in theater, or commodity-type capabilities entered onto GSA schedule for procurement by Department users. 13 of 16 completions in FY 2012 were successfully transitioned.</p>			
B. Accomplishments/Planned Programs (\$ in Millions)	FY 2012	FY 2013	FY 2014
<p>Title: Mission Assurance Decision Support System (MADSS)</p> <p>Description: MADSS provides an integrated Command, Control and Communications (C3) operational and critical infrastructure relationships understanding by correlating data from different data sources, using web-based services, and secure network and automated data transformation services. MADSS provides improved responsiveness and predictive capability, rapid event analysis, and Warfighter analysis of alternatives development for network and critical infrastructure outages. MADSS is in daily operational use at U.S. Strategic Command (STRATCOM).</p> <p>FY 2012 Accomplishments: Maintained MADSS accreditation status, conducted monthly training sessions for operators, and activated three COCOM user communities of interest at STRATCOM, U.S. Cyber Command (CYBERCOM), and U.S. Northern Command (NORTHCOM).</p>	1.500	0.000	0.000
<p>Title: Cooperative Security Engagement (CSE)</p> <p>Description: CSE demonstrates operational concepts and tools for enabling joint, interagency, multi-national planning, coordination, and synchronization. CSE provides a framework for interagency adaptive planning; regional and multinational/event based information sharing; and integrated event assessment, operation, monitoring, and evaluation. The JCTD sponsor is U.S. Southern Command (SOUTHCOM) and U.S. European Command (EUCOM). The U.S. Agency for International Development (USAID) provides key technical and operational input. Transition will incorporate CSE capabilities and operational concepts</p>	1.505	0.000	0.000

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603648D8Z: <i>Joint Capability Technology Demonstration (JCTD)</i>	PROJECT P648: <i>Joint Capability Technology Demonstration (JCTD)</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
into COCOM stability operations. Program Outputs and Efficiencies: (1) interagency adaptive planning process and tool; (2) streamlined regional and interagency assessments; (3) regional and multi-national information sharing; (4) repeatable and reusable frameworks; (5) mutually visible situation/event assessment and planning; and (6) collaborative implementation, monitoring, and evaluation tools.			
FY 2012 Accomplishments: Operational Demonstration 1 (OD1) was successfully concluded. Operational Demonstration 2 (Phase 1) was initiated in the SOUTHCOM Area of Responsibility and addressed functional requirements and Critical Operational Issues and Criteria, not demonstrated during OD1. The Operational Utility Assessment was initiated. USAID is a full partner in all of these events and Interagency Tactics, Techniques, and Procedures were developed. Additionally, in an effort to reach out to our interagency and non-government organization partners, the Technical Management Office, in cooperation with the United States Institute of Peace (USIP), conducted a demonstration of the Unity platform. In FY 2013, the program will transition to Defense Information Systems Agency (DISA)/Unclassified Information Sharing Architecture; host the CSE JCTD/Unity Platform on the SOUTHCOM server as an interim capability; and pursue opportunities to host Unity at both USAID and USIP.			
Title: Counter-Electronics High Powered Microwave System Advanced Missile Project (CHAMP) Description: CHAMP demonstrates and assesses a multi-shot and multi-target aerial High Power Microwave (HPM) platform that is capable of degrading, damaging, or destroying electronic systems. A compact HPM payload will be integrated into an aerial vehicle to create the aerial HPM platform demonstrator. CHAMP is a multi-year project under sponsorship of U.S. Pacific Command (PACOM) for transition to an Air Combat Command Program of Record. The primary outputs and efficiencies to be demonstrated are: (1) delivery of the HPM aerial system to the target; (2) minimum effectiveness HPM range; (3) stand-off distance from launch to target; (4) multiple geographically separated targets; and (5) navigation, orientation, and fuzing accuracy. FY 2012 Accomplishments: Completed flight test, Military Utility Assessment, and documentation for transition to Program of Record. Completed the JCTD.		3.300	0.000
Title: Tactical Edge Data Solutions (TEDS) Description: TEDS is the implementation of Command and Control (C2) Core extensions for tactical information at the battalion level so that web-services data sharing frameworks based on Universal Core (UCore) can enable data sharing among disparate systems. TEDS focuses on exchanging data from Army and Marine Corps C2 Authoritative Data Sources for the C2 and Battlespace Awareness domains. The efficiencies gained will be the reduction of redundant software being developed across multiple programs and the ability to seamlessly exchange data within Military Services as well as North Atlantic Treaty Organization (NATO) and coalition partners who adopt UCore. Transition of the C2 Core extensions and Web services for		1.700	0.000

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense			DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>		R-1 ITEM NOMENCLATURE PE 0603648D8Z: <i>Joint Capability Technology Demonstration (JCTD)</i>		PROJECT P648: <i>Joint Capability Technology Demonstration (JCTD)</i>	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2012	FY 2013	FY 2014
translation and semantic mediation is planned for Programs of Record in the Army and Marine Corps. The output of TEDS will enable C2 systems to migrate to a Service Oriented Architecture environment.					
<i>FY 2012 Accomplishments:</i> Demonstrated net-enabled Coalition Data Sharing using C2 Core in Coalition Warrior Interoperability Exercise with seven coalition partners. Transitioned these capabilities by uploading the information exchange specifications to the DoD Metadata Data Repository and the NATO Metadata Registry and Repository. Transitioned Web services to Army and Marine Corps for use in tactical programs of record to enable mediation of data across tactical C2 systems for Position Reports, Significant Activity, and Enemy Situation reporting using U.S. message text formatting. Provided the repeatable processes for extending C2 Core mediation to other communities of interest such as logistics, force support, and cyber. Completed the JCTD.					
<i>Title:</i> Rapid Reaction Tunnel Detection (R2TD) <i>Description:</i> R2TD demonstrates a set of detection and mapping technologies, and establishes procedures to provide Joint Force Commanders with a capability to detect, characterize, and interdict tunnels on the battlefield and beneath the U.S. borders. R2TD will accurately locate subsurface voids up to 100 feet deep; detect tunnel construction in real-time and report summaries every four hours; detect movement of contraband through tunnels in near-real time and report summaries every four hours; precisely locate tunnel axis, ingress and egress points; characterize physical dimensions of tunnels; and characterize internal features of tunnels including floor, shoring, lighting, ventilation, and water presence/flow. <i>FY 2012 Accomplishments:</i> Tested and integrated Passive and Active systems into one Common Operating Picture (COP). Conducted the final Operational Demonstration with the fully integrated suite of systems. Transitioned to Army Program of Record for long term sustainability. Completed the JCTD.			2.203	0.000	0.000
<i>Title:</i> Command and Control Gap Filler (C2GF) <i>Description:</i> C2GF will provide an information systems architecture that can share all-source air surveillance data between government departments. The C2GF solution will also provide data fusion services to users. Additionally, the C2GF will refine the concept of operations and employment and Tactics, Techniques, and Procedures (TTP) necessary for air domain surveillance coordination. <i>FY 2012 Accomplishments:</i> Completed work on air surveillance data fusion capability. Validated and demonstrated the C2GF architecture by incorporating data from representative air surveillance sensors in Operation Vigilant Shield. Provided stand-alone air picture in Air Operations			4.200	4.000	0.000

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603648D8Z: <i>Joint Capability Technology Demonstration (JCTD)</i>	PROJECT P648: <i>Joint Capability Technology Demonstration (JCTD)</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
Center (AOC). Completed C2GF Enterprise Technical Demonstration 2 for sensor integration. Provided enhanced C2 capabilities on DoD computer networks, Releasable Canadian (RELCAN), and DHS networks.			
FY 2013 Plans: Conduct Operational Utility Assessment at an U.S. Northern Command exercise. Provide expanded disparate sensor integration and integrated Air and Missile Defense sensor netting. Provide sensor integration capability among DoD and Federal Aviation Administration (FAA) sensors in the AOC. Complete the JCTD.			
Title: Joint Unmanned Air Systems (UAS) Precision Targeting (JUPT) Description: JUPT rapidly provides precision coordinates from UAS generated imagery for use with coordinate seeking weapons. JUPT provides the Joint Commander the ability to rapidly transition from observing to striking high value targets with coordinate seeking weapons in all terrain, while minimizing collateral damage. FY 2012 Accomplishments: Approved Management Transition Plan. Conducted operation demonstrations and Joint Operational Utility Assessments. Transitioned capability to Army Program Manager-Unmanned Air Systems and U. S. Special Operations Command. Completed the JCTD.		1.446	0.000
Title: Fixed Wing Advanced Precision Kill Weapon System (FW-APKWS) Description: FW-APKWS provides the legacy AV-8B and A-10 (optionally F-18 and F16) aircraft with a precision air-to-ground low collateral damage weapon for use in close controlled strike applications. FW-APKWS will demonstrate a weapon that increases the flexibility of current fixed-wing inventory and delivers 50 residuals (25 U.S. Air Force, 25 U.S. Navy) for limited use. FY 2012 Accomplishments: Conducted instrumented measurement vehicle testing on AV-8B and A-10 aircraft. Conducted technical demonstrations. In FY 2013, the program will finalize the Technical Data Package, complete the Military Utility Assessment and Operational Assessment, and modify the Operational Requirements Document of APKWS to include fixed-wing production requirements.		2.000	0.000
Title: Operational Three-Dimension (Op3D) Description: Op3D is a joint interagency program sponsored by U.S. Special Operations Command (SOCOM). Op3D will develop and transition capabilities to quickly discover, manage, generate, exploit, disseminate, and accurately update 3D Geographic Intelligence data from multiple collection systems to the warfighter. The JCTD consists of three overlapping development and demonstration spirals. Residuals from the effort include an enhanced 3D data processing pipeline, warfighter/analyst exploitation tools, Tactics, Techniques and Procedures (TTPs), concepts of operations, user guides and training packages. SOCOM is responsible for requirements validation and transition management for the Special Operations Forces		1.400	0.000

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603648D8Z: <i>Joint Capability Technology Demonstration (JCTD)</i>	PROJECT P648: <i>Joint Capability Technology Demonstration (JCTD)</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
community. The National Geospatial-Intelligence Agency (NGA) will develop and transition successful Op3D technologies into Programs of Record. Op3D will spiral capabilities into Agency and Service Production Centers.			
FY 2012 Accomplishments: Executed, evaluated, and transitioned Spiral Two and Three tasks. Developed Concept of Operations, standard operating procedures, TTPs, user guides, and training packages for successful Spiral Three processes. Completed the JCTD.			
Title: Integrated Satellite Communications - Global Information Grid (SATCOM-GIG) Operations and Management (ISOM) Description: ISOM will demonstrate real-time Internet Protocol (IP) satellite communications (SATCOM) situational awareness (SA) and a scalable and policy-based management system that enables dynamic allocation and provisioning of SATCOM resources. ISOM will integrate certain existing terrestrial and IP SATCOM management tools which will greatly improve the ability to make the most of underutilized SATCOM resources or to resolve complex warfighter communications outages. ISOM integrates real-time situational awareness of SATCOM resources to provide a single, over-arching view of current SATCOM allocations and the load on these links. It then provides an automated ability to act on this information by dynamically re-allocating or re-provisioning the SATCOM resources given to IP SATCOM networks. FY 2012 Accomplishments: Engineered architecture to align with Defense Information System Network (DISN) Operational Support System (OSS) sustainment requirements. Conducted Operational Utility Assessment in operationally relevant network environment. Integrated ISOM SA with the policy-based management capability that enables dynamic allocation and provisioning of SATCOM resources in an end-to-end architecture. Completed second technical demonstration and operational evaluation. In FY 2013, the program will finalize operational demonstrations and assessments on the prototypes and initiate transition to the DISN OSS.		2.723	0.000
Title: National Technical Nuclear Forensics (NTNF) Description: NTNF will strengthen strategic nuclear deterrence by enhancing nuclear forensics capabilities supporting attribution after release of nuclear materials (details are classified). NTNF will integrate advanced air and ground debris sample collection technologies in both manned and unmanned platforms, and integrate DoD capabilities into the developing joint interagency Concept of Operations (CONOPS) for advanced air and ground sample collection with global applicability. The project will also demonstrate enhanced integrated yield estimation methods for nuclear events. The techniques to be employed will increase capabilities to determine initial yields and collect nuclear debris, while enhancing safety for NTNF Task Force personnel. FY 2012 Accomplishments:		3.800	2.000
			0.000

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense			DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>		R-1 ITEM NOMENCLATURE PE 0603648D8Z: <i>Joint Capability Technology Demonstration (JCTD)</i>		PROJECT P648: <i>Joint Capability Technology Demonstration (JCTD)</i>	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2012	FY 2013	FY 2014
Detailed capability outputs are classified. Continued technical development, training, and technical demonstrations. Operationally demonstrated and exercised (ODX) ground sampling collection platforms and airborne debris collection capabilities. FY 2013 Plans: Complete JCTD with culmination ODX of all three NTNF capabilities: yield estimation, air sampling, and ground sampling. Produce operational assessment. Publish Joint/Interagency Concept of Operations, Tactics, Techniques and Procedures, and doctrine change recommendations. Complete the JCTD.					
Title: Rapid Site Exploitation (RSE) Description: RSE will employ innovative combat site collection and exploitation capabilities with a web portal to rapidly recognize, collect, analyze, share, track, and manage collected materials. Site exploitation will include biometrics, document and media, and other combat forensic materials. A web portal will link key information sources maintained by multiple U.S. Government organizations. RSE will shorten site collection times from hours to minutes and speed forensic analysis from days to hours. FY 2012 Accomplishments: Continued efforts to complete integrated site exploitation kits and prototype web portal interface, interoperable with biometric, forensic, and document/media exploitation enterprises. Conducted final Utility Assessment and transitioned residuals to a program of record. Completed the JCTD.			2.300	0.000	0.000
Title: Dark Fusion (DF) Description: DF is a capability to detect and track non-emitting maritime threats by integrating data from national collection capabilities which provides the ability to detect and track difficult maritime targets and increases maritime situational awareness (details are classified). FY 2012 Accomplishments: Conducted technical demonstration and first operational demonstration. Transitioned spiral capability to the Office of Naval Intelligence (ONI) program of record. FY 2013 Plans: Conduct final operational demonstrations and utility assessments. Transition remaining products to ONI. Complete the JCTD.			5.100	1.500	0.000
Title: Commercial Radar Operational Support to U.S. Southern Command (CROSS) Description: CROSS demonstrates the ability to task, on-demand, three commercial radar constellations and receive unclassified imagery to support operations and contingency planning activities. This capability provides U.S. Southern Command (SOUTHCOM) the ability to fulfill un-met lower resolution imagery tasks (e.g., Haiti disaster relief, Gulf oil spill, and specific classified military applications) within their area of responsibility. Upon successful demonstration at SOUTHCOM, CROSS will			1.100	0.000	0.000

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603648D8Z: <i>Joint Capability Technology Demonstration (JCTD)</i>	PROJECT P648: <i>Joint Capability Technology Demonstration (JCTD)</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
replicate a similar model at remaining Combatant Commands (COCOMs) and instantiate Non-Government Agencies' (NGA) contracts to provide direct and routine tasking and support for long-term COCOM radar imagery buys.			
FY 2012 Accomplishments: Conducted final utility assessment and delivered final Collection Management Tool. Completed the JCTD.			
Title: Combat Commander Direct Participation, Transition Enabling, and Special Programs		28.291	24.014
Description: This effort is comprised of three programs that support the entire JCTD Program, separate from the specific JCTD projects. The three programs are (1) Unified Combatant Commander (COCOM) Direct Support; (2) JCTD Pre-Transition; and (3) Program Integration Office for execution of select, classified projects. (1) COCOM Direct Support: The COCOMs are essential in specifying capability needs, project selection, validation, demonstration, assessment, and transition of JCTDs. The JCTD Program provides direct support to COCOMs, enabling the COCOMs to provide an on-site JCTD manager, typically one to two full-time equivalents (FTEs). (2) JCTD Pre-Transition: In some cases, Service or Agency partner transition funding is not available for one to two years following the JCTD assessment phase due to the Service or Agency Program Objective Memorandum commitments. In such cases, where there is a clear transition and the need to sustain the capability for a short time prior to availability of Service or Agency transition funds the JCTD Pre-Transition fund may be used to meet that need. (3) Program Integration Office: A limited number of classified projects that require enhanced security measures due to need-to-know and/or mission partner sensitivities are managed within the Program Integration Office.			21.000
FY 2012 Accomplishments: COCOM direct participation funding enabled COCOM staff participation in developing and executing JCTD projects, ensuring direct warfighter input and proper focus of JCTD projects. JCTD Transition Enabling funds targeted transition for projects that included Mission Assurance Decision Support System (MADSS), Daily Watch and One-Box-One-Wire (OB-1). The Program Integration Office executed continuing projects, developed additional projects, and managed select projects.			
FY 2013 Plans: COCOM direct participation will continue to enable COCOM staff participation in developing and executing JCTD projects, ensuring direct warfighter input, and proper focus of JCTD projects. JCTD transition enabling funds will provide transition bridge funding for several projects, sustaining the efforts for a year until committed Program of Record (POR) funds are received. The Program Integration Office will execute projects as approved and will develop new projects that address the most critical COCOM needs.			
FY 2014 Plans:			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense			DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>		R-1 ITEM NOMENCLATURE PE 0603648D8Z: <i>Joint Capability Technology Demonstration (JCTD)</i>		PROJECT P648: <i>Joint Capability Technology Demonstration (JCTD)</i>	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2012	FY 2013	FY 2014
Continue to provide COCOM direct participation to enable COCOM staff participation in developing and executing JCTD projects, ensuring direct warfighter input and proper focus of JCTD projects. Sustain selected completed JCTD efforts until POR funds are received. Develop and execute projects as proposed by COCOMs.					
Title: Enabling Technologies (ET)			6.931	39.000	7.000
Description: The ET fund is used to rapidly assess or mature emerging capabilities requested by COCOMs prior to determining whether a JCTD project should be initiated. Emerging Technology investments are small, short (less than one year) efforts that may lead to JCTD proposals, depending on the COCOM assessment and determination of technical maturity.					
FY 2012 Accomplishments: Projects included increased availability of Ultra High Frequency Satellite Communications for disadvantaged users in support of Personnel Recovery; assessment of a tactical data fusion module that addresses cyber vulnerabilities; conduct proof-of-concept of a Resource Assurance framework with emphasis on community and regional stability; secured access to current and reliable geospatial data in U.S. African Command (AFRICOM) area of responsibility; development of an internationally accepted assessment tool for disaster preparedness and risk reduction; maturation of a coherent situational awareness and effective command and control across government, non-government, and foreign partners during Humanitarian Assistance / Disaster Relief missions; delivery of cost effective energy to support the Warfighter; deployment of a maritime domain awareness capability in the South China Sea; development of a capability to conduct surveillance, detection, and geo-location of enemy artillery; maturation of a cost effective solution to Unmanned Ground Vehicle's reliability on Global Positioning System; assessment of co-registration technologies of 360 degrees Three Dimensional (3D) laser and camera data; an integration of an E-2 aircraft Stand-Off Combat Identification capability; and demonstration of a capability to send "call-for-help" message with a DoD Common Access Card (CAC).					
FY 2013 Plans: Projects will be determined based on the rapid assessment or maturing of emerging capabilities requested by COCOMs, inter-agency partners, and/or DoD leadership that are intended to mitigate technical risks prior to determining whether a JCTD project should be initiated. Selected effort will be small, focused, and executable in less than one year and require a concrete deliverable (prototype hardware and/or software, integrated subsystem, tech assessment report, etc.). Desired ET attributes include technology maturation, leads to risk mitigation, partner contributions, and directly responds to COCOM needs. Additionally, in FY 2013, ETs include "Disruptive Demonstrations" to support development/demonstration of time-sensitive capabilities that address Secretary/Department Strategic Vectors, and Chairman's Gap Assessment of capability shortfalls.					
FY 2014 Plans: Projects will continue to be determined based on the rapid assessment or maturing of emerging capabilities requested by COCOMs, interagency partners, and/or DoD leadership that are intended to mitigate technical risks prior to determining whether					

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense			DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>		R-1 ITEM NOMENCLATURE PE 0603648D8Z: <i>Joint Capability Technology Demonstration (JCTD)</i>		PROJECT P648: <i>Joint Capability Technology Demonstration (JCTD)</i>	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2012	FY 2013	FY 2014
a JCTD project should be initiated. Selected effort will be small, focused, and executable in less than one year and require a concrete deliverable (prototype hardware and/or software, integrated subsystem, tech assessment report, etc.). Desired ET attributes include technology maturation, leads to risk mitigation, partner contributions, and directly responds to COCOM needs. In FY 2014 a new project code (P264) was initiated for Disruptive Demonstrations. ET funds allocated to that effort in FY 2013 are now reflected in project code P264.					
Title: Smart Power Infrastructure Demonstration for Energy Reliability and Security (SPIDERS) Description: SPIDERS will demonstrate cyber-secure “smart” micro-grids with demand side management and integration of renewable energy and storage on military installations, in partnership with Department of Homeland Security (DHS) and Department of Energy (DOE). The expected output and efficiency to be demonstrated is a reduction in the “unacceptably high risk” of extended electric grid outages by developing the capability to “island” installations while maintaining operational surety and security. FY 2012 Accomplishments: Completed micro-grid technical design for Joint Base Pearl Harbor-Hickam, HI and Fort Carson, CO. Procured long lead items for demonstrations. Installed micro-grid technologies. Validated the energy management control system with the cyber security evaluation tool. Received delivery of five Smith electric vehicles and two-way charging stations. Started preparation for the demonstrations at Joint Base Pearl Harbor-Hickam, HI and Ft. Carson, CO. In FY 2013, the program will perform circuit level micro-grid demonstration at Joint Base Pearl Harbor-Hickam, HI and a larger smart micro-grid demonstration with cyber defense and vehicle-to-grid storage at Ft. Carson, CO. The program will develop conceptual design and complete technical micro-grid design for Camp Smith, HI and validate micro-grid technologies and systems for Camp Smith, HI. Perform final operational demonstration of installation level cyber secure smart micro-grid and battery storage with island capability at Camp Smith, HI during the Makana Pahili hurricane exercise. Determine the military utility of the technologies and procedures demonstrated. Transition the technologies to DoD, and DOE and to other governmental and public energy agencies.			1.600	0.000	0.000
Title: High Speed Container Delivery System (HSCDS) Description: HSCDS will integrate aerial delivery components to provide a cost effective, high speed ingress or egress, low-altitude, accurate Point of Need Delivery capability, which reduces exposure to threats for aircrew, aircraft, and ground receiving units. HSCDS will provide parachute-extracted Container Delivery System with C-130J and C-17 aircraft at maximum ramp open airspeed from as low as 250 feet above ground level. This provides warfighters the ability to conduct low altitude, fast and accurate resupply (up to 16,000 pounds of supplies via eight Containerized Delivery System bundles) to small combat units while maintaining aircraft maneuverability, thus reducing threat exposure.			2.466	0.000	0.000

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603648D8Z: <i>Joint Capability Technology Demonstration (JCTD)</i>	PROJECT P648: <i>Joint Capability Technology Demonstration (JCTD)</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
<i>FY 2012 Accomplishments:</i> Continued integration of aerial delivery components and testing of HSCDS threshold capabilities (low speed) and initial testing of objective capability (high speed). Conducted developmental testing and executed operational demonstration #1. In FY 2013, the program will field Low Speed capability to theater, execute operational demonstration #2 (C-17 high speed), finalize integration of components to meet objectives, test at objective capabilities, and plan for execution of final operational demonstrations. The program will field High Speed capability (C-17) to theater, execute operational demonstration #3 (C-130J high speed), field High Speed capability (C-130J) to theater, conduct final testing at objective capabilities, and execute seamless transition of HSCDS capability to Program of Record with Army Product Manager Force Sustainment Systems.			
<i>Title:</i> Maritime Predator (MP) <i>Description:</i> MP will demonstrate the ability to conduct clandestine, intrusive unmanned maritime operations in high-threat restricted water areas of interest from a safe standoff. MP will provide several platform payload combinations as a residual capability. <i>FY 2012 Accomplishments:</i> Demonstrated two platforms and three payloads. <i>FY 2013 Plans:</i> Transition residuals for operational use (details are classified). Complete the JCTD.		2.100	0.500
<i>Title:</i> Preferred Force Generator (PFG) <i>Description:</i> PFG provides planners the capability to rapidly and accurately generate and refine preferred force lists to help expedite the planning process and provide the critical data needed for course-of-action analysis, transportation feasibility, and assessments for rapid force availability. Net-centric technologies will be employed to provide the service across the enterprise. <i>FY 2012 Accomplishments:</i> Developed PFG services that interface with the Joint Capabilities Resource Manager sourcing capability to rapidly populate a Time Phased Force Deployment List with preferred forces for a contingency plan. Conducted Technical Demonstrations and a Limited Operational User Assessment. Incorporated Attribute Based Access Control. Develop the Concept of Operations (CONOPS) on application of preferred forces across the planning process. Conduct operational demonstration #2. Complete the JCTD. Transition to Defense Enterprise Computing Center.		1.385	0.000
<i>Title:</i> Global Decision Support (GDS)		1.450	0.000

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense			DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>		R-1 ITEM NOMENCLATURE PE 0603648D8Z: <i>Joint Capability Technology Demonstration (JCTD)</i>		PROJECT P648: <i>Joint Capability Technology Demonstration (JCTD)</i>	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2012	FY 2013	FY 2014
<p>Description: GDS enables senior decision makers to use newer technologies that can deliver decision-quality information for quicker understanding of the situation and provides increased time for course of action (COA) development, risk assessment, and decision-making. GDS technologies provide digital conferencing capabilities that augment the current analog capabilities in the national senior leader conferencing capabilities and leverage Defense Red Switch Network and secure Voice Over Secret Internet Protocol Router Network (SIPRNET) technologies. GDS provides authoritative data, secure mobile devices and improved visualization tools to enable a decision focused COA development and analysis for senior leaders in support of space and air events. Program outputs and efficiencies are improved collaboration capabilities supporting emergent time-critical events to provide senior leaders with rapid situational awareness to effectively respond or develop appropriate courses of actions for missile and space events.</p> <p>FY 2012 Accomplishments: Integrated the Global Sensor Integrated Network display with secret level secure mobile devices to support worldwide voice and data conferences. Transitioned GDS services to the Integrated Strategic Planning and Analysis Network Program of Record. Completed the JCTD.</p>					
<p>Title: Computer Adaptive Network Defense-in-Depth (CANDID)</p> <p>Description: CANDID will demonstrate the integration of Virtual Secure Enclaves (VSEs) inside existing tactical networks to enable network defense-in-depth and ensure Command and Control (C2) capabilities despite hostile attempts to hack, disrupt, and deny computer networks. CANDID will increase security of vital C2 capabilities in a cyber-contested environment; prevent infiltration from external threats, ex-filtration of protected information, and C2 denial of service; and deliver cyber surveillance and situational awareness through fusion of heterogeneous sensor data.</p> <p>FY 2012 Accomplishments: Installed CANDID equipment on U.S.S. George Washington. Demonstrated and assessed prototype VSE SIPRNET C2 capability at U.S. Pacific Command, U.S. Pacific Fleet/Joint Task Force 519, and functional components. Demonstrated CANDID in CLOUDBREAK.</p> <p>FY 2013 Plans: Harden leave behind/transition ready VSE SIPRNET C2 capability at U.S. Pacific Command, U.S. Pacific Fleet/Joint Task Force 519, and functional components. Transition capability to U.S. Navy and Defense Information Systems Agency. Complete the JCTD.</p>			6.353	1.315	0.000
<p>Title: Collaborative Coalition Collection Environment (C3E)</p> <p>Description: C3E is a language independent intelligence data collection interface usable by U.S. and Coalition forces with initial fielding to support the Operational Control (OPCON) transformation on the Korean Peninsula. C3E reduces data collection errors</p>			2.600	2.662	0.000

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603648D8Z: <i>Joint Capability Technology Demonstration (JCTD)</i>	PROJECT P648: <i>Joint Capability Technology Demonstration (JCTD)</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
by guiding the user to choose a variety of options using cascading drop-down menus. C3E will enable U.S./Korean personnel to describe their requirements in general military terms, symbols, and graphics within their native language. C3E reduces reliance on specialized skills, language, and process that are beyond the shared experience of coalition operators. It improves the ability to gather, manage, and understand collection requirements and tasks in real time.			
FY 2012 Accomplishments: Obtained authority to operate on Combined Enterprise Regional Information Exchange System–Korea (CENTRIX–K) and Department of Defense Intelligence Information System (DoDIIS) Collection Framework with Mission Manager & Requirements (MM&R) II User Interface. Conduct Technical and Operational Demonstrations during Key Resolve and Ulchi Focus Guardian Exercises. Demonstrate services for automated target analysis and transition C3E to the Joint Deployable Intelligence Support System Program of Record.			
FY 2013 Plans: Secure interim authority to operate on CENTRIX-K and DoD Intelligence Information System (DoDIIS) Collection Framework with Mission Manager & Requirements (MM&R) User Interface. Conduct final Operational Utility Assessment in conjunction with the Ulchi-Freedom Guardian 2013 Command Post exercise in Korea. Defense Intelligence Agency (DIA) will fund transition into Collection Mission Management Application (CMMA) portfolio. Complete the JCTD.			
Title: Gorgon Stare Smart Link (GS-SL) Description: GS-SL will demonstrate the ability to dynamically allocate motion video operational sub-views to available bandwidth at optimum resolution and Quality of Service (QoS), considering variables such as users' priorities and near-real time (NRT) multi-source intelligence and command and control cues. This will result in enhanced monitoring and response to the environment (identify sub-views in accordance with dynamic user priorities, mission priorities, events, and multi-source intelligence cues); dynamically prioritized, encoded, and delivered views to optimize QoS; and decision support in accordance with available bandwidth and intelligence requirements.		2.900	0.000
FY 2012 Accomplishments: Completed QoS management supporting intelligence requirements; conducted assessment based upon a capabilities technical demonstration. Transitioned initial capability for current estimated potential (CEP) association of near real-time data with operational sub-views and chip-out prioritization to Multi-Source Display (MSD) capability within Gorgon Stare Program of Record (POR), Increment two aircraft. Delivered full smart information management and allocation capability with MSD system upgrades to GS POR. Completed the JCTD.			
Title: Joint Warfighting Integrated Network Operations (NetOps) (JWIN)		2.300	1.263
			0.000

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense			DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 3: Advanced Technology Development (ATD)		R-1 ITEM NOMENCLATURE PE 0603648D8Z: Joint Capability Technology Demonstration (JCTD)		PROJECT P648: Joint Capability Technology Demonstration (JCTD)	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2012	FY 2013	FY 2014
Description: JWIN will consolidate independent Service network management information into a single integrated network management view that uses a JWIN gateway to translate service specific network information into a common format. This common format allows for the integration of policy controls to enhance the Joint Force Commander's decision making process over network resources. Key benefits include enhanced situational awareness of network events on critical operations and end-to-end network distributed policy collaboration and management capabilities used to communicate authoritative direction over critical network resources. Joint Tactics, Techniques, and Procedures (JTTPs) will be identified to ensure a joint procedural construct is established. JWIN provides the Joint Task Force Commander a consolidated network view which affords him/her the ability to monitor and influence tactical NetOps supporting associated missions to implement the Commander's intent.					
FY 2012 Accomplishments: Continued integration and testing of network management technologies. Conducted two Technical Demonstration events and two Operational Demonstration events. Developed an acquisition strategy to implement Joint Warfighting Integrated NetOps components. Developed JTTPs.					
FY 2013 Plans: Conduct final Technical Demonstration and Operational Demonstration. Provide Joint/Military Utility Assessment. Finalize Concept of Operations and proposed JTTPs. Provide U.S. Pacific Command with a leave behind capability. Complete the JCTD.					
Title: Autonomous Technologies for Unmanned Aerial Systems (ATUAS)			5.100	5.000	0.000
Description: ATUAS will integrate a series of technologies and demonstrate autonomous precision delivery and retrograde to and from a forward point of need in operationally relevant conditions. It will demonstrate increased mission level autonomy through onboard enhanced autonomous navigation and contingency management software for single operator/multi-vehicle control of two Unmanned Aerial Systems (UAS) reducing the risks to the Warfighter and enabling improved operational readiness.					
FY 2012 Accomplishments: Conducted technical demonstration #1. Demonstrated, certified, and transitioned the beacon system for the Marine Corps Cargo Unmanned Aerial System (UAS) deployment. Initiated integration of autonomous delivery beyond line of sight, autonomous enroute re-programming, in-stride multiple drop locations, and control of two vehicles for a single ground control station.					
FY 2013 Plans: Continue integration and demonstration of autonomous en route re-programming, in-stride multiple drop locations, and autonomous retrograde. Conduct technical demonstration #2. In FY 2014, the program will conduct an operational Utility					

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603648D8Z: <i>Joint Capability Technology Demonstration (JCTD)</i>	PROJECT P648: <i>Joint Capability Technology Demonstration (JCTD)</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
Assessment focusing on autonomous delivery of multiple loads to multiple locations and the conduct of retrograde operations, and transition the technologies to existing UAS Programs of Record (POR) and an anticipated new Service or Joint Cargo UAS POR.				
Title: Countermeasure Expendable with Replaceable Block Elements for Reactive Unmanned Systems Multi-Mission Jammer (CERBERUS) Description: CERBERUS delivers a net-enabled modular expendable jamming system based on the Air Force Miniature Air-Launched Decoy (MALD) that employs replaceable nosecone payloads to counter emerging threats in the PACOM area of responsibility. CERBERUS reduces overall mission costs by providing reconfigurable & flexible mission weapons. FY 2012 Accomplishments: Finalized Implementation Directive. Technical demonstration of non-coherent electronic attack module. FY 2013 Plans: Complete advanced radar jamming payload assembly and data link electronic attack payload assembly. Conduct technical and operational demonstration of nose cone assemblies. Complete Operational Utility Assessment. Complete the JCTD.		2.431	1.369	0.000
Title: Arctic Collaborative Environment (ACE) Description: ACE will transition an open-access, web-based, Arctic regional and national decision-support system that integrates data from existing remote sensing assets to provide a monitoring, analysis, and visualization decision-support system based on earth observation data and modeling analysis. The primary outputs and efficiencies are: (1) increased Arctic maritime domain awareness to protect maritime commerce, critical infrastructure, and key resources; (2) obtain, analyze, and disseminate accurate data from the entire Arctic region, including both paleo-climatic data and observational data to enable accurate prediction of future environmental and climate; (3) serve as the foundation for an effective Arctic circumpolar observing network with broad partnership from other relevant nations; and (4) engage Russia as a full partner in the development and deployment of an Arctic awareness tool. FY 2012 Accomplishments: Delivered the ACE Development Server, which will function as the ACE Operational Server during the transition to the National Oceanic and Atmospheric Administration (NOAA) cloud service and the National Ice Center (NIC). Briefed key US and international organizations about the ACE capability and its value proposition for the Arctic Region and the missions of their organizations. Conducted several beta testing sessions within the Arctic user community and incorporated feedback into the operational system. Completed the Technical Demonstration. FY 2013 Plans:		1.304	0.424	0.000

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603648D8Z: <i>Joint Capability Technology Demonstration (JCTD)</i>	PROJECT P648: <i>Joint Capability Technology Demonstration (JCTD)</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
Conduct operational testing, deploy the ACE Developmental Server in an operational environment, transition operations to the National Ice Center (NIC), and complete the JCTD.			
Title: VIVID POINTER (VP)		4.100	0.000
Description: VP will demonstrate the ability to gather, correlate, and fuse low-latency National, Theater and Tactical data while removing sources and collection methods. This data will be distributed via Link-16 and Global Command and Control System - Joint (GCCS-J) at the SECRET releasable level in order to support counter-Integrated Air Defense and counter-Long Range Aviation missions.			
FY 2012 Accomplishments: Conducted Milestone #1 and Milestone #2 demonstrations. In FY 2013, the program will conduct Milestone #3 demonstration; transition residual capability and complete the JCTD.			
Title: Hardened Installation Protection for Persistent Operations (HIPPO)		4.600	0.000
Description: HIPPO will develop and validate scalable, resilient-structured solutions to enhance continuity of operations in the face of major disruptions from war. Emphasis will be on capabilities required to enable/conduct persistent sortie generation including the ability to recover, refuel/re-arm/unload-load, and launch aircraft and the systems that enable these activities. Solutions analysis will extend to port operations and critical Joint operations normally conducted in garrison to generate and deploy combat power. HIPPO will demonstrate a range of proven (weapons effect tested) sheltering methods and improved survivability capabilities for critical systems and a companion strategy for phased implementation with schedule and expected costs considering threat, location, mission, and cost.			
FY 2012 Accomplishments: Continued modeling and simulation, and technical demonstrations in testing scaled and/or full scale section(s) of various hardening constructs against potential threat projectiles with appropriate explosive weights. Conducted a technical demonstration focusing on expedient, repair and restoration technologies. Completed Interim Reports #2 and #3. In FY 2013, the program will conduct an operational Utility Assessment focusing on expedient, repair and recovery technologies, transition the hardening, repair and recovery capabilities to the Guam Strike and other appropriate Programs of Record, determine the military utility of the technologies and procedures demonstrated, and complete the JCTD.			
Title: Joint Extended Range Illumination Projectile (JERIP)		2.500	1.100
Description: JERIP demonstrates an improved Infrared and Visible Light Illumination capability for maneuver commanders. JERIP extends Joint Day and Night Vision range by an additional five kilometers, provides 75 percent increase in engagement			0.000

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603648D8Z: <i>Joint Capability Technology Demonstration (JCTD)</i>	PROJECT P648: <i>Joint Capability Technology Demonstration (JCTD)</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
area footprint coverage, reduces the taxpayer burden and costs by re-using M483 155mm projectile shell bodies in the demilitarized stockpile, and creates a procurement avoidance estimated benefit of \$10.000 million.			
<i>FY 2012 Accomplishments:</i> Successfully completed Technical Demonstrations. Initiated Operational Demonstrations of the 155mm XM1123 Infrared Illuminating Projectiles and the 155mm XM1124 Visible Light Illuminating Projectiles.			
<i>FY 2013 Plans:</i> Complete Operational Demonstrations and conduct JERIP Joint Utility Assessments. Transition to Program Executive Office Ammo. Complete the JCTD.			
<i>Title:</i> Regional Domain Awareness (RDA)		4.100	1.900
<i>Description:</i> RDA demonstrates a standards-based unclassified framework for information sharing between U.S. government agencies and international partners. RDA will install government off the shelf software to integrate air, land, and sea sensor data to create a multi-domain unclassified information sharing framework between U.S. interagency and local, tribal, and international partners. RDA will demonstrate (1) assured integration from air, maritime, and land sensors and networks; (2) user defined monitoring and alerting; (3) selective sharing of situational awareness and alerts to multiple defined users; (4) Concept of operations and Tactics, Techniques & Procedures supporting the sharing of unclassified information to non-PKI (Public Key Infrastructure) users; and (5) access to unclassified data and services.			
<i>FY 2012 Accomplishments:</i> Conducted the Information Exchange Package Documentation (IEPD) for defined data sets. Implemented the initial demonstration software framework. Integrated and disseminated capabilities for initial defined data sets. Conducted Technical Demonstration #1 as part of the Trident-Warrior 2012 Fleet Experimentation exercise which demonstrated data sharing between U.S. Southern Command, the United Kingdom, and France (via Net-Centric Enterprise Services); and transition planning.			
<i>FY 2013 Plans:</i> Develop Concept of Operations and Tactics, Techniques, and Procedures. Conduct transition planning, Technical Demonstration #2, demonstrate partner nation data and services, federated services between multiple sites, and data mediation services. Conduct Operational Demonstration.			
<i>FY 2014 Plans:</i> Conduct Limited Operational Utility Assessment (LOUA); transition to Defense Information Systems Agency and U.S. Southern Command. Complete the JCTD.			
<i>Title:</i> Three Dimensional Landing Zone (3D-LZ)		5.401	5.050
			2.000

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense			DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>		R-1 ITEM NOMENCLATURE PE 0603648D8Z: <i>Joint Capability Technology Demonstration (JCTD)</i>		PROJECT P648: <i>Joint Capability Technology Demonstration (JCTD)</i>	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2012	FY 2013	FY 2014
<p>Description: 3D-LZ will deliver an integrated sensor suite capable of providing rotorcraft pilots with situational awareness during degraded visual environments encountered on takeoff and landings, cable warning and obstacle avoidance cues, and general terrain awareness for safety of flight. The program will deliver an integrated turret to the Global Reach Program Office.</p> <p>FY 2012 Accomplishments: Finalized Implementation Directive. Conducted kickoff meeting. Conducted ground based technical demonstration.</p> <p>FY 2013 Plans: Conduct technical and operational demonstrations of sensor package in flight tests. Complete Operational Utility Assessment. Complete the JCTD.</p> <p>FY 2014 Plans: Complete Operational Utility Assessment. Complete the JCTD.</p>					
<p>Title: Anti-Jam Precision Guided Munitions (AJPGM)</p> <p>Description: AJPGM will deliver precision navigation capability to severely Global Positioning System (GPS)-jammed environments. AJPGM will also deliver home-on-jam capability. Specifics related to technologies, current capability, and threats are classified.</p> <p>FY 2012 Accomplishments: Finalized Implementation Directive. Completed fabrication and testing of home-on-jam sensor. Conducted technical demonstration using hardware in the loop facility.</p> <p>FY 2013 Plans: Complete anti-jam sensor assembly. Complete system integration. Conduct technical/operational demonstration integrated assemblies. Complete Operational Utility Assessment. Complete the JCTD.</p>			4.826	6.000	0.000
<p>Title: Joint Strike Fighter (JSF) Enterprise Terminal (JETpack fifth to fourth)</p> <p>Description: JETpack fifth to fourth supports the airborne gateway needs to distribute fifth Generation (Gen) data to fourth Gen fighters by translating their tactical data link into Link-16 messages that can be viewed by the fourth Gen aircraft. JETpack will demonstrate: (1) four flyable prototype dual-band, multi-beam antennas, (2) two JET terminals, and (3) two dual-band remote electronics.</p> <p>FY 2012 Accomplishments:</p>			7.848	6.352	0.900

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603648D8Z: <i>Joint Capability Technology Demonstration (JCTD)</i>	PROJECT P648: <i>Joint Capability Technology Demonstration (JCTD)</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
Conducted technical demonstrations to include the JET terminal with Intra-Flight Data Link (IFDL), and a dual-band, multi-beam antenna lab test. FY 2013 Plans: Finalize operational demonstrations and assessments on the flyable prototypes. FY 2014 Plans: Finalize integration of JETpack flyable prototype into test aircraft, receive safety of flight certification, conduct pre-flight tests, conduct the operational utility assessment and initiate transition to the F-15C community.			
Title: Autonomous Mobility Appliqué System (AMAS) Description: AMAS will equip existing military ground vehicles with scalable modes of robotic technology through the integration of modular kits, common interfaces, and a common architecture. AMAS will be comprised of a By-Wire kit that will provide active safety functionality and a standard control approach that will allow for current and future robotics to be implemented relatively seamlessly onto military tactical vehicles, and an Autonomy kit that will contain the primary sensing and intelligence for scalable modes of autonomy and leader/follower behaviors for convoy operations. FY 2012 Accomplishments: Conducted a detailed requirements analysis. Initiated development of By-Wire and Autonomy kits. Received initial delivery of 16 military vehicles. Procured long lead items for demonstration. FY 2013 Plans: Complete development and integration of By-Wire and Autonomy kits. Install technologies on military vehicles. Conduct a Technical Demonstration on the first eight tactical Army and Marine Corps vehicles and transition those residuals to the Army and Marine Corps. FY 2014 Plans: Complete development on additional levels of autonomy on the AMAS kits. Conduct two Technical Demonstrations and final Operational Demonstration culminating with a Military User Assessment. Residuals from the Operational Demonstration will transition to Army and Marine Corps. AMAS JCTD results will transition-to and inform the Army AMAS Program of Record. Complete the JCTD.		2.725	4.000
Title: CELESTIAL REACH Description: CELESTIAL REACH addresses the limitations placed on high-priority and senior leader communications existing as a result of current Communications Satellite (COMSAT) capability and data throughput. Presently limited to a maximum data rate of 256 kilo bites per second (kbps) to/from the aircraft, capacity to maintain global communications is further impacted by peak-period COMSAT user saturation. This JCTD provides USSOCOM the capability and capacity to communicate effectively using a		4.140	2.370
			1.380

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense			DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>		R-1 ITEM NOMENCLATURE PE 0603648D8Z: <i>Joint Capability Technology Demonstration (JCTD)</i>		PROJECT P648: <i>Joint Capability Technology Demonstration (JCTD)</i>	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2012	FY 2013	FY 2014
robust (up to three Mbps forward link; 512 Kbps return link) C-17 portable hatch mounted satellite antenna (HMSA) during crisis in response to Chairman of the Joint Chiefs of Staff Concept of Operations Plan and other contingency requirements.					
FY 2012 Accomplishments: Completed hatch assembly prototype (form and fit only; not fully functional); Critical Design Reviews (hatch assembly and antenna, separate events).					
FY 2013 Plans: Conduct Technical Demonstration Readiness Review and Technical Demonstration.					
FY 2014 Plans: Complete HMSA aircraft fit check/verification; Operational Demonstrations; Joint Utility Assessment; Limited Operational User Assessment; JCTD Final Report; and one HMSA flight certified prototype. Complete the JCTD.					
Title: Deep Seaweb (DSW)			1.300	3.250	1.350
Description: DSW provides a capability to persistently detect and monitor high traffic maritime areas of interest to find/fix/track illicit traffickers in source and transit zones. DSW will deliver an undersea-network of fixed bottom sensor nodes, mobile unmanned communication gateways, and an operations center server that will provide autonomous 24/7 tripwire surveillance that cue coalition forces of trafficking threats including fully submersible vessels. This information will be available to the tactical decision makers for near real-time action by U.S. or partner nation detection and monitoring assets.					
FY 2012 Accomplishments: Procured and fabricated two sensor-node-systems, one mobile gateway, and an operations center server. Conducted bench-top testing and evaluation of components. Updated concepts of employment and operations. Developed Technical Demonstration one plan.					
FY 2013 Plans: Conduct technical demonstration in deep water to validate undersea communication ranges and data-throughput. Develop and evaluate procedures for deep water sensor node deployment, sensor node localization, and recovery. Conduct end-to-end system tests to demonstrate connectivity to operational center. Conduct technical demonstrations (two-node, one-gateway). Procure and manufacture seven sensor-node-systems and two mobile gateways.					
FY 2014 Plans:					

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 3: Advanced Technology Development (ATD)	R-1 ITEM NOMENCLATURE PE 0603648D8Z: Joint Capability Technology Demonstration (JCTD)	PROJECT P648: Joint Capability Technology Demonstration (JCTD)		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
Conduct technical demonstration in operationally representative environment to evaluate integration with operations center workflow. Conduct operational demonstration. Transition operations to Joint Inter-Agency Task Force, South. Complete the JCTD.				
<p>Title: Defense Installation Access Control (DIAC)</p> <p>Description: DIAC will develop an identity management enterprise service's architecture that will provide timely, accurate, and actionable information to support the installation access control decision-making process based on authoritative data sources such as the National Crime Information Center and Terrorist Screening Database in order to initially and continuously vet all personnel prior to entry to DoD installations worldwide.</p> <p>FY 2012 Accomplishments: Identified and coordinated resolution of relevant policy and privacy issues. Completed analysis of user requirements and identified performance metrics. Completed analysis of alternative architectural designs and information management modules.</p> <p>FY 2013 Plans: Integrate installation access control systems with the Defense Enrollment Eligibility Reporting System, DoD local population database, Interoperability Layer Service and Continuous Information Management Engine. Demonstrate the full architecture integrating National Crime Information Center, Terrorist Screening Database, Service Criminal Justice System databases, and non-DoD credential revocation lists.</p> <p>FY 2014 Plans: Conduct final operational demonstration at selected military installations and complete independent assessor report. U.S. Northern Command sponsor will issue final operational utility determination. Transition DIAC capabilities into Programs of Record. Complete the JCTD.</p>		0.975	3.400	2.205
<p>Title: Foliage Penetrating Airborne Light Detection and Ranging (LIDAR) for Reconnaissance Imaging (FALCON-I)</p> <p>Description: FALCON-I will provide a unified foliage penetrating (FOPEN) sensing system that collects, processes, and fuses LIDAR and Ultra High Frequency (UHF) Synthetic Aperture Radar (SAR) to produce a comprehensive three dimensional (3D) view of human activity, terrain, and lines of communication obscured by foliage. The ultimate goal of the FALCON-I is to provide analysts and Warfighters a simple to understand 3D image of foliage obscured target areas of interest.</p> <p>FY 2012 Accomplishments:</p>		0.850	5.175	1.750

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603648D8Z: <i>Joint Capability Technology Demonstration (JCTD)</i>	PROJECT P648: <i>Joint Capability Technology Demonstration (JCTD)</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
Conducted FALCON-I system development, integration, and demonstration of exploitation and fused data systems. Integrated FOPEN SAR and LIDAR on a common platform, and automated LIDAR data processing and exploitation algorithms. Developed deployable ground processing hardware.			
FY 2013 Plans: Perform FOPEN/Polarimetric LIDAR testing and demonstration to include new algorithms for data fusion and exploitation, enhancement of existing hardware for dissemination, storage, visualization, and recovery of data. Develop Concept of Operations and Tactics, Techniques and Procedures, and an initial polarimetric LIDAR assessment.			
FY 2014 Plans: Complete the Operational Demonstration, Fuse SAR/LIDAR Exploitation System Assessment, and Joint Military Utility Assessment. Complete the JCTD.			
Title: Information Volume & Velocity (IV2)		0.050	1.250
Description: IV2 will provide a data discovery and processing capability that enables users to identify and visualize patterns, trends and changes in publicly available information over time and space to enhance decision-making purposes. It will leverage technologies and processes from successful commercial applications to deliver accurate and actionable information to support: the strategic decision-making process; real-time situational awareness; and long-term proactive analytics for strategic planning. The capability will be a cloud-based system that gathers data from personal and mainstream media, including audio, video, and geo-location, and will sort, analyze, and display that data.			0.000
FY 2012 Accomplishments: Developed a relevant set of operational requirements with input from a range of potential operational users, including guidance from General Counsel. Derived a set of technical specifications to satisfy the operational requirements. Developed prototype modules for data gathering and display, and tested those modules.			
FY 2013 Plans: Expand the set of modules and develop a prototype user interface. Test individual modules for acceptance of languages and multiple data types. Integrate proven modules into a complete IV2 application. Test the system in the lab and in multiple operational scenarios, and refine the system based on operator feedback. Test for scalability and begin the Certification and Accreditation process. Begin transition of the IV2 capability to intended Programs of Record at the Defense Information Systems Agency and U.S. Army Special Operations Command. Complete the Certification and Accreditation process.			
Title: Kestrel Eye		1.265	4.317
Description: Kestrel Eye is a very small, 25 kilogram class satellite that provides “good enough” 1.5 meter resolution visible imagery. Imagery tasking and delivery is controlled directly by the Combatant Commander to ensure sufficient timelines for near			2.158

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603648D8Z: <i>Joint Capability Technology Demonstration (JCTD)</i>	PROJECT P648: <i>Joint Capability Technology Demonstration (JCTD)</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
real-time situation awareness and decision-making in the field. The cost of less than \$1.500 million for a Kestrel Eye enables an affordable constellation for persistence, near continuous converge between 45 degrees North/South. The primary outputs and efficiencies are: (1) Finish one Block 1 “proof of concept” design, launch Block 1 Kestrel Eye and conduct on-orbit evaluation and upgrade Block 2 design with propulsion system and improved telescope pointing using a star tracker. The JCTD will build and launch three Block 2 design Kestrel Eye satellites.			
FY 2012 Accomplishments: Completed assembly of one Block 1 design “proof of concept” Kestrel Eye.			
FY 2013 Plans: Launch one Block 1 design. Complete construction of three Block #2 design Kestrel Eyes, adding propulsion for station-keeping and a star tracker for increasing pointing accuracy.			
FY 2014 Plans: Depending on launch opportunities, launch three Block 2 design Kestrel Eyes and conduct operational demonstrations and assessments. Initiate transition to the U.S. Army Program Executive Office, Missiles & Space. Complete the JCTD.			
Title: Kinetic/Non-kinetic Integrated Force Effects (KNIFE)		3.250	5.800
Description: KNIFE will provide Combatant Commanders with four dimensional (4D) views of composite effects that dynamically updates to inform strategic and operation decision-making in a compressed timeframe. KNIFE provides an integrated, enterprise capability that models multiple effects for planner collaboration and Commander decision. The integrated disciplines are comprised of cyber, electronic warfare, kinetic and space effects. The primary metric is more robust, accurate and timely targeting management during planning and execution.			1.100
FY 2012 Accomplishments: Defined information flow and data environment for effects and assessment. Integrated and visualized physical and functional effects and collateral damage.			
FY 2013 Plans: Dynamically update and share 4D views of effects. Provide machine to machine consumption of cyber, electronic warfare, space, and kinetic data. Produce composite effects and collection objectives.			
FY 2014 Plans: Publish sequenced tasks for in-line approval by decision makers. Complete the JCTD.			
Title: Next Generation Wireless Communications (NGWC)		2.808	1.770
			0.445

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603648D8Z: <i>Joint Capability Technology Demonstration (JCTD)</i>	PROJECT P648: <i>Joint Capability Technology Demonstration (JCTD)</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
<p>Description: NGWC will develop and demonstrate the utility of NGWC mesh protocol which provides continuous visibility of material and equipment with less work and lower cost than other tracking technologies. The same mesh network will support asset tracking in-transit visibility (ITV) and collection of sensor data from tags monitoring equipment condition.</p> <p>FY 2012 Accomplishments: Initiated development, software upgrades, and conducted a detailed requirements analysis.</p> <p>FY 2013 Plans: Complete development of the mesh network protocol to include security and sensor integration. Conduct developmental tests focusing on ability to track both NGWC mesh tags and Radio Frequency Identification (RFID) tags, improving asset tracking and ITV and the capability to write NGWC mesh tags over the mesh using legacy information systems. Finalize integration and conduct technical and operational demonstrations of a ready-to-use system, interoperable with active RFID.</p> <p>FY 2014 Plans: Execute technical and operational demonstrations to test, demonstrate, and deliver interface to Common Logistics Operating Environment and Condition Based Maintenance Plus sensors and devices. Determine the military utility of the technologies and procedures demonstrated. Transition the NGWC protocol and software, and DoD-compliant architecture to Army Program Executive Office Enterprise Information Systems. Complete the JCTD.</p>			
<p>Title: Rapid Open Geospatial User Environment (ROGUE)</p> <p>Description: ROGUE will deliver operational open geospatial analytic and Volunteered Geospatial Information (VGI) services, Concept of Operations, Tactics, Techniques, and Procedures (TTPs), and work flows/processes. ROGUE will provide Web-based geospatial capability linking Joint Task Force Headquarters components to the tactical edge of mixed U.S., partner nation, interagency components, and private sector Nongovernment Organizations. ROGUE will facilitate accessibility from multiple user platforms (Web-portal, Desktops, Smart Phones, etc.) to enable partnering with agencies and countries conducting Humanitarian Assistance/Disaster Relief support missions in support of Theater Security Cooperation and Humanitarian Assistance.</p> <p>FY 2012 Accomplishments: Identified user requirements and initiated analysis of open geo-spatial standards integration. Established architecture for Virtual Machine Templates and web processing services for hand held mobile data generation.</p> <p>FY 2013 Plans: Develop and implement: five applications addressing differing classes of functionality; and, software services to support the end user environments (Pacific Disaster Center, State Department Human Information Unit, DoD, Non-Governmental Organization) providing analytic Open Layers capability. Integrate software solutions to the Geospatial software platform. Develop open back-</p>		0.935	2.300
			1.715

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603648D8Z: <i>Joint Capability Technology Demonstration (JCTD)</i>	PROJECT P648: <i>Joint Capability Technology Demonstration (JCTD)</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
end services to include the incorporation and managing of geospatial updates from various sources. Develop four location based applications that will have a direct connection to data storage and Support Service Oriented Software and Cloud implementation with scalability based upon the virtual Machine Template. Develop "end to end" Geographical Information System service. Perform developmental testing and operational assessments. FY 2014 Plans: Perform final operational utility demonstration and complete independent assessor report. United States Southern Command sponsor will issue final user utility determination. Transition ROGUE tools and standards across the community of interest. Complete the JCTD.				
Title: Space & Missile Defense Command (SMDC) Nanosatellite Program (SNaP-3) Description: SNaP-3 provides low orbit tactically integrated beyond-line-of-sight communications nanosatellites for the U.S. as well as for partner nation radios and unattended ground sensors. It provides user service on demand with minimal training requirements. The JCTD will have three nanosatellites built and tested. It will launch and conduct the operational demonstration and Utility Assessment and provides a residual operational capability. FY 2012 Accomplishments: Initiated the JCTD. Conducted Government kickoff and released final Implementation Directive (ID) draft. FY 2013 Plans: Complete the build and testing of three nanosatellites and associated ground hardware and launch three nanosatellites. Conduct operational demo and utility assessment. Complete the JCTD.		4.275	1.575	0.000
Title: Soldier-Warfighter Operationally Responsive Deployer for Space (SWORDS) Description: SWORDS provides a dedicated, low cost, rapid and predictable launch of small satellites to precise, optimum orbits. Enables capability to satisfy Combatant Command's urgent needs for augmentation of persistent imagery or communications in their Area of Responsibility. When in production, SWORDS is targeted to cost \$1.000 million per launch of 25 kilogram payloads up to a 750 kilometers circular orbit from a wide variety of ranges, including austere locations. FY 2012 Accomplishments: Prime contractor incorporated design results of analyses provided by National Aeronautics and Space Administration. Procurement of materials by subcontractors. FY 2013 Plans: Construct and test fire first stage engine in ground test stand. FY 2014 Plans:		1.370	5.060	2.530

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense			DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>		R-1 ITEM NOMENCLATURE PE 0603648D8Z: <i>Joint Capability Technology Demonstration (JCTD)</i>		PROJECT P648: <i>Joint Capability Technology Demonstration (JCTD)</i>	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2012	FY 2013	FY 2014
Conduct suborbital flight test. Conduct orbital flight test. Initiate transition to the U.S. Army PEO Missiles & Space. Complete the JCTD.					
Title: Unified Command and Control (UC2) Description: The UC2 JCTD provides the capability that will support discretionary information sharing on a common network with compartmented network protection. UC2 will provide network enclaves to allow operational commanders to manage cyber risk to their own mission without introducing risk to the Global Information Grid. UC2 will provide key lessons learned for assured terrestrial transport to protect core Command and Control (C2) in anti-access/area denial environments and will allow greater access to assured C2 with Component Commanders, Joint Task Forces, and functional component headquarters. FY 2012 Accomplishments: Initiated requirements and implementation activities. FY 2013 Plans: UC2 will install and test the Common Mission Network Transport (CMNT) and Agile Virtual Enclave (AVE) at four U.S. Pacific Component Commanders for data exchange with Defense Information Systems Agency and Services on DoD networks. The technical demonstration will be conducted. FY 2014 Plans: UC2 will install and test CMNT and AVE at three additional sites. The Operational Demonstration and Joint Utility Assessment will be conducted. Transition to Defense Information Systems Agency and U.S. Navy for sustainment. Complete the JCTD.			0.050	2.500	2.500
Title: Vector Description: Vector will launch two cube satellites for an on-orbit technical demonstration and operational utility assessment. The system will continue to be used for operations until reaching their respective end-of-life. Additional details are classified. FY 2012 Accomplishments: Completed ground segment development and began to develop Joint Capabilities Integration and Development System (JCIDS) documentation. FY 2013 Plans: Launch two Cube Satellites, complete on-orbit checkout and conduct demonstration tests resulting in an operational on-orbit prototype. Continue to develop JCIDS documentation. FY 2014 Plans:			1.705	1.675	0.670

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense			DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>		R-1 ITEM NOMENCLATURE PE 0603648D8Z: <i>Joint Capability Technology Demonstration (JCTD)</i>		PROJECT P648: <i>Joint Capability Technology Demonstration (JCTD)</i>	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2012	FY 2013	FY 2014
Conduct operational test and continue operational availability of the capability. Complete JCIDS documentation for transition capability. Complete the JCTD.					
Title: Minor Resource Projects Description: The JCTD program completed the following minor projects in FY 2012: Joint Multi-Effects Warhead System (JMEWS), Sea Tracker, Prepositioned Expeditionary Assistance Kit (PEAK), SENSORWEB 2, Daily Watch and Non-Persistent Desktop Browsing (NPDB). Combined End-to-End EMIO (Expanded Maritime Interdiction/Interception Operations) Performance Optimization (C3PO) and Humanitarian Expeditionary Logistics Program (HELP) were started in FY 2012 and will continue into FY 2013. FY 2012 Accomplishments: Completed Joint Multi-Effects Warhead System (JMEWS), Sea Tracker, Prepositioned Expeditionary Assistance Kit (PEAK), SENSORWEB 2, Daily Watch, and Non-Persistent Desktop Browsing (NPDB). Began C3PO and HELP. FY 2013 Plans: Complete and transition C3PO and HELP.			6.836	1.300	0.000
Title: ACE 202 (CLASSIFIED) Description: Details are Classified. FY 2012 Accomplishments: Details are Classified. FY 2013 Plans: Details are Classified.			3.600	2.500	0.000
Title: FY 2013 Combatant Commands' (COCOM) Priorities Description: The first group of FY 2013 JCTD projects was identified at a Candidate Nomination Board in May 2012 followed by a Candidate Decision Board in August 2012. This allowed the Department to rapidly execute the JCTDs needed in FY 2013 to meet the COCOMs most pressing needs as soon as FY 2013 funds became available. COCOMs proposed projects addressing a range of capability gaps including: project power despite anti-access/area denial challenges; defending the Homeland and providing support to civil authorities; conducting humanitarian, disaster relief, and other operations; counter terrorism; and irregular warfare. Additional COCOM proposals were acted on throughout the year to address emerging needs as funds were identified. FY 2013 Plans:			0.000	6.572	17.450

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603648D8Z: <i>Joint Capability Technology Demonstration (JCTD)</i>	PROJECT P648: <i>Joint Capability Technology Demonstration (JCTD)</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
Fund the first year of FY 2013 projects selected for approval at the August 2012 Candidate Decision Board or identified by Senior Department Leadership or COCOM Commanders to solve COCOM priority shortfalls. In addition, in FY 2013 a portion of the funds were allocated to enabling technologies to resource "Disruptive Demonstrations" in support of development/demonstration of time-sensitive capabilities that address Secretary/Department Strategic Vectors and Chairman's Gap Assessment of capability shortfalls.			
FY 2014 Plans: Fund the second year of the FY 2013 projects that are scheduled to proceed to a second year.			
Title: FY 2014 Combatant Commands (COCOM) Priorities Description: JCTD projects that support COCOM priorities are linked directly to COCOM integrated priority lists and validated joint operational needs statements. FY 2014 JCTD projects will be identified under the JCTD selection process beginning with a Candidate Nomination Board in the spring of FY 2013, followed by a Candidate Decision Board (CDB) in the Summer of 2013. This allows the Department to rapidly execute the JCTDs needed in FY 2014 to meet the COCOMs' most pressing needs as soon as FY 2014 funds become available. Additional CDBs will be held throughout the year to address emerging COCOM needs. JCTDs identified in these CDBs will be initiated as funds are identified. FY 2014 Plans: Fund the first year of the FY 2014 projects that are selected by the CDB or identified by Senior Leadership. Complete JCTD projects started in FY 2011 and FY 2012. Work closely with the Joint Staff and the various Combatant Commanders to develop technology to shape future engagements.		0.000	0.000
Title: High Performance Computing Modernization (HPCM) Description: HPCM provides high performance computing hardware, parallel software, wide area networking services, and expertise that enable the Department of Defense (DoD) Research, Development, Test, and Evaluation (RDT&E) community to investigate and understand physical phenomena and behavior of systems through large scale computational simulation. The JCTD program sub-allocated \$21.300 million to Army for this effort and was subsequently remunerated. During the FY 2012 Continuing Resolution (CR) period (September to December 2011), Office of the Secretary of Defense (OSD) funds from the JCTD program were used for critical operations of the HPCMP Army program. The HPCMP was devolved from OSD to Army as part of the FY 2011 Secretary of Defense efficiencies initiative. Under Continuing Resolution rules, Army could not fund the HPCMP new start initiative and did not have the prior year budget authority for HPCMP. Thus, OSD JCTD program funds were used for HPCMP. FY 2012 Accomplishments:		21.300	0.000
			83.375
			0.000

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>		R-1 ITEM NOMENCLATURE PE 0603648D8Z: <i>Joint Capability Technology Demonstration (JCTD)</i>	PROJECT P648: <i>Joint Capability Technology Demonstration (JCTD)</i>
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
The accomplishments of this effort are reflected in the U.S. Army budget Program element 0603461A.			
Accomplishments/Planned Programs Subtotals		192.297	152.428
C. Other Program Funding Summary (\$ in Millions) N/A			
Remarks			
D. Acquisition Strategy JCTD capabilities that demonstrate operational utility transition to acquisition via one of several methods: <ul style="list-style-type: none"> - The capabilities address a documented capability gap in an existing Program of Record, so that the existing Program can acquire, further develop, sustain, and provide the capability under existing program documentation. - The capabilities address capability gaps that naturally fit with an existing Program of Record, but program documentation addressing the new capabilities does not exist. In these cases, existing program documentation (such as the Capabilities Development Document or Capabilities Production Document) is revised to include the new capabilities from the JCTD, and the JCTD capabilities transition to the Program of Record. - The capabilities address a current operational need without requiring Program of Record changes. In these cases, the JCTD capabilities may transition directly to operational use, with sustainment (operations and maintenance) funding arranged through the gaining command. - The capabilities may be widely applicable commodity products, useful to many commands. In these cases, the commodity products listed on General Services Administration schedule, and made available for purchase by any commands needing the capability, using procurement funds. 			
E. Performance Metrics Strategic Goals Supported in FY 2014: <ul style="list-style-type: none"> - Project Selection Focus - Spiral Technologies to Fielded Capabilities - Time to Final Demonstration - 70 Percent Transition Rate - Adequately Shared Funding and Visibility - Independent Assessment Capability - Successful Military Utility Assessment (MUA) <p>The majority of funding from this program element is forwarded to the Services/Defense Agencies that execute the individual JCTD projects. The Director, JCTD Program, maintains and provides overall programmatic oversight for the JCTD program, to include the individual JCTD projects. The JCTD performance metrics center on how fast relevant joint and/or transformational technologies can be demonstrated and provided to the joint warfighter. These metrics are driven by the overall business process which includes six parts: (1) selection focus; (2) ability to spin-off spiral technologies; (3) time necessary to complete a final demonstration; (4)</p>			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603648D8Z: <i>Joint Capability Technology Demonstration (JCTD)</i>	PROJECT P648: <i>Joint Capability Technology Demonstration (JCTD)</i>
adequately resourced projects with appropriate oversight; (5) capability to complete an independent assessment of the technology; and (6) the number of successful capabilities that are actually transitioned to the warfighter.		
<p>MEASURABLE OUTCOMES: Metrics include: all JCTDs will deliver products within 12 months to enable assessment for project continuation; 50 percent of JCTDs will provide an operationally-relevant prototype within 12 months and 75 percent will complete final demonstration within 24 months of Implementation Directive signature. JCTDs will spiral products and deliverables during the demonstration. At least 75 percent of JCTD projects will transition products to Programs of Record (POR), sustained residual operations, or availability for procurement from the General Services Administration Schedule.</p> <p>Transition Achievement: The JCTD program has been achieving actual transition rates of over 80 percent, well in excess of the Assistant Secretary of Defense (Research and Engineering) stated goal of 40 percent. The JCTD Program defines transition as all or components of the demonstrated JCTD going to a new or existing POR, providing fieldable-prototypes (residual capabilities) sustained by non-JCTD funds in direct support of operations, or commodity-type capabilities entered onto GSA schedule for procurement by Department users. 13 of 16 completions in FY 2012 successfully transitioned.</p>		

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE				PROJECT			
0400: Research, Development, Test & Evaluation, Defense-Wide BA 3: Advanced Technology Development (ATD)					PE 0603648D8Z: Joint Capability Technology Demonstration (JCTD)				P264: Disruptive Demonstrations			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
P264: Disruptive Demonstrations	-	0.000	0.000	22.000	-	22.000	21.000	21.000	20.000	19.000	Continuing	Continuing

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

Note

In FY 2014, the "Disruptive Demonstrations" project was inserted to support development/demonstration of time-sensitive capabilities that address Secretary/ Department Strategic Vectors, and Chairman's Gap Assessment of capability shortfalls. As a result, we anticipate less partner funding for those strategic investment areas and will have to rely on greater partner funding for other JCTD projects. Overall we envision fewer JCTD projects that will be longer in duration.

A. Mission Description and Budget Item Justification

The JCTD program will allocate a portion of the JCTD Enabling Technology funding for Disruptive Demonstrations to solve priority shortfalls identified by Department Senior Leadership or the Chairman's Gap Assessment.

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2012	FY 2013	FY 2014
Title: Disruptive Demonstrations	0.000	0.000	22.000
Description: In FY 2014, the department will allocate a portion of the Enabling Technology funding line to technology demonstrations specifically aligned to the Department's strategic vectors (Asian-Pacific, low cost, small footprint operations) and the Chairman's Gap Assessment for capability shortfalls.			
FY 2014 Plans: The JCTD program will allocate a portion of the JCTD Enabling Technology funding for Disruptive Demonstrations to solve priority shortfalls identified by Department Senior Leadership or the Chairman's Gap Assessment.			
Accomplishments/Planned Programs Subtotals	0.000	0.000	22.000

C. Other Program Funding Summary (\$ in Millions)

N/A

Remarks

D. Acquisition Strategy

The primary acquisition strategy for funding Disruptive Demonstrations will be through Military Inter-Departmental Purchase Requests (MIPRS). The specifics of each MIPR will be dependent upon the development center, laboratory, contractor or agency requirements and needs. If an Inter-Agency agreement is required, compliance and coordination of the agreement will be completed in coordination with the receiving activity and Federal Acquisition Regulation 17.5.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603648D8Z: <i>Joint Capability Technology Demonstration (JCTD)</i>	PROJECT P264: <i>Disruptive Demonstrations</i>

E. Performance Metrics

Performance metrics are specific to each Disruptive Demonstration effort and include measures identified in the management approach, Statement of Work (SOW) and Period of Performance (POP). In addition, completions and successes are monitored against schedules and deliverables stated in the initiative's management approach. Generic performance metrics applicable to the RDT&E initiatives includes attainment of DoD Strategic Objective 3.5.2D. The title of this objective is "Maintain a strong technical foundation within the Department's Science and Technology (S&T) program" and the metrics for this objective is to transition 40 percent of completing demonstration programs per year.

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY

0400: *Research, Development, Test & Evaluation, Defense-Wide*
BA 3: *Advanced Technology Development (ATD)*

R-1 ITEM NOMENCLATURE

PE 0603662D8Z: *Networked Communications Capability*

COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
Total Program Element	-	20.856	25.393	20.000	-	20.000	0.000	0.000	0.000	0.000	Continuing	Continuing
P663: <i>Network Communications Analysis</i>	-	20.856	25.393	20.000	-	20.000	0.000	0.000	0.000	0.000	Continuing	Continuing

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

The Networked Communications Capability Program (NCCP) seeks to accelerate the wireless mobile networking capability of Department of Defense's (DoD) current and planned investments in response to national military strategy and ever growing needs. Warfighter's today rely more and more on communications networks to support and enable actions from targeting and shooting weapons to video-conferencing. Though military basic infrastructure capabilities follow the mainstream commercial internet, for many reasons (security, mobility, and robustness), commercial telecommunications especially commercial wireless (tactical edge) communications are not well-matched with the requirements of today's warfighter. These trends will continue as the military data load becomes more diverse and heavy. These tactical edge technology challenges cut across all warfare domains (space, air, ground, and sea). In response to recognized technical problems today, as well as anticipated problems in the future, this research will focus on two key problems in networked technologies: The need for "Joint interoperability" and "expanded reach" (resilient and robust) where no communication infrastructure exists. The main research objectives of this program are to:

- Perform Network Communications Analysis to establish the scientific foundations for tactical mobile networking with a specific emphasis on integrating heterogeneous Networks and Integrated NetOps for tactical networks.
- Complete the enhancements of joint integrated capability to predict performance of heterogeneous communication networks and expand the reach/connectivity and capacity.
- Jointly manage and operate existing and planned diverse communications networks, services and applications.
- Create mature products for transition to programs of record (POR) or directly to field.
- Wireless mobile network design, development & operations, spectrum management, information assurance and information dissemination management software tools.
- Joint Aerial Layer Networking (JALN), services and applications packages including hardware and software systems and integrated/joint network operations software tools and new information architectures.

This research provides the technical basis to standardize the implementation of military network communications capabilities in the areas of joint airborne network gateways and network communications analysis across the military services, Joint Staff, Office of the Secretary of Defense, and defense agencies.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense	DATE: April 2013
--------------------------------------------------------------------------------------	------------------

APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603662D8Z: <i>Networked Communications Capability</i>
-----------------------------------------------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------

B. Program Change Summary (\$ in Millions)	<u>FY 2012</u>	<u>FY 2013</u>	<u>FY 2014 Base</u>	<u>FY 2014 OCO</u>	<u>FY 2014 Total</u>
Previous President's Budget	23.185	25.393	30.395	-	30.395
Current President's Budget	20.856	25.393	20.000	-	20.000
Total Adjustments	-2.329	0.000	-10.395	-	-10.395
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-2.322	-			
• SBIR/STTR Transfer	-	-			
• Baseline Adjustments	-	-	-10.395	-	-10.395
• Other Adjustments	-0.007	-	-	-	-

Change Summary Explanation

FY 2014 baseline adjustments are reflective of DoD priorities and requirements.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE				PROJECT			
0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>					PE 0603662D8Z: <i>Networked Communications Capability</i>				P663: <i>Network Communications Analysis</i>			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
P663: <i>Network Communications Analysis</i>	-	20.856	25.393	20.000	-	20.000	0.000	0.000	0.000	0.000	Continuing	Continuing

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

Tactical Mobile Networking - As studies have suggested, for instance, the National Research Council's Network Science Report (2005) and Army Mobile Ad-hoc Network (MANET) JASON's Report (January 2006), the type of networking projected to meet military tactical requirements is not supported by network theory, network design, and analysis tools. This research will define those technical parameters important to military tactical mobile networking environments, investigate the status of network design and analysis tools, and evaluate how modeling and simulation is conducted to support tactical mobile networking environments. The role of network experimentation with respect to network modeling will be explored. Further development and analysis will be conducted to improve the awareness of the condition of tactical mobile networking technologies. Design tools, architectures, and technical approaches will be recommended to acquisition programs as a result of this research.

Network Management Tools and Analysis - Network management in the commercial world is a highly organized, synchronized activity that has excellent tools to monitor activity and repair disrupted networks as needed. These same tools are ill-matched for management in the wireless world, and specifically for military tactical mobile networking. In addition, the military tactical mobile networking environment lacks the infrastructure (connectivity) and support (helpdesk) because resources (spectrum, people, and equipment) are scarce (not in harm's way). As the complexity of networking grows and as network capabilities are introduced, improved network management is required. For military operations, assured delivery may be needed for specific information and operations. This requires management tools to be in place to ensure continued secure and robust operations, which is not achieved with commercial wireless technologies. This research will assess network management tools in place for the military tactical mobile networking environment and develop technology and tools to address shortfalls with the goal to transition technology to operational systems.

Spectrum Management Tools and Analysis - For wireless, tactical mobile networking, the management of the use of spectrum effects network operations. The demand for spectrum is increasing due to the expanded use of sensors, imagery, and voice. This demand increases the pressure on the limited shared radio frequency (RF) spectrum for military tactical networking. The current Department of Defense (DoD) frequency planning and management infrastructure will have a limited ability to cope with this demand through operational planning, Coalition Joint Spectrum Management Planning Tool (CJSMPT) Joint Capability Technology Demonstration (JCTD), and the Global Electromagnetic Spectrum Information System (GEMSIS). Advanced spectrum management concepts such as sense and adapt, spectrum sharing, and dynamic reallocation are under investigation but not yet mature support operations. This research will evaluate opportunities for more efficient and effective use of the frequency spectrum within DoD. Technology advances are expected to advance the concept of cognitive radio and cognitive antenna devices to sense and adapt operations based on spectrum policy and usage, the management of multi-band and multifunction apertures, and the use of spectrum efficient

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 3: Advanced Technology Development (ATD)	R-1 ITEM NOMENCLATURE PE 0603662D8Z: Networked Communications Capability	PROJECT P663: Network Communications Analysis		
<p>waveforms for use in military environments. This research will develop the models and tools to demonstrate capabilities for operational planning and monitoring of spectrum as these technologies are introduced.</p> <p>Integrated Network Management Capability - Network management becomes more complex as more and different types of networking capability become available. Integrated network management across heterogeneous systems, especially wireless systems, requires definition, design, and development. Operationally, network management assumes all functions required to share networking resources and ensure proper operation for participants. This research will define integrated network operations tools for all aspects of network resource management and to prioritize across operational spectrum management, security management, network management, and information management. This research will also develop test beds especially to validate models and simulations used to develop and test network management tools, and conduct experimentation on approaches developed.</p> <p>Tactical Networking Evolution and Expansion - Fielded and about-to-be-fielded tactical networks can be vastly expanded and evolved from their current capabilities by developing and applying new techniques (or existing techniques developed in basic research) to the existing systems, providing modern capability to the warfighter without the large expense to the DoD of developing new systems. This research will focus on developing and applying new DoD specific techniques to create leap-ahead approaches to Anti-Jam resistance of tactical networks, larger, more fully exploited networks, and expanded capabilities for signal/data processing and data compression in radios and across the networks. This research will take advantage of new software defined radios about to be fielded by the Department, as well as focus on the existing legacy systems, using the successful approach we developed when fielding the Netted Iridium capability.</p>				
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
Title: Tactical Mobile Networking		5.283	6.297	0.000
Description: This project is for the development of new applications and standards that can be used on existing tactical networks to improve data retrieval and discovery by the tactical warfighter. In addition, research is conducted into tactical communications architectures to develop models useful for optimizing and exploiting tactical networks. New applications and architectures will be tested in a joint federated experimental emulation test bed being developed within this program. Project collaboratively executed by the Navy and Air Force. Results planned for transition to programs of record as maturity of models allow. Research efforts include Wireless Computational Networking Architectures (WCNA), Tactical Edge Protocol Evaluation and Experimentation (TEPEE), Mission Aware Reasoning for Tactical Edge Network Services (MARTENS)/Semantically Augmented Resource Manager (SARM), Dynamic Transport Protocol, SATCOM and Tactical NetOps, MANET Project (w/ NSA), Cooperative Heterogeneous Communications, Inter-domain Routing, Communications for Autonomous Systems, Network Visualization, Tactical Edge Group-Wise Networking, Advanced Tactical Data Links, Reliable Data Transport, Channel Modeling for Software Defined Radios in Real Atmospheric Environments, and Loss Tolerant Transmission Control Protocol (LT-TCP) for Mobile Wireless Networks.				
Overall goal: Increase understanding of the condition of tactical mobile networking technologies. Improve specification of technical standards and policy for tactical mobile networking. Refine fidelity modeling and simulation to support operations analysis and the articulation of operational requirements and performance parameters.				

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>		R-1 ITEM NOMENCLATURE PE 0603662D8Z: <i>Networked Communications Capability</i>	PROJECT P663: <i>Network Communications Analysis</i>
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
<p><i>FY 2012 Accomplishments:</i></p> <ul style="list-style-type: none"> - Designed compressive sensing (CS) based protocols for massive antenna arrays. Implemented compressive sensing decode on a Global Processing Unit (GPU). Designed small unmanned airborne systems (SUAS) flight test for distributed spectrum sensing. - Completed the TEPEE project. - Transitioned the SARM project into a new effort called MARTENS. Developed prototype implementation of semantic reasoner. Demonstrated the initial SARM/MARTENS prototype. - Initiated Dynamic Transport Protocol project. Evaluated candidate protocols and completed initial dynamic protocol design. Created emulation environment for protocol concept evaluation. - Completed design methodology on how to better link tactical terrestrial network operations (NetOps) planning and tools with the Joint Satellite Communications (SATCOM). Completed architectural analysis on dynamic SATCOM access schemes. - Initiated MANET project in conjunction with NASA. Developed and matured prototype software code and standards. Developed a common (standards-based) radio networking stack and a common management capability prototype. - Developed new protocols utilizing network coding to leverage multi-path routing. - Developed a test bed environment to explore the impact of Border Gateway Protocol (BGP) routing policy settings in a joint networked environment. - Developed simulation model and metrics to evaluate impact of communications on autonomous systems. Evaluated mission autonomy strategies. - Initiated Network Visualization project. Executed a series of simple prototype to test a variety of visualization strategies. - Completed network group forwarding and structural analysis with group-oriented network protocols. Researched adaptive rate reliable video and NACK-Oriented Reliable Multicast (NORM) transport proxy. Researched survivable, serverless messaging and chat solutions, and Disruption Tolerant Networking (DTN) for heterogeneous operations. - NRL completed the Advanced Tactical Data Links effort. - Initiated reliable data transport project. Conducted robust distributed network transport workshop (June 2012). Drafted test plan for tactical network testbed. - Completed Channel Modeling for Software Defined Radios in Real Atmospheric Environments project. - Initiated the LT-TCP effort. <p><i>FY 2013 Plans:</i></p> <ul style="list-style-type: none"> - Perform distributed spectrum sensing SUAS experiments. Investigate integration of compressive sensing based compression and encryption. Demonstrate Capability Enabler Network enabling advanced collaborative/secure networks. - Complete extension of the system for operation in tactical environments. Develop enhanced user interface functionality. Integrate MARTENS capability into NATM (AFRL) and JINX (CERDEC) systems. 			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603662D8Z: <i>Networked Communications Capability</i>	PROJECT P663: <i>Network Communications Analysis</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
<ul style="list-style-type: none"> - Develop location and path aware protocol tuning mechanisms. Design basic protocol architecture integrating multiple transport protocols. Emulate protocol architecture to analyze performance in realistic tactical environments. - Create and complete SATCOM planning and control software early prototypes. Evaluate design architectures for using the Mobile User Objective Systems (MUOS). Develop implementation methods to apply Precision Polarization for Terrestrial SATCOM. - Test and mature prototype software code and standards. Analyze, model and design prototype server-less Voice over Internet Protocol (VOIP) systems. Evaluate and develop new Stochastic Routing protocols for Disruption Tolerant Networking (DTN). - Explore opportunities to transition advances in the protocol development to programs or services. Extend the network coding protocols to different scenarios. - Explore alternatives to BGP that can handle the dynamics of mobile tactical networks, with potential applications to emerging networks across programs and services (WIN-T, JALN, etc.). - Define communication risk environment. Develop autonomous decision making algorithms. - Collect feedback on the initial prototypes from networking research staff. Expand visualization prototypes which hold the most promise. Define specifications for a full-featured Network Visualization Toolkit. - Conduct initial field experiment at Naval Post-graduate School (NPS) Tactical Network Testbed (TNT) facility. Complete development of network protocol mechanisms to support distributed, autonomous group-wise communication. Enhance the Adaptive Reliable Video Service (ARVIS). - Perform S&T in efficient dissemination backbones and adaptive ad hoc routing. Investigate performance trade-off of reliable multicast and unicast transport methods for mobile tactical edge communications. Research, develop, and transition decentralized mobile service discovery mechanisms. Research and transition serverless group messaging capability. 			
Title: Network Management Tools and Analysis		2.821	3.599
<p>Description: This project is for the development of joint standards and tools for policy-based and measurement-based tactical network management. New standards and applications will be tested in a joint federated experimental emulation test bed being developed within this program. This project is jointly executed by the Navy, Air Force and Army, with technology transition agreements being pursued with programs of record. Research efforts include Network Agent Technology for Management (NATM), Joint Integrated Network Management System Exchange (JINX), Tiger Team Analysis, Tactical Resource Management and Control, End-to-End Network Management (NEEMO), NRL Information Assurance, Optimal Scheduling in Time Division Multiple Access (TDMA) Networks, and Dynamic Policy Management (DPM).</p> <p>Overall goal: Increased understanding of the complexity of the tactical network management. Determination of the support required for tactical network operations. Evaluation of technology to support transition and fielding to operational capability.</p> <p>FY 2012 Accomplishments:</p>			0.000

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013				
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 3: Advanced Technology Development (ATD)		R-1 ITEM NOMENCLATURE PE 0603662D8Z: Networked Communications Capability	PROJECT P663: Network Communications Analysis			
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012			FY 2013	FY 2014
<ul style="list-style-type: none">- Integrated AFRL NATM and NRL NEEMO capabilities. Developed basic Anomaly Detection capabilities. Initiated transition of NATM capabilities into Joint Warfighting Integrated NetOps (JWIN) Joint Concept Technology Demonstration (JCTD).- Completed the JINX Project. Matured and completed development of bridging technology to facilitate application level Joint Force information sharing. Matured and completed development of network Common Operating Picture (COP) visualization technologies to facilitate understanding of the network's impact on Joint missions, and converting the Joint Information Dissemination and Management (JINX) technology into Systems Center Operations Manager (SCOM) management packs. Technology transitioned to the JWIN JCTD.- Conducted analysis of future network technologies and developed research roadmaps outlined required technology developments for waveforms, tactical networking, and Satellite Communications (SATCOM).- Demonstrated using a single network management interface to control real radios and emulated radios. Drafted a Common Open Research Emulator (CORE) Management Information Base (MIB) for tactical radios.- Tested NEEMO installation on the USS Blue Ridge and the USS Mt. Whitney. Participated in Communications AirBorne Layer Expansion (CABLE) JCTD. Participated in JWIN JCTD (Terminal Fury 12 and Valiant Shield)- Transitioned NRL Information Assurance work to the OSD Cyber Security Program Line.- Completed the Optimal Scheduling in Time Division Multiple Access (TDMA) Networks project.- Successfully developed and demonstrated multi-party negotiation algorithm. Developed greater complexity use cases with various tactical services and multiple types of networks. Researched, designed, and developed prototype policy negotiation user interface software that supports collaborative distributed negotiation. <p>FY 2013 Plans:</p> <ul style="list-style-type: none">- Develop Enhanced Anomaly Detection. Augment system to support Dynamic Spectrum Access decisions. Initialize integration with Net Design capability.- Evaluate requirements for integrating physical layer and networking layer designs for the multifunctional waveform to provide a complete solution. Evaluate results of integration studies for implementing Mobile User Objective System (MUOS) satellite systems into tactical networks.- Integrate real radios and networks into emulation environment to demonstrate operation of a universal interface and verify the feasibility of configuring and monitoring real communications equipment.- Research requirements and develop capabilities to provide mobile tactical warfighters with automated indications of network health, and research requirements for deployment into heterogeneous tactical network environments. Research methods for obtaining network topologies from flow-based monitoring techniques, and research implementation of methods for dynamic analysis and mapping of cross-domain quality of service (QoS) requirements. Research utilizing network data analysis to optimize network bandwidth usage.						

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603662D8Z: <i>Networked Communications Capability</i>	PROJECT P663: <i>Network Communications Analysis</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
- Research solutions to address the fair negotiation human factor problem. Mature the Dynamic Policy Management (DPM) algorithm and software. Integrate policy negotiation to Policy-based Network Management (PBNM) systems.			
Title: Spectrum Management Tools and Analysis		4.934	5.914
<p>Description: This project is for the development of measurement-based spectrum management tools. Applications will be developed and tested in a laboratory environment. Project is executed by the Army and results are available to the Navy and Air Force through the Joint NETOPS Integrated Collaborative Working Group. Research efforts include Spectrum Analysis and Experimentation in Dynamic Operational Environments (SAEDOE), Agile Spectrum and Network Testbench (ASPECT), Dynamic Spectrum Access (DSA) Spectrum Analysis Software, Cognitive Networking Radio Algorithmic Fusion, Integrating Comm and Electronic Attack. SIGINT-assisted Spectrum Management and Control, Cognitive Radio Technology, Networking for Spectrum Aware Cognitive Radios, DSA Enhancements, Spectrum Sharing Trade Study, and Directional Ad hoc Networking Technology - 2 (DANTE - 2).</p> <p>Overall goal: Develop the technical basis to support changes regarding the operational use of spectrum both within the military and among spectrum regulatory bodies.</p> <p>FY 2012 Accomplishments:</p> <ul style="list-style-type: none"> - Completed collection of airborne spectrum characterization data. Developed Dynamic Spectrum Access (DSA) simulation environment. Completed initial assessment of DSA algorithms. - Initiated the ASPECT project. Developed initial testbench framework design and architecture. - Developed algorithms and analytical methods for the performance of Dynamic Spectrum Access (DSA) systems in heterogeneous networks where background emitters operate with differing bandwidths. Demonstrated the DSA Policy automation, creation, and simulation software tool and coexistence policies between DSA and legacy systems. Demonstrated a complete capability to generate, disseminate, and execute a DSA policy in the laboratory environment. - Completed development of a Radio Network test bed that supports development, evaluation, and demonstration of wireless networking technologies enabling the capability of passing realistic user communications traffic using both simulated and live radio networks. - Demonstrated medium access control (MAC) layer attack on the 802.11 waveform. Investigated additional spectrum efficient modulated attacks on specific communications waveforms. - Added distributed sensors into the non-central channel control algorithm in the spectrum management simulation. Studied interpolation approaches for distributed sensors using spatial correlation of the power spectrum. Improved the control algorithms in the spectrum management model (results to be published in MILCOM 2012). Enhanced the run-time performance of the simulation. 		0.000	

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013						
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603662D8Z: <i>Networked Communications Capability</i>	PROJECT P663: <i>Network Communications Analysis</i>						
B. Accomplishments/Planned Programs (\$ in Millions)								
<ul style="list-style-type: none"> - Completed evaluation of current version of Shared Spectrum Company Dynamic Spectrum Access (SSC DSA-2100) radios with security assessment. Released initial capture spectral environments to DoD Wireless Networking Library, and completed basic Matlab model of DSA in a simulated environment. Increased the number of development nodes to four with general applicability to larger collection of nodes, and demonstrated multi-node multicast and asynchronous node interactions. - Advanced the use of channel state information (CSI) in cognitive radio networks and its impact on the stability region of a two-user cognitive radio network. Developed a set of criteria to determine the capacity scaling laws for ad-hoc networks under different physical layer technologies. Developed joint optimal relay selection and resource allocation under bandwidth exchange (BE) to enable incentivized cooperative forwarding. - Completed the DSA Enhancements Study. - Initiated the Spectrum Sharing Trade Study. Developed generic incumbent system models. Developed generic entrant system models. Determined the dynamic spectrum access (DSA) rule parameters for different incumbent radio types including the limiting DSA factors. - Began low rate initial production (LRIP) on one GHz and two GHz DANTE systems for a classified application. Directional Ad-hoc Networking Technology- 2 (DANTE-2) has been proven at five GHz and transitioned at one GHz and two GHz. <p>FY 2013 Plans:</p> <ul style="list-style-type: none"> - Complete airborne spectrum data collection. Implement DSA algorithm hardware. Validate previously simulated DSA techniques via experiments. - Complete prototype RF control software development. Implement three node prototype controllable spectrum capability. Conduct initial experimentation utilizing framework. - Complete development of measurement-based dynamic spectrum access (DSA) and policy management software. Develop and test on a radio emulation test bed negotiated spectrum access algorithms and evaluate its possible inclusion into current tactical waveforms. Test and demonstrate real time DSA algorithm. Develop spectrum sharing mechanisms with commercial providers/systems to address the limitation imposed on tactical networks by the National Broadband Plan. - Investigate generalized MAC layer electronic attack techniques. Research joint networked comm/jammer waveform. Demonstrate promising capabilities. Complete investigations of joint Network comm/jamming architectures. - Complete SIGINT-assisted Spectrum Management and Control project. - Develop a set of spectral scenarios to evaluate DSA radios, including individual and environmental radios. Expand and increase the fidelity of the modeled environment and explore Electronic Attack (EA) effectiveness against cognitive jammers. Create cooperative sensing strategies for heterogeneous environment and real-time RF channel emulation interface RF with propagation models to EMANE. - Develop scheduling mechanisms in wireless networks that employ multi-user detection (MUD) for allowing simultaneous transmissions. Analyze the multicast throughput and stability for a two-user cognitive radio system and analyze the capacity-delay 		<table> <tr> <th>FY 2012</th><th>FY 2013</th><th>FY 2014</th></tr> <tr> <td></td><td></td><td></td></tr> </table>	FY 2012	FY 2013	FY 2014			
FY 2012	FY 2013	FY 2014						

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603662D8Z: <i>Networked Communications Capability</i>	PROJECT P663: <i>Network Communications Analysis</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
tradeoffs in cognitive radio networks. Develop throughput maximization schemes for secondary nodes in a cognitive network under the transparent co-existence paradigm, and complete development of a protocol framework of BE-based networking. - Develop alternate spectrum architectures. Estimate incumbent and entrant implementation and recurring costs for each architecture. Develop test plan to validate key assumptions and results. - Extend DANTE to other frequencies. Extend network topology automation to multiple frequencies.			
Title: Integrated Network Management Capability		4.882	5.857
Description: This project is for the development of joint integrated network management tools, and three federated experimental test beds for the development and evaluation of integrated tactical network management and spectrum management. The project is executed jointly by the Navy, Army and Air Force. The plan is to also establish a Joint Network Operations (NETOPS) Integrated Collaborative Working Group for the establishments of standards and joint development in support of all projects in this program. Membership includes the research community from the Navy, Marine Corps, Army and Air Force as well as developers from acquisition programs such as Warfighter Information Network-Tactical (WIN-T) and Joint Tactical Radio System (JTRS). Future plans call for further joint infrastructure test bed development to include DoD PlanetLab as well as joint networking tools in support of NETOPS. The results of this research will transition to future increments of JTRS and WIN-T, and if successful, to the field through a joint integrated tactical NETOPS program. Research efforts include MlabCUNE /Edge Network Visualization and Emulation (ENVE), Tactical Edge Network Integration and Operational Environment Testbed, Joint Network Management Interoperability, Wireless Networking Library (WNL), Network Emulation and Experimentation, and Tactical Edge Wireless Experimentation.			0.000
Overall goal: Common integrating framework to support interoperability among various aspect of developmental network operations and management to include spectrum management, network management, security management, and information management. Reduce the cost to develop, procure, and support networks through the integration across networks and functions within networks.			
FY 2012 Accomplishments: - Completed the mlabCUNE/ENVE project - Completed the Tactical Edge Network Integration and Operational Environment Testbed project. - Completed Development of a Joint emulation capability for testing/evaluation of tactical network applications without software code modification. Completed development of a common integrating framework to support interoperability among various aspects of joint Network Operations. Completed design and implementation of a flexible Network Management policy approach supporting multiple application domains and platforms. Completed integration of KAoS with Spectrum Managements Tools on a radio emulation test bed.			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603662D8Z: <i>Networked Communications Capability</i>	PROJECT P663: <i>Network Communications Analysis</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
<ul style="list-style-type: none"> - Expanded WNL user base to over 100 users across dozens of Department of Defense (DoD) organizations. WNL demonstrated at MILCOM 2011. - Expanded library of emulated waveforms with an MIT-LL developed EMANE emulation of the Network-Centric Waveforms (NCW). Transferred emulation platform technology to other programs (such as Project Manager Warfighter Information Network-Tactical (PM WIN-T)). - Released EMANE 0.7.3 with enhanced "Universal PHY" and other features and improvements. Conducted fourth collaborative DoD Mobile Network Modeling Workshop (February 2012). Pursued EMANE use for ONR (Office of Naval Research) Advanced Tactical Data Link (ATDL) modeling. <p>FY 2013 Plans:</p> <ul style="list-style-type: none"> - Conduct routine administration and maintenance of the WNL. Demonstrate WNL at targeted conferences. Examine technology refresh and additional software features. - Perform and complete work on verification and validation (V&V) of waveforms and protocols in the scalable emulation. Improve the ability to set up and operate large scale emulations. Transition capability to other DoD programs. - Complete CORE and EMANE development. Mature Network Modeling Framework (NMF) and additional wireless models. Collect and analyze field test data to validate emulation modeling through various test, visualization, and data analysis tools. 			
<p>Title: Tactical Networking Evolution and Expansion</p> <p>Description: This project is for the development of new applications and approaches that can be used on existing tactical networks to improve the physical and networking layers for the tactical warfighter. It will explore new ways to build architectures, antennas, and signal and data processing or exploit waveforms to improve Anti-Jam resistance, network throughput and scale, or network packet routing, and improve these metrics at low cost and without sacrificing interoperability. Research efforts include Joint Aerial Layer Network (JALN) Network Management/Control Concept Analysis, Advanced Tactical High-Performance Network Architecture (ATHENA), Network Radio Characterization Limited Objective Experiment (LOE), Multi-Function Wave Form (Resilient EW/Comms), and the Asymmetric Broadcast Command and Control System (ABC2) Anti-Access/Area Denial (A2/AD) Demonstration</p> <p>Overall goal: Next generation tactical networking in the fielded tactical systems, with vastly increased capabilities, at the lowest cost possible to the DoD.</p> <p>FY 2012 Accomplishments:</p> <ul style="list-style-type: none"> - Conducted Joint Concept process analysis. - Identified and categorized current, emerging, and new ATDL applications as well as their network service requirements. Modulated and enhanced code that enable reuse of Link 16 RF hardware and operation in Link 16 spectrum. Designed modular 		2.936	3.726
			20.000

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603662D8Z: <i>Networked Communications Capability</i>	PROJECT P663: <i>Network Communications Analysis</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
<p>network architecture to enable interoperability. Developed IP Robust Header Compression (ROHC) functionality in OPNET and developed new IP header compression protocol MANET IP Header Compression. Completed initial evaluation of MANET routing protocols in airborne networks.</p> <ul style="list-style-type: none"> - Initiated Network Radio Characterization LOE project. Completed bench testing with Marine Corps Trellisware radios. - Initiated Multi-Function Wave Form effort. <p>FY 2013 Plans:</p> <ul style="list-style-type: none"> - Test Joint Concept process inserts. Complete Joint Concept analysis documentation. - Perform and complete algorithmic and architectural improvements to the ATHENA physical, MAC, and network layer designs, incorporating feedback from network simulation and emulation performance experiments. Create and finalize a hardware implementation of the ATHENA algorithms and architectures as an integrated air tactical domain solution. - Conduct a field demonstration of various application layer tools and network services in a heterogeneous tactical network. - Develop a Multifunctional Electronic Warfare (EW) and Communications Waveform components capable of providing simultaneous communications and EW functions. Develop hardware interface and software architectures. Develop scheduling algorithms advanced routing features and Physical/Media Access features. Develop integrated comms/EW models. - Field test and demonstrate the Integrated COMMS/EW models. <p>FY 2014 Plans:</p> <ul style="list-style-type: none"> - Begin the ABC2 demonstration planning phase in order to serve as preparation, planning, and requirements gathering activities, such that the ABC2 demonstration will be properly lined up with relevant exercises taking place during late FY 2014 in the U.S. Pacific Command Area of Responsibility aligned with strategic needs for A2/AD. This will include operational planning, technical requirements gathering, and programmatic and acquisition planning. 			
Accomplishments/Planned Programs Subtotals		20.856	25.393
C. Other Program Funding Summary (\$ in Millions) N/A			
Remarks			
D. Acquisition Strategy The Netted Iridium (NI) capability will be transitioned directly to production and sustainment to the DTCS-Army program by the Army for use in the U.S. Central Command Area of Responsibility. Other program capabilities will be transitioned to acquisition programs as successful and appropriate.			
E. Performance Metrics Strategic Goals Supported: Net-Centric Warfare/Joint Interoperable Communication. Meet current needs of tactical warfighter.			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603662D8Z: <i>Networked Communications Capability</i>	PROJECT P663: <i>Network Communications Analysis</i>
<p>Existing Baseline: Prototype relays and gateways; initial federated, laboratory test beds; and prototype joint network management tools.</p> <p>Planned Performance Improvement / Requirement Goal: Link expansion in prototype relays and gateways; and continued integration in federated test beds; demonstration of prototypes and software tools.</p> <p>Actual Performance Improvement: Prototype and transition able relays and gateways; usage of federated test beds; and demonstration of prototypes and software tools.</p> <p>Planned Performance Metric / Methods of Measurement: Utilization of federated test beds; and demonstration of prototypes and software tools.</p> <p>Actual Performance Metric / Methods of Measurement: Progress on test bed development; prototype software demonstrated; and prototype architectures developed.</p>		

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE							
0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>					PE 0603663D8Z: <i>Data to Decisions Advanced Technology</i>							
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
Total Program Element	-	4.536	13.754	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
P366: <i>Data to Decisions Advanced Technology</i>	-	4.536	13.754	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

Note

Change from FY 2013 to FY 2014 reflects a realignment of the program funds from the Data to Decisions Advanced Development PE 0603663D8Z to the new Applied Research for the Advancement of Science and Technology (S&T) Priorities PE 0602251D8Z.

The goals of this program will be shifted to the Department of Defense (DoD) Components under the direction of the Research and Engineering Executive Committee and will conform with the DoD Data to Decision Priority Steering Council roadmaps. Historically, the Joint Data Management program was restructured to evolve into the revised Data to Decisions program to support the FY 2010 Quadrennial Defense Review mission: Succeed in counterinsurgency, stability, and counterterrorism operations. In addition, this program addresses a signed Secretary of Defense S&T priority, Data to Decisions, which reduces the cycle time and manpower requirements for analysis and use of large data sets.

A. Mission Description and Budget Item Justification

As the DoD increases the capability and capacity to generate increasing amounts of data from numerous sensors in the battlespace, the issue of handling very large data sets has become more challenging. This is in part due to Department of Defense response to a changing threat environment where there is an expansion of the types of sensors deployed, new types of information collected, and different features used to classify these new threats. From a technical perspective, data creation speeds have outpaced the speed and ability to transport, store and process the data created. Science and Technology (S&T) investigation into new and novel ways to manage and exploit this data is required to more efficiently use sensor assets and effectively use information in a timely fashion.

The OSD Data to Decisions program (PEs 0602663D8Z and 0603663D8Z) uniquely address three specific gap areas not addressed by Component S&T: minimal dedicated Data to Decisions research to support Joint and emerging mission areas; DoD needs a mechanism to increase responsiveness of Component Data to Decisions research and lower the time-to-solution across a broad DoD-wide user base; and limited investment in multi-disciplinary research investigations of Data to Decisions issues and solutions. The OSD Data to Decisions program pulls together research efforts to address shortfalls within the context of Joint and emerging missions to ensure that the distinctive needs of these joint analysts and decision makers are addressed by DoD science and technology. As an example, irregular warfare, non-state terrorism movements, and uncertain environmental patterns that trigger major weather disasters are producing a reality for military and government leaders where traditional physics-based sensors alone are insufficient to plan current and future actions in a region on interest or need. Component Data to Decisions efforts focus on developing technology to overcome a particular challenge within a mission or advance a particular priority area of that Component, as a result the Research and Engineering Database has over 388 references to Decision Support programs all of which are designed to address a specific need over the course of

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense DATE: April 2013

APPROPRIATION/BUDGET ACTIVITY

0400: *Research, Development, Test & Evaluation, Defense-Wide*
BA 3: *Advanced Technology Development (ATD)*

R-1 ITEM NOMENCLATURE

PE 0603663D8Z: *Data to Decisions Advanced Technology*

several years. However, there exists no other program in the DoD that focuses on technology development efforts to speed the delivery of the Component solutions and lessons learned to a DoD-wide user base. The OSD Data to Decisions program provides the common platform (access to datasets, infrastructure, and metrics) to integrate and evaluate the technology development and research methods to support various missions driven by the challenge problems. This ability to rapidly evaluate technology development and research methods will allow technology transfer for mission analysis not previously foreseen and lower the time-to solution across DoD by rigorously analyzing technical performance for more immediate use. Traditional approaches within research seek to advance machine systems for a specific mission effect resulting in large complex data sets. While necessary for sensor system improvements, potential Data to Decisions solutions require a coupling of automated data analysis with human analysts, operators and decision makers in order to reduce time and limit the number of people required. Many research studies, workshop and analysis have stated that solutions to data issues are multi-disciplinary. The OSD Data to Decisions program is in the unique position to reach across Components and research disciplines to blend promising research in new ways in response to Challenge Problem statements. For Challenge Problems, contextual understanding will result from research combining human sciences with computer processing techniques to take advantage of a person's cognitive ability to fuse and assimilate multiple sources and types of information for new insights.

B. Program Change Summary (\$ in Millions)	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total
Previous President's Budget	4.117	13.754	13.797	-	13.797
Current President's Budget	4.536	13.754	0.000	-	0.000
Total Adjustments	0.419	0.000	-13.797	-	-13.797
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	0.420	-			
• SBIR/STTR Transfer	-	-			
• Baseline Adjustments	-	-	-13.797	-	-13.797
• Other Adjustments	-0.001	-	-	-	-

Change Summary Explanation

FY 2014 baseline adjustments are reflective of DoD priorities and requirements.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 3: Advanced Technology Development (ATD)					R-1 ITEM NOMENCLATURE PE 0603663D8Z: Data to Decisions Advanced Technology				PROJECT P366: Data to Decisions Advanced Technology			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
P366: Data to Decisions Advanced Technology	-	4.536	13.754	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012												
^{##} The FY 2014 OCO Request will be submitted at a later date												
Note												
Change from FY 2013 to FY 2014 reflects a realignment of the program funds from the Data to Decisions Advanced Development PE 0603663D8Z to the new Applied Research for the Advancement of Science and Technology (S&T) Priorities PE 0602251D8Z.												
A. Mission Description and Budget Item Justification												
The OSD Data to Decisions (D2D) program (PEs 0602663D8Z and 0603663D8Z) uniquely address three specific gap areas not addressed by Component Science and Technology: minimal dedicated D2D research to support Joint and emerging mission areas; DoD needs a mechanism to increase responsiveness of Component D2D research and lower the time-to-solution across a broad DoD-wide user base; and limited investment in multi-disciplinary research investigations of D2D issues and solutions.												
The D2D program establishes the demonstration and experimentation environment to conduct independent evaluations of research efforts that have the most potential of minimizing the impact of the increasing amount of information available and required to support military operational decision-making. The intent is to leverage existing research investments within defense S&T and provide proper evaluations and assessments to facilitate technology transition. The Applied Research program concentrates on the Development portion of this collaborative effort, focusing on the development of improved algorithms (relative to FY 2012 state of the art) to be demonstrated and validated in the 6.3 D2D program test bed. The D2D Advanced Development (6.3) program uses a spiral development model with four-steps. Each year Operational teams will choose a series of cross-service challenge problems dominated by a specific sensing modality. Representative data for each of those problems will then be collected for testing against that problem. A Development team will design algorithms and data management architectures using high-level languages and self-test on controlled data sets to address those challenge problems. Independent assessment will occur with sequestered data sets, but each development tool will also be tested against new sensors not included in the self-testing to determine fragility and applicability. A transition team will host the developed algorithms as services in a spiraling prototype system that will support rapid prototyping and transition.												
B. Accomplishments/Planned Programs (\$ in Millions)									FY 2012	FY 2013	FY 2014	
Title: Operational Initiative									0.228	3.500	0.000	
Description: The OSD D2D Program develops cross-service challenge problems from joint missions as a frame within the Operational Initiative, so that the research base can investigate technical challenges while these under-represented missions realize a timely and responsive benefit from DoD-wide talent with minimal investment. Challenge problems focus multiple levels of algorithm development across the DoD to catalyze a larger technical community to work D2D issues for Joint and future missions												

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603663D8Z: <i>Data to Decisions Advanced Technology</i>	PROJECT P366: <i>Data to Decisions Advanced Technology</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
and also provide a basis for testing the reuse and repurposing of algorithms and systems for rapid repurposing of algorithms and systems that match the agility of threats and missions.			
<p><i>FY 2012 Accomplishments:</i></p> <ul style="list-style-type: none"> - Successfully engaged Combatant Command (COCOM) stakeholders via onsite visits to major COCOMs related to or supporting the U.S. Africa Command (AFRICOM) mission. - Developed a detailed analysis of AFRICOM and supporting COCOM issues that have potential for mitigation by current or future DoD D2D research and technology development and/or analysis which included a listing of topic areas with supporting rationale and description that can be used to seed future research. - Identified functions (decisions and processes) that would be impacted by a research investment based on needs driven by the scenario, which helped to define the future research thrusts and investments across DoD. - Continued generating moving intelligence (MOVINT) data sources for the Development team. - Continued to explore technical approaches, including investigating technical and legal challenges, for sanitizing data sets for use by non-U.S. citizens. <p><i>FY 2013 Plans:</i></p> <ul style="list-style-type: none"> - For one of the three scenario challenges identified in the FY 2012 AFRICOM Scenario, build detailed top-down data collection requirements, statistical analysis and evaluation plans for experimentation to support information fusion and decision support tests of emerging technologies. Demonstrate prototype applications in one or more COCOM exercises. Share with COCOM exercise planners. - Complete the COCOM Decision Requirements Study by reaching out to COCOMs not visited in FY 2012 and by supporting elements of FY 2012 COCOMs who have expressed need for continued study/support. Deliver results to the D2D Priority Steering Council for inclusion into roadmaps and Component plans. - Extend efforts to broadly understand the current state of D2D domains in space operations, counter weapons of mass destruction, human, social, culture, and behavior modeling, health information technology, and logistics. - Identify mature technologies being developed within the D2D program, small business innovation research (SBIR) performers, and Navy Enterprise (Office of Naval Research and Naval Research Laboratory) to fuse data, clean dirty data, triage data, and compress data, to improve decision support. Deliver appropriate metrics through the knowledge engineering process. - Deliver MOVINT data sources for the Development team. 			
<i>Title:</i> Assessment Initiative		1.800	4.804
<i>Description:</i> The Assessment team is responsible for test and evaluation, as well as architectural analysis. The team is the primary vehicle by which algorithm developers test their data on sequestered data sets. The team provides feedback to the Developers and Operational team and guides future test vectors. This team is also responsible for architectural analysis of the			0.000

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603663D8Z: <i>Data to Decisions Advanced Technology</i>	PROJECT P366: <i>Data to Decisions Advanced Technology</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
processing and user interface layers. To this end, the team conducts quantitative analysis of algorithm performance requirements and conducts user interface experiments in human factors.			
<p>FY 2012 Accomplishments:</p> <ul style="list-style-type: none"> - Hand truthed 28 minutes of WAMI MOVINT data and released the data to the performers and when possible made the data sets publicly available. - Adapted and extended the AFRL COMPASE Tracker Evaluation Software Suite (CTESS) track evaluation tool for measuring performance of tracking algorithms. - Conducted quantitative analysis to develop a processing architecture for text analytics. Work with the Operational team on specific problem sets. - Provided data analysis to evaluate tools and applications for temporal/spatial resolutions and space/time correlations for cueing, entity tracking, and data layering of disparate data sets into a single picture. This included independent assessment and evaluation of tools and algorithms. - Reference tool chain and prototype of workflow service for WAMI network analysis demonstrated on testbed. Demonstrated interoperation of modules and defined a common architecture that could be executed by a single operator. <p>FY 2013 Plans:</p> <ul style="list-style-type: none"> - Complete the assessment of MOVINT modules; provide extensive feedback to Operational Team on test results to guide further FY 2013 collections. - Develop and deliver ground-truth data for text/imagery analysis relevant to challenge problem. - Transition the Automated Online Data Repository (AODR) to the wider development community by including additional datasets with analytic studies of tools/applications. - Adapt testbed to accommodate text workflow that supports the AFRICOM centric challenge problem. 			
<p>Title: Transition Initiative</p> <p>Description: This team transitions the prototype algorithms developed by the Applied Research program into a library of D2D modules. The team is also responsible for building the consortium infrastructure for storage, revision control, development and testing. The final D2D system architecture will be developed by this team using an internal testbed to conduct architectural analysis.</p> <p>FY 2012 Accomplishments:</p> <ul style="list-style-type: none"> - Began initial experiments in scalability of algorithms and modules over large data sets. - Developed a D2D Program roadmap for algorithm advancements in data management layer. - Participated in four experiments including USMC Mojave, NGA Afghanistan LOE (ALOE 2), NGA Enterprise Resolve 12 (ER12) and IC Trident Spectre 2012 collecting data and demonstrating specific functions. 		2.508	5.450
			0.000

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense							DATE: April 2013				
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>				R-1 ITEM NOMENCLATURE PE 0603663D8Z: <i>Data to Decisions Advanced Technology</i>			PROJECT P366: <i>Data to Decisions Advanced Technology</i>				
B. Accomplishments/Planned Programs (\$ in Millions)							FY 2012	FY 2013	FY 2014		
- Developed and standardized ICDs for analytics. Enhancements required by the D2D system were communicated back to the community through the National Geo-spatial Intelligence Agency's (NGA) Motion Imagery Standards Board (MISB). <i>FY 2013 Plans:</i> - Complete experiments in scalability of algorithms and modules over large data sets. - Develop and deliver the roadmap for algorithm advancements in data management layer. - Transition the D2D system testbed to the DoD D2D Priority Steering Council members to conduct architectural analysis and transitioning the prototype algorithms. - Investigate expansion of the testbed to support text analytics by DoD Component programs. - Complete experiments in scalability of algorithms and modules over large data sets.											
Accomplishments/Planned Programs Subtotals							4.536	13.754	0.000		
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
• BA 2, PE# 0602663D8Z, P266: <i>Data to Decisions Applied Research</i>	4.128	13.753	0.000		0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
Remarks											
Change from FY 2013 to FY 2014 reflects a realignment of the program funds from the Data to Decisions Applied Research PE 0602663D8Z to the new Applied Research for the Advancement of Science and Technology (S&T) Priorities PE 0602251D8Z. The goals of the program will be shifted to the DoD Components under the direction of the Research and Engineering Executive Committee and will conform with the DoD Data to Decision Priority Steering Council roadmaps.											
D. Acquisition Strategy											
N/A											
E. Performance Metrics											
N/A											

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 3: Advanced Technology Development (ATD)					R-1 ITEM NOMENCLATURE PE 0603665D8Z: Biometrics Science and Technology							
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
Total Program Element	-	10.342	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
P665: Biometrics Science and Technology	-	10.342	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
# FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012												
## The FY 2014 OCO Request will be submitted at a later date												
Note This program ends in FY 2012.												
A. Mission Description and Budget Item Justification Biometric technologies are revolutionizing critical military operations by providing the warfighter with the ability to verify an individual's claimed identity; and, when combined with additional intelligence and/or forensic information, establish an unknown individual's identity, which strips away his anonymity. These emerging technologies provide Department of Defense (DoD) warfighters and commanders with an important capability that supports such missions as base access, force protection, maritime intercept and counter-piracy operations, counterintelligence screening, humanitarian assistance and displaced persons management. Additionally, the biometrics and identity information collected during DoD missions are shared with the Department of Homeland Security, the Department of State, and the Department of Justice, to support homeland defense, law enforcement, and other national interests. In October 2006, the Deputy Secretary of Defense designated the Assistant Secretary of Defense for Research and Engineering (ASD(R&E)) as Principal Staff Assistant (PSA) for biometrics. In April 2011, the Under Secretary of Defense for Acquisition, Technology, and Logistics (USD(AT&L)) was designated as the PSA for forensics. The PSAs for biometrics and forensics have the responsibility to fully address and exercise control over all facets of the DoD's biometrics and forensics programs, initiatives and technologies. A central role of the Biometrics and Forensics Science & Technology Program is to support each respective PSA in addressing the technology gaps that preclude our ability to quickly and accurately identify anonymous individuals who threaten our interests and provide the ability to attribute enemy activity to a specific individual. The Biometrics and Forensics Program develops an annual comprehensive science and technology (S&T) plan and implements multiple projects to advance capabilities in both biometrics and forensics. This S&T plan includes a portfolio of emerging technologies that will support the evolving capabilities required by the commanders and warfighters in ongoing and future military operations.												

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense	DATE: April 2013
-------------------------------------------------------------------------------------------------	-------------------------

APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603665D8Z: <i>Biometrics Science and Technology</i>
-----------------------------------------------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------

B. Program Change Summary (\$ in Millions)	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total
Previous President's Budget	10.406	0.000	0.000	-	0.000
Current President's Budget	10.342	0.000	0.000	-	0.000
Total Adjustments	-0.064	0.000	0.000	-	0.000
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-0.061	-			
• SBIR/STTR Transfer	-	-			
• Other Adjustments	-0.003	-	-	-	-

Change Summary Explanation

This program is terminated in FY 2012 as part of DoD priorities and adjustments.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 3: Advanced Technology Development (ATD)					R-1 ITEM NOMENCLATURE PE 0603665D8Z: Biometrics Science and Technology				PROJECT P665: Biometrics Science and Technology			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
P665: Biometrics Science and Technology	-	10.342	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
# FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012												
## The FY 2014 OCO Request will be submitted at a later date												
Note This program ends in FY 2012.												
A. Mission Description and Budget Item Justification												
Biometric technologies are revolutionizing critical military operations by providing the warfighter with the ability to verify an individual's claimed identity; and, when combined with additional intelligence and/or forensic information, establish an unknown individual's identity, which strips away his anonymity. These emerging technologies provide Department of Defense (DoD) warfighters and commanders with an important capability that supports such missions as base access, force protection, maritime intercept and counter-piracy operations, counterintelligence screening, humanitarian assistance and displaced persons management. Additionally, the biometrics and identity information collected during DoD missions are shared with the Department of Homeland Security, the Department of State, and the Department of Justice, to support homeland defense, law enforcement, and other national interests.												
In October 2006, the Deputy Secretary of Defense designated the Assistant Secretary of Defense for Research and Engineering (ASD(R&E)) as Principal Staff Assistant (PSA) for biometrics. In April 2011, the Under Secretary of Defense for Acquisition, Technology, and Logistics (USD(AT&L)) was designated as the PSA for forensics. The PSAs for biometrics and forensics have the responsibility to fully address and exercise control over all facets of the DoD's biometrics and forensics programs, initiatives and technologies. A central role of the Biometrics and Forensics Science & Technology Program is to support each respective PSA in addressing the technology gaps that preclude our ability to quickly and accurately identify anonymous individuals who threaten our interests and provide the ability to attribute enemy activity to a specific individual.												
The Biometrics and Forensics Program develops an annual comprehensive science and technology (S&T) plan and implements multiple projects to advance capabilities in both biometrics and forensics. This S&T plan includes a portfolio of emerging technologies that will support the evolving capabilities required by the commanders and warfighters in ongoing and future military operations.												
B. Accomplishments/Planned Programs (\$ in Millions)												
Title: Biometric and Forensic Engineering Analysis									FY 2012	FY 2013	FY 2014	
Description: The Biometrics and Forensics Program sponsored two projects that assessed elements of the biometric and the forensic enterprises from an engineering perspective. The Biometric Information Technology Evaluation (BITE) assessed the current use of biometrics in support of force protection missions and has built a metrics framework for the Defense Forensics									1.372	0.000	0.000	

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 3: Advanced Technology Development (ATD)	R-1 ITEM NOMENCLATURE PE 0603665D8Z: Biometrics Science and Technology	PROJECT P665: Biometrics Science and Technology		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
Enterprise. The Biometric and Forensic Information Services Model-Based Systems Engineering (MBSE) effort provided enterprise and solutions-level architecture development, collaboration and review support.				
FY 2012 Accomplishments: The BITE program delivered a report on the actual and potential use of biometrics in support of force protection missions as well as the Defense Forensics Enterprise metrics dashboard and supporting database capability. The MBSE effort evaluated the enterprise architectures at the solutions level and provided recommendations for future technology implementations to support the warfighter.				
Title: Emerging Forensic Projects Description: The Forensics Program sponsored five projects that developed emerging forensic technologies. The Aptamer Selection and Integration in Nanoparticle-Based Detection Systems is delivering a selection method for aptamers that can be used to detect multiple chemicals. The Single-use Sensor Strips for Reliable Field Analysis of Gunshot Residues project investigated the ability to immediately identify individuals that fired a weapon in a battlefield environment using electrochemical stripping voltammetry. The Real-Time Synthetic Cannabinoid Detection Platform is developing a compact prototype to detect cannabinoids. The Statistical Analysis of Firearms/Toolmarks project has developed a system to evaluate impressions generated by discharge of a firearm for use in an expeditionary environment. The Comprehensive Ribonucleic Acid (RNA)-based Bodyfluid Identification Assay project is developing a Deoxyribonucleic Acid (DNA)/RNA co-extraction isolation protocol that permits the simultaneous identification of all forensically relevant biological fluids.		1.703	0.000	0.000
FY 2012 Accomplishments: The Single-use Sensor Strips project delivered the sensor design and a prototype of the sensor strip for demonstration and testing. The Real-Time Synthetic Cannabinoid Detection Platform demonstrated the initial capability; the Statistical Analysis of Firearms/Toolmarks project delivered an initial software prototype; the Aptamer Selection and Integration in Nanoparticle-Based Detection Systems project demonstrated multi-target detection; and, the Comprehensive RNA-based Bodyfluid Identification Assay project delivered technical manuals and analysis macros along with initial reagents and consumables.				
Title: Fingerprint Capture and Processing Description: The Fingerprint Capture and Processing Program sponsored three projects to assess and develop new technologies for fingerprint capture and the processing of latent prints. The Four Finger Mobile Capture Platform project investigated the feasibility of developing a solid state four finger slap capture system based on thin film technology. The Advanced Fingerprint Card Scanning project is developing an automated fingerprint card scanning prototype that can quickly and accurately process a wide variety of paper-based fingerprint cards, extract both the biometric and biographical information, and populate a transmission		1.272	0.000	0.000

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603665D8Z: <i>Biometrics Science and Technology</i>	PROJECT P665: <i>Biometrics Science and Technology</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
file. The Forensic Science Validation of Latent Fingerprint Analysis effort examined the scientific basis of latent fingerprint validation techniques to inform the development of improved procedures and requirements for latent fingerprint examiners.			
FY 2012 Accomplishments: The Four Finger Mobile Capture Platform delivered an initial specification document and development plan. The Advanced Fingerprint Card Scanning project has demonstrated an initial capability and continues to develop a prototype device in FY 2013. The Forensic Science Validation of Latent Fingerprint Analysis project delivered an initial analysis of the variability and quantification of uncertainty in latent fingerprints.			
Title: DNA Extraction and Processing Description: The Biometrics and Forensics Office sponsored two projects to develop new techniques and technologies in the extraction and processing of DNA. The Extraction of DNA from Crude Matrices project developed a new DNA extraction and purification technique to extract human DNA from bone and gum matrices, as well as, extract plant DNA from plant material. The Automated Liquid Handling for DNA Processing project evaluated, selected, and internally validated an automated liquid handling system and sample tracking software capability. FY 2012 Accomplishments: The first phase of the Automated Liquid Handling for DNA Processing project developed an enhanced DNA extraction protocol that now yields two to three times more DNA than current extraction methods. To further increase extraction yields and productivity, two automated liquid handling systems and associated software were delivered to DoD. Also, the Extraction of DNA from Crude Matrices delivered a final report describing the new DNA extraction and purification technique.		1.092	0.000
Title: Forensic Technology Test and Evaluation Description: This project developed and tested a pilot system for aiding in data collection in the process of forensic evidence submission. In addition, this effort is managing a study of the reliability of forensic firearms examiners in comparing fired cartridge casings. The results of this project will lead to more relevant and timely forensic analysis for commanders. FY 2012 Accomplishments: This project completed a forensic technology needs assessment and will deliver a test plan for evaluating the reliability of forensic firearms examiners which will be implemented in late FY 2013.		1.420	0.000
Title: Next Generation DNA Sequencing		1.145	0.000

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603665D8Z: <i>Biometrics Science and Technology</i>	PROJECT P665: <i>Biometrics Science and Technology</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
<p>Description: This project is exploring the potential uses of DNA sequencing in biometric and forensic applications. The project is currently establishing the scientific foundation for DNA sequencing techniques to ensure backwards compatibility with existing DNA databases as well as conducting population studies to establish the validity of new analyses.</p> <p>FY 2012 Accomplishments: This project will developed baseline methods for locus selection, primer design and data analysis and management. In addition, this project developed initial standards for sequence-based analysis for all currently validated DNA identification databases. These baseline methods and standards will be delivered in FY 2013.</p>			
<p>Title: Rapid Biometric for Physical Access Control</p> <p>Description: This project developed a prototype device to identify individuals in a moving vehicle using facial recognition technology. The technology leverages a series of cameras for face finding and capture of high quality images for matching against a database of enrolled individuals. The system is able to correct for blur, pose and illumination issues of a moving vehicle in an outdoor environment.</p> <p>FY 2012 Accomplishments: This project delivered an initial prototype system to enable testing and further development. The final prototype integrated into an existing physical access control point for demonstration and testing purposes.</p>		1.272	0.000
<p>Title: Fingerprint Fragment Fusion</p> <p>Description: This project addressed the challenge of matching latent fingerprints of varying quality to fingerprints that reside in a fingerprint database. This project leveraged an innovative approach to map the ridge detail on a latent fingerprint and compare the results to a gallery of enrolled fingerprints. This project seeks to improve the number of matches and the confidence in the matches over existing latent fingerprint matching systems.</p> <p>FY 2012 Accomplishments: This project developed a prototype software solution, with testing against a latent fingerprint database. Army is testing and evaluating in FY 2013.</p>		1.066	0.000
Accomplishments/Planned Programs Subtotals		10.342	0.000
C. Other Program Funding Summary (\$ in Millions)			
N/A			
Remarks			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603665D8Z: <i>Biometrics Science and Technology</i>	PROJECT P665: <i>Biometrics Science and Technology</i>

D. Acquisition Strategy

N/A

E. Performance Metrics

The Defense Biometrics and Forensics Science and Technology (S&T) strategy is to annually assess biometric and forensic technology gaps in DoD's combined S&T portfolio, and sponsor projects that help close those gaps. These projects are designed to advance immature technologies and deliver a prototype.

In FY 2012, nine projects were completed with prototype or final product delivery. Six projects were focused on biometrics and transitioned to the Army as the Executive Agent for Biometrics. Three of the projects were focused on forensics and were transitioned to the Army as the Executive Agent for Forensics. Close coordination between biometrics and forensics operational users and the respective S&T communities helped ensure each delivered product was transitioned to operational use. The Biometrics transition rate of 100 percent for FY 2012 exceeds the 40 percent benchmark established by DoD Strategic Objective 3.5 - 2D.

In addition, project performance metrics specific to each effort are identified in the project plan, and individual project success will be monitored through these metrics. The metrics include items such as target dates from project work break down schedules, production measures, production goals, production numbers and demonstration goals and dates.

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE							
0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>					PE 0603668D8Z: <i>Cyber Advanced Technology Development</i>							
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
Total Program Element	-	5.836	19.935	19.668	-	19.668	29.221	30.337	30.831	31.431	Continuing	Continuing
P113: <i>Cyber Advanced Technology Development</i>	-	5.836	19.935	19.668	-	19.668	29.221	30.337	30.831	31.431	Continuing	Continuing

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

Our military forces require resilient, reliable networks and computer systems to conduct effective operations. However, the number and sophistication of threats in cyberspace are rapidly growing, making it urgent and critical to improve the cyber security of Department of Defense (DoD) networks to counter those threats and assure our missions. This program focuses on innovative and sustained research in both cyber security and computer network operations to develop new concepts to harden key network and computer components to include: designing new resilient cyber infrastructures; increasing the military's ability to fight and survive during cyber attacks; disrupting nation-state level attack planning and execution; measuring the state of cyber security for the U.S. government; increasing our understanding of cyber as a war-fighting domain; and providing modeling and simulation of cyberspace operations through exploring and exploiting new ideas in cyber warfare for agile cyber operations and mission assurance.

The Cyber Advanced Technology Development program element is budgeted in the advanced technology development budget activity because it focuses on the maturation of successful applied research results, and their development, into demonstrable advanced cyber security capabilities. The Cyber Advanced Technology Development program will build on the results of matured applied research from the Cyber Applied Research (0602668D8Z), and other programs, to develop technology demonstrations for potential transition into capabilities that support the full spectrum of computer network operations. These approaches will include moving from cyber defense to cyber resilience by changing the defensive terrain of our existing digital infrastructure, identifying ways to raise the risk and lower the value of an attack from an advanced persistent cyber threat, and focusing on mission assurance metrics.

This program focuses on integrating computer network defense (CND) and computer network operations (CNO), in addressing the advanced persistent threat (APT), filling DoD technology gaps as identified in the FY 2012 Cyber Priority Steering Council Science & Technology Roadmap, as determined by assessments conducted by the Office of the Assistant Secretary of Defense for Research & Engineering (OASD(R&E)).

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense	DATE: April 2013
-------------------------------------------------------------------------------------------------	-------------------------

APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603668D8Z: <i>Cyber Advanced Technology Development</i>
-----------------------------------------------------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------

B. Program Change Summary (\$ in Millions)	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total
Previous President's Budget	5.539	19.935	19.995	-	19.995
Current President's Budget	5.836	19.935	19.668	-	19.668
Total Adjustments	0.297	0.000	-0.327	-	-0.327
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	0.299	-			
• SBIR/STTR Transfer	-	-			
• Baseline Adjustments	-	-	-0.327	-	-0.327
• Other Adjustments	-0.002	-	-	-	-

Change Summary Explanation

FY 2014 baseline adjustments are reflective of DoD priorities and requirements.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE				PROJECT			
0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>					PE 0603668D8Z: <i>Cyber Advanced Technology Development</i>				P113: <i>Cyber Advanced Technology Development</i>			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
P113: <i>Cyber Advanced Technology Development</i>	-	5.836	19.935	19.668	-	19.668	29.221	30.337	30.831	31.431	Continuing	Continuing

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

Efforts of the program will develop improved and demonstrable capabilities through the DoD science and technology (S&T) organizations within and across the following technical areas:

INFORMATION ASSURANCE AND COMPUTER NETWORK DEFENSE (IA/CND):

Develop technologies to harden DoD network components; evolve from network defense to mission assurance; and enable systems to operate through cyber attacks in degraded and contested environments.

COMPUTER NETWORK OPERATIONS (CNO):

Disrupt adversary attack planning and execution; explore game-changing ideas over the full spectrum of CNO and new concepts in cyber warfare; increase collaboration between disparate research communities within CNO; and address identified gaps in DoD CNO S&T to prepare for cyber conflict against advanced persistent threats.

Beginning in FY 2014, the program will expand research in cyber command and control to provide warfighters and commanders new situational awareness, course of action analysis, cyber operational agility and cyber mission control. This research will include protection of tactical networks, weapons systems and platforms. The six new technical thrust areas include:

FOUNDATIONS OF TRUST:

Develop approaches and methods to establish known degree of assurance that devices, networks, and cyber-dependent functions perform as expected, despite attack or error. This technical area encompasses all aspects of the assessment, establishment, propagation, maintenance, and composition of trust relationships between devices, networks, and people.

RESILIENT INFRASTRUCTURE:

Entails the ability to withstand cyber attacks, and to sustain or recover critical functions. A resilient infrastructure has the ability to continue to perform its functions and provide its services to required levels during an attack. The objective in this area is to develop integrated architectures that are optimized for their ability to absorb (cyber) shock, and recover in a timely fashion to a known secure state, even if this is at the expense of degraded performance. Resilient Algorithms and Protocols

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603668D8Z: <i>Cyber Advanced Technology Development</i>	PROJECT P113: <i>Cyber Advanced Technology Development</i>
<p>cover ways to develop novel protocols and algorithms to increase the repertoire of resiliency mechanisms available to the infrastructure and architecture. Research is needed to develop resiliency at lower levels with specific algorithms and protocols to support higher-level resiliency architectures.</p> <p>AGILE OPERATIONS: Explore new methods and technologies to dynamically reshape cyber systems as conditions/goals change, to escape harm, or to manipulate the adversary. These capabilities present technology challenges in the areas of Autonomic Cyber Agility and Cyber Maneuver. Cyber Maneuver is a new way to manage systems dynamically in a cyber situation. It is a set of emerging methods for maintaining defensive or offensive advantage in cyber operations. It entails developing mechanisms that enable goal-directed reshaping of cyber systems. Cyber maneuver encompasses reallocation for repurposing a device or platform, reconfiguration for changing the way a system performs a task, and relocation for altering the operating location in a logical or physical topology. Autonomic Cyber Agility covers several forms of agility. As cyber infrastructures increase in scale and complexity, there is an urgent need for autonomous and agile mechanisms to reconfigure, heal, optimize, and protect defensive and offensive cyber mechanisms.</p> <p>ASSURING EFFECTIVE MISSIONS: Develop the ability to assess and control the cyber situation in the mission context. While the focus in cyber research is often placed on individual technologies, how these technologies work toward an effective mission is critical for the DoD. The objective of Assuring Effective Missions presents technology challenges in the areas of Cyber Mission Control and Effects at Scale. Cyber Mission Control covers the ability to orchestrate cyber systems to achieve an overarching mission goal. There is a critical need for tools that can map information technology assets to missions and use modeling and simulation, or other techniques, to perform dynamic analysis of asset criticality and course-of-action alternatives. Inherent in Cyber Mission Control is the ability to automatically derive and fuse information about the characteristics of information technology systems in a manner that allows us to describe, analyze, observe, and control the operation of information technology components. A key goal of this research area is to have tools that enable commanders to assess and direct different information technology maneuvers in conjunction with mission actions. Effects at Scale encompass full spectrum challenges that intersect with cyber becoming a new full-fledged domain of warfare.</p> <p>CYBER MODELING, SIMULATION, AND EXPERIMENTATION (MSE): Develop modeling and simulation capabilities that are able to sufficiently simulate the cyber environment in which the DoD operates and enable a more robust assessment and validation of cyber technology development. There are two technical challenges associated with cyber modeling, simulation, and experimentation; Cyber Modeling and Simulation and Cyber Measurement. Cyber Modeling and Simulation seeks to develop tools and techniques that enable analytical modeling and multi-scale simulation of complex cyber systems. Cyber Measurement develops cyber experimentation and test range technology to conduct controlled, repeatable experiments, providing the ability to track the progress of cyber research investments in a quantitative fashion. This area will explore new analytical methodologies, models, and experimental data sets to establish metrics to measure a system's state of security, apply the scientific method to establish the foundations of a framework in which cyber security research can be conducted, to test hypothesis with measurable and repeatable results, and the quantitative experimentation and assessment for new cyber technologies. These new methodologies will enable the exploration modeling and simulation tools and techniques that can drive innovation in research and aid in integrated experimentation and transition to operations to simulate the cyber environment with sufficient fidelity, and to integrate cyber modeling and simulation with the traditional modeling and simulation related to the kinetic domain.</p> <p>EMBEDDED, MOBILE, AND TACTICAL ENVIRONMENTS (EMT):</p>		

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense			DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 3: Advanced Technology Development (ATD)		R-1 ITEM NOMENCLATURE PE 0603668D8Z: Cyber Advanced Technology Development	PROJECT P113: Cyber Advanced Technology Development		
Increase the overall emphasis on the Department’s cyber systems that rely on technology beyond wired networking and standard computing platforms. The objective in the area of embedded and tactical systems is to develop tools and techniques that assure the secure operation of microprocessors within our weapons platforms and systems; enable security in real-time systems; and establish security in disadvantaged, intermittent, and low-bandwidth environments. This research also seeks to expand and cultivate military-grade techniques for securing and operating with enterprise-style commodity mobile devices, such as smart phones, tablets, and their associated infrastructures. With the constant evolution of these devices and their respective infrastructures it is of the utmost importance to provide a secure environment where these devices can be effectively utilized, monitored and tracked.					
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2012	FY 2013	FY 2014
Title: Cyber Advanced Technology Development			5.836	19.935	19.668
Description: The Cyber Advanced Technology Development program will build on, mature, and transition the results of successful applied research results from the Cyber Applied Research PE. The link between the Cyber Applied Research and Cyber Advanced Technology Development program elements (PEs) is intended to create a mechanism to take existing basic research results and mature them to the point of incorporation into technology demonstrations. This program focuses on integrating computer network defense and computer network operations, addressing joint problems in cyber operations, and filling capability and technology gaps as determined by assessments in the Office of the Assistant Secretary of Defense for Research & Engineering. Progress and results are reviewed by the Cyber S&T Priority Steering Council.					
FY 2012 Accomplishments: INFORMATION ASSURANCE AND COMPUTER NETWORK DEFENSE (IA/CND): - Developed a composite trust metric for MANETs and coalition networks - Developed trust-based multi-objective optimizations for coalition networks - Integrated expanded startup measurements of Windows, Linux and virtualized platforms - Created Computer Network Defense (CND) framework to accelerate CND technology development through reuse of common services - Demonstrated operational pilots of host integrity, including as startup (NSA EHI-EM) and adding runtime - Developed command authentication patch to prevent hijacking of untrusted optical transport equipment - Demonstrated techniques to identify all publically known zero-day exploits in FY 2012 COMPUTER NETWORK OPERATIONS (CNO): - Created data communication standard to support interoperability among service implemented Computer Network Operations (CNO) software frameworks - Demonstrated unidirectional variable format messages (VMF) data transfer from low to high for a tactical cross domain solution (CDS) for the individual dismounted soldier					

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense			DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>		R-1 ITEM NOMENCLATURE PE 0603668D8Z: <i>Cyber Advanced Technology Development</i>		PROJECT P113: <i>Cyber Advanced Technology Development</i>	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2012	FY 2013	FY 2014
<p>CYBER METRICS AND EXPERIMENTATION:</p> <ul style="list-style-type: none"> - Developed and tested relevant technologies to improve the functionality of Cyber Ranges <p>FY 2013 Plans:</p> <p>FOUNDATIONS OF TRUST:</p> <ul style="list-style-type: none"> - Report on the design and analysis of the composite trust model - Report comparing the proposed trust framework on network security to existing mechanisms with similar purposes - Develop framework for collaborative reverse engineering - Conduct real world red team testing reviews using the Chimera framework - Demonstrate the application of trusted computing and measurement technologies to a modern cloud computing infrastructure <p>CYBER RESILIENCE:</p> <ul style="list-style-type: none"> - Document high assurance separation architecture using multi-core technology for applications in tactical AIS environments - Improve CND decision making through data sharing by enabling disparate CND technologies - Develop Common Protocols and Open API's - Demonstrate fully operational protection system that enhances mission assurance - Augment an evolving set of mission assurance services to specifically counter APT effects at the operational level <p>CYBER AGILITY:</p> <ul style="list-style-type: none"> - Demonstrate fingerprinting capabilities and identify vulnerabilities in HTML5 for rich content - Develop countermeasures to mitigate hardware and firmware based attacks - Demonstrate fully operational protection system that enhances mission assurance - Characterize the APT against the agility/maneuver defensive technologies, enabling direct assessment of effectiveness against an APT-class threat <p>ASSURING EFFECTIVE MISSIONS:</p> <ul style="list-style-type: none"> - Develop trust management schemes to capture mission performance metrics in tactical networks - Develop means for identifying and monitoring of steganography while assuring integrity of data channels <p>CYBER MODELING, SIMULATION, AND EXPERIMENTATION:</p> <ul style="list-style-type: none"> - Practical input/output metrics for assessment of classified technologies associated with offensive, defensive, and mission oriented capabilities - Provide opportunities for cross-service and cross-CTS multi-disciplinary experiments using the Joint I/O range 					

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603668D8Z: <i>Cyber Advanced Technology Development</i>	PROJECT P113: <i>Cyber Advanced Technology Development</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
<p>- Demonstrate the use of Graphical Processor Units (GPUs) and multicore processors to dramatically increase the computational parallelism available to model and simulate cyberspace effects on a country or global scale.</p> <p>EMBEDDED, MOBILE, AND TACTICAL ENVIRONMENTS:</p> <p>- New hybrid time of arrival / phased array antenna system for protocol-independent ability to geo-locate wireless emitters</p> <p>- Develop analytical model of the resiliency of routing techniques in the presence of wireless jamming</p> <p>FY 2014 Plans:</p> <p>FOUNDATIONS OF TRUST*:</p> <p>- Develop scalable reverse engineering and analysis</p> <p>- Explore and identify trust establishment, propagation, and maintenance techniques</p> <p>- Develop trustworthy architectures and trust composition tools</p> <p>- Integrate userspace integrity measurements with larger system measurement</p> <p>CYBER RESILIENCE*:</p> <p>- Develop methods for increasing resiliency of operational systems</p> <p>- Identify mechanisms to compose resilient systems from brittle components</p> <p>- Integrate sensing, detection, response, and recovery mechanisms</p> <p>- Pilot host integrity for virtual platforms</p> <p>CYBER AGILITY*:</p> <p>- Design distributed systems architectures and service application polymorphism</p> <p>- Design network composition based on graph theory, distributed collaboration and social network theory</p> <p>- Develop techniques for autonomous reprogramming, reconfiguration, and control of cyber components, and machine intelligence</p> <p>- Integrate advanced Computer Network Defense (CND) components and management features into the CND framework</p> <p>ASSURING EFFECTIVE MISSIONS*:</p> <p>- Develop techniques for mapping assets and describing dependencies between mission elements and cyber infrastructure</p> <p>- Develop techniques for course of action development and analysis</p> <p>- Enable cyber effects assessment</p> <p>- Demonstrate Computer Network Operations (CNO) framework scalability in a representative laboratory environment (1000+ Nodes)</p> <p>CYBER MODELING, SIMULATION, AND EXPERIMENTATION*:</p>				

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense							DATE: April 2013				
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>			R-1 ITEM NOMENCLATURE PE 0603668D8Z: <i>Cyber Advanced Technology Development</i>			PROJECT P113: <i>Cyber Advanced Technology Development</i>					
B. Accomplishments/Planned Programs (\$ in Millions)							FY 2012	FY 2013	FY 2014		
<ul style="list-style-type: none"> -Develop approaches and tools to incorporate models of the cyber substrate in kinetic simulations -Develop cyber and simulation models that incorporate mission models and cyber-kinetic effects -Establish game and a decision-theoretic and other approaches to infer and predict adversary intentions, strategies, and tactics - Develop large-scale experiments to explore a variety of adversarial behaviors and defensive postures EMBEDDED, MOBILE, AND TACTICAL ENVIRONMENTS: <ul style="list-style-type: none"> -Establish architectural approaches for composing embedded mobile systems (smart phones, tablets, and mobile applications) within an overarching system and develop the security capabilities needed to make the composed system robust and secure -Identify mechanisms for trust establishment and secure information sharing at the tactical edge -Develop approaches to security and mobility-aware routing and quality of service <p>*FROM CYBER ROADMAP</p>											
Accomplishments/Planned Programs Subtotals							5.836	19.935	19.668		
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
• BA 2, PE # 0602668D8Z, P003: <i>Cyber Applied Research</i>	5.280	18.985	18.908		18.908	23.675	22.790	22.675	22.797	Continuing	Continuing
Remarks											
D. Acquisition Strategy N/A											
E. Performance Metrics N/A											

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE							
0400: Research, Development, Test & Evaluation, Defense-Wide BA 3: Advanced Technology Development (ATD)					PE 0603670D8Z: Human Social Culture Behavior (HSCB) Modeling Advanced Development							
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
Total Program Element	-	12.153	8.235	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
P370: Human Social Culture Behavior (HSCB) Modeling Advanced Development	-	12.153	8.235	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

Note

Change from FY 2013 to FY 2014 reflects a reallocation of funds from the Office of the Secretary of Defense (OSD) Human Social Culture Behavior (HSCB) Modeling program to higher priority DoD requirements.

A. Mission Description and Budget Item Justification

The OSD HSCB Modeling Program is a vertically integrated effort to research, develop, and transition technologies, tools, and systems to programs of record and users in need. The Program exists to optimize U.S. forces' ability to perform population-centric sensing, understand behaviors driven by social and cultural variables, and select effective courses of action in the full range of military operations. Program research will enhance population-centric intelligence, surveillance, and reconnaissance (ISR) capabilities for understanding the increasingly complex global environment to address national strategic challenges such as instability, aggression, proliferation of weapons of mass destruction, and violent extremism. In three integrated program elements (PEs), the Program will conduct applied research, mature and demonstrate advanced technology, and develop transitionable methods, technology, tools and prototypes. Work under PE 0603670D8Z is focused on developing and demonstrating general-use, cross-domain tools in two areas: computational modeling; and sociocultural behavior data collection, management, and dissemination. Research will result in more effective cultural understanding in existing intelligence, influence operations, and operations planning systems; modeling capabilities for forecasting reactions to U.S./coalition actions; demonstration of strategic decision making tools that highlight political, religious, cultural, and related factors; tools and technologies enabling more widespread and effective use of sociocultural behavior models in operations and mission rehearsal; and toolsets that can be used as strategic decision making tools to account for sociocultural factors.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense	DATE: April 2013
-------------------------------------------------------------------------------------------------	-------------------------

APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603670D8Z: <i>Human Social Culture Behavior (HSCB) Modeling Advanced Development</i>
-----------------------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------

B. Program Change Summary (\$ in Millions)	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total
Previous President's Budget	12.724	8.235	8.398	-	8.398
Current President's Budget	12.153	8.235	0.000	-	0.000
Total Adjustments	-0.571	0.000	-8.398	-	-8.398
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-0.567	-			
• SBIR/STTR Transfer	-	-			
• Baseline Adjustments	-	-	-8.398	-	-8.398
• Other Adjustments	-0.004	-	-	-	-

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 3: Advanced Technology Development (ATD)					R-1 ITEM NOMENCLATURE PE 0603670D8Z: Human Social Culture Behavior (HSCB) Modeling Advanced Development				PROJECT P370: Human Social Culture Behavior (HSCB) Modeling Advanced Development			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
P370: Human Social Culture Behavior (HSCB) Modeling Advanced Development	-	12.153	8.235	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
# FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012												
## The FY 2014 OCO Request will be submitted at a later date												
Note Change from FY 2013 to FY 2014 reflects a reallocation of funds from the Office of the Secretary of Defense (OSD) Human Social Culture Behavior (HSCB) Modeling program to higher priority DoD requirements.												
A. Mission Description and Budget Item Justification This program is focused on developing and demonstrating general-use, cross-domain tools in two areas: computational modeling; and sociocultural behavior data collection, management, and dissemination. Research will result in cultural understanding technologies and overlays to support intelligence, influence operations, and operations planning systems; modeling capabilities for forecasting reactions to U.S./coalition actions; demonstration of strategic monitoring and decision making tools that account for political, religious, cultural, and related factors; tools and technologies enabling more widespread and effective use of sociocultural behavior models in operations. The Program will ensure that supported research is clearly tied to warfighters and their needs.												
B. Accomplishments/Planned Programs (\$ in Millions)									FY 2012	FY 2013	FY 2014	
Title: Modeling Capabilities									5.851	6.435	0.000	
Description: Develop and demonstrate computational models to support sensing and forecasting of non-US populations, including their reactions to U.S./coalition informational, military, economic, or political actions. The Program has emphasized development of tools to support forecasting of instability. In addition to refining and extending those tools, the Program is researching and developing comparable models and tools for analysis and forecasting of other events of interest. Work in this area also includes modeling to support analysis of alternative courses of action (COA). This is a challenging objective that requires research, development and integration of constituent technologies. Integrate and demonstrate decision making support tools useful within programs of record and operational user analysis, planning and execution systems for political, religious, cultural and other factors. Support specific operational planning tasks for selected government partners via limited technical demonstration in user settings. In addition, working with operational partners HSCB Program models will be tested in realistic environments by representative users.												
FY 2012 Accomplishments:												

PE 0603670D8Z: *Human Social Culture Behavior (HSCB) Modeling*
 Adva...

Office of Secretary Of Defense

UNCLASSIFIED

Page 3 of 6

R-1 Line #46

Volume 3 - 241

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603670D8Z: <i>Human Social Culture Behavior (HSCB) Modeling Advanced Development</i>	PROJECT P370: <i>Human Social Culture Behavior (HSCB) Modeling Advanced Development</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
<p>Developed and validated software to detect national-level changes in sociocultural characteristics that have been linked to an environment hospitable to violent extremism. Expanded number of countries covered for medium-range, one to six months, modeling of instability and extended capabilities of Integrated Crisis Early Warning System (ICEWS) Trend Recognition and Assessment of Current Events (ITRACE), and Integrated Crisis Early Warning System (ICEWS) Forecasting (ICAST), components of Worldwide Integrated Crisis Early Warning System (W-ICEWS). Developed forecast models for five events of interest covering 167 countries and all Combatant Command areas of responsibility. Incorporated Office of the Director, National Intelligence (ODNI) Open Source Center data. Transitioned information and analysis capability to acquisition category 1 (ACAT 1) program of record.</p> <p>FY 2013 Plans: Complete development of and extend and assess system for providing advance sensing of national and sub-national scale crisis, by testing the added forecast value of social media events. Refine the granularity of Spectrum software to detect national-level changes in sociocultural characteristics that have been linked to an environment hospitable to violent extremism; test and extend capability to additional countries/regions. Complete development of tools for exploring impacts of alternative COA on leading national security challenges, including violent extremism, instability, and use of weapons of mass destruction. Complete development of methods, techniques, standards and tools that support model selection and verification and validation. Validate forecasting models for providing support to “what if” analyses.</p>			
<p>Title: Visualization Software Toolsets</p> <p>Description: Demonstrate first generation decision-making tools that include sociocultural behavior factors. These tools are required to account for political, religious, cultural, and other factors as well as to vertically integrate cultural information into a military operational environment. Common, generalized, strategic to tactical, tools for visualization of Diplomatic, Information, Military and Economic (DIME) COA, and Political Military Economic Social Information Infrastructure (PMESII) effects on the battlefield, or during Security, Stability, Transition and Reconstruction phases do not exist. This Program will focus on providing visualization capabilities that support a richer understanding of sociocultural data in concert with other warfighter data.</p> <p>FY 2012 Accomplishments: As part of W-ICEWS, developed methods for visualizing national-level data bearing on instability as well as middle-term, one to six months, forecasts of instability across 167 countries. Improved methods and tools for managing the most challenging visualization issues, including sparse data sets, highly volatile underlying data, and inherent complexity of sociocultural behavior dynamics. Demonstrated techniques for visualizing patterns of community formation and evolution of both friendly and adversarial groups.</p>		2.570	0.000
			0.000

PE 0603670D8Z: *Human Social Culture Behavior (HSCB) Modeling*
Adva...
Office of Secretary Of Defense

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603670D8Z: <i>Human Social Culture Behavior (HSCB) Modeling Advanced Development</i>	PROJECT P370: <i>Human Social Culture Behavior (HSCB) Modeling Advanced Development</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
Marine Corps Civil Information Management (MARCIM) project provided visualization of CIM data in context with base maps and overlays of relevant imagery and internet data feeds.			
Title: Training/Mission Rehearsal Systems Description: Develop and demonstrate methods and procedures for integrating cultural information into military operations. Focus on methods and resources that will increase flexibility to rapidly deliver just-in-time training for new regions of interest and emerging mission areas, e.g., transition and reconstruction. Develop resources and tools to support integration of sociocultural behavior models with existing training systems, and to train personnel at tactical, operational, and strategic levels in the appropriate and effective use of those models. FY 2012 Accomplishments: Completed cognitive task analysis and framework for computer-based training application that promotes mission-centric, cross-cultural competence through development of a Marine's cognitive skills and ensure acceptance of the application by the user community. When complete, system will provide 100 percent improvement in trainees' abilities to identify and apply sociocultural factors to the Military Decision Making Process.		0.200	0.000
Title: Sociocultural Data Collection and Management Description: Develop and demonstrate tools for improved collection of sociocultural behavior data for multiple operational echelons. Develop and demonstrate tools to support ingest of unstructured data and structuring of data for use in computational modeling for intelligence analysis, operations analysis, and decision support. Specifically address emerging media and other open source data. FY 2012 Accomplishments: MARCIM project provided Civil Military Operations teams with actionable knowledge of the operational environment through mobile computing technologies, semantic information and knowledge management, and geospatial decision support capabilities. Developed new techniques for collecting and structuring data necessary for detection and tracking of violent extremism and instability. Researched techniques and technologies for reliable exploitation of crowd-sourced information. FY 2013 Plans: Complete development of and extend and assess system for providing advance sensing of national and sub-national scale crisis, by incorporating classified data and non-English language sources. Complete development of and test software for reliable exploitation of crowd-sourced information. Complete development of and demonstrate methods for collecting and analyzing		3.532	1.800
			0.000

PE 0603670D8Z: *Human Social Culture Behavior (HSCB) Modeling*
Adva...

Office of Secretary Of Defense

UNCLASSIFIED

Page 5 of 6

R-1 Line #46

Volume 3 - 243

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense	DATE: April 2013
----------------------------------------------------------------------------------------------	-------------------------

APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603670D8Z: <i>Human Social Culture Behavior (HSCB) Modeling Advanced Development</i>	PROJECT P370: <i>Human Social Culture Behavior (HSCB) Modeling Advanced Development</i>
-----------------------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2012	FY 2013	FY 2014
HSCB-relevant data in denied areas, using readily available commercial imagery. Complete development of and demonstrate improved performance of tools and methods for harvesting data at scale from open source media.			
Accomplishments/Planned Programs Subtotals	12.153	8.235	0.000

C. Other Program Funding Summary (\$ in Millions)

Line Item	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
• PE 0602670D8Z BA 2: <i>HSCB Applied Research</i>	8.602	6.771	0.000		0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
• PE 0604670D8Z BA 4 : <i>HSCB Research & Engineering</i>	7.252	5.131	0.000		0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE							
0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>					PE 0603680D8Z: <i>Defense Wide Manufacturing Science and Technology Program</i>							
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
Total Program Element	-	49.026	21.966	34.041	-	34.041	22.539	23.268	23.574	24.031	Continuing	Continuing
P680: <i>Manufacturing Science and Technology Program</i>	-	49.026	21.966	34.041	-	34.041	22.539	23.268	23.574	24.031	Continuing	Continuing

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

Defense-wide Manufacturing Science and Technology (DMS&T), established within the Manufacturing Technology Program directed in Title 10 USC Section 2521, provides the Department with a comprehensive manufacturing program to achieve the strategic goals of focused technology, improved acquisition across the life cycles, and cost-effective logistics. By designing for manufacturability early in development, anticipated results will have an impact on increasing reliability and decreasing the life cycle burden of weapon systems. The mission to anticipate and close gaps in defense manufacturing capabilities and drive significant system life cycle affordability benefits makes DMS&T an increasingly important leveraging tool in the current budget environment.

DMS&T will: 1) address manufacturing enterprise game-changing initiatives that are beyond the scope of any one Military Department or Defense Agency or platform and, 2) establish and mature cross-cutting manufacturing processes required for transitioning emerging technologies which impact the time lines, affordability, and productivity of acquisition programs and shorten the deployment cycle times.

The DMS&T program is fundamental to a coordinated development process. Concurrent development of manufacturing processes with the S&T development enables the use of emerging technologies. Key technical areas for investment for DMS&T include Advanced Electronics and Optics Manufacturing, Advanced Materials Manufacturing, and Enterprise and Emerging Manufacturing. Advanced Electronics and Optics addresses advanced manufacturing technologies for a wide range of applications such as sensors, radars, power generation, switches, and optics for defense applications. Advanced Materials addresses advanced manufacturing technologies for a wide range of materials such as composites, metals, ceramics, nanomaterials, metamaterials, and low observables. Enterprise and Emerging Manufacturing addresses advanced manufacturing technologies and enterprise business practices for defense applications. Key focus areas include the industrial information infrastructure, advanced design/qualification/cost tools, supply network integration technologies and management practices, direct digital (or additive) manufacturing, machining; robotics, assembly, and joining.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense	DATE: April 2013
-------------------------------------------------------------------------------------------------	-------------------------

APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603680D8Z: <i>Defense Wide Manufacturing Science and Technology Program</i>
-----------------------------------------------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------

B. Program Change Summary (\$ in Millions)	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total
Previous President's Budget	46.277	21.966	22.407	-	22.407
Current President's Budget	49.026	21.966	34.041	-	34.041
Total Adjustments	2.749	0.000	11.634	-	11.634
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	2.749	-			
• SBIR/STTR Transfer	-	-			
• AT&L More Disciplined Use of Resources	-	-	-0.366	-	-0.366
- two percent reduction for resource realignment					
• Establishment of collaborative Institutes for Manufacturing Innovation per Administration/OMB guidance	-	-	12.000	-	12.000

Congressional Add Details (\$ in Millions, and Includes General Reductions)

Project: P680: *Manufacturing Science and Technology Program*

Congressional Add: *Industrial Base Innovation Fund*

	FY 2012	FY 2013
	30.000	-
Congressional Add Subtotals for Project: P680	30.000	0.000
Congressional Add Totals for all Projects	30.000	0.000

Change Summary Explanation

FY 2012 \$3.000 approved omnibus reprogramming per FY12-18 PA to support emerging manufacturing projects to continue significant advancements to additive manufacturing processes.

FY 2014 includes \$12.000 for Advanced Manufacturing Innovation Institute program priorities of the Department and the Administration.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 3: Advanced Technology Development (ATD)					R-1 ITEM NOMENCLATURE PE 0603680D8Z: Defense Wide Manufacturing Science and Technology Program				PROJECT P680: Manufacturing Science and Technology Program			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
P680: Manufacturing Science and Technology Program	-	49.026	21.966	34.041	-	34.041	22.539	23.268	23.574	24.031	Continuing	Continuing
[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012												
^{##} The FY 2014 OCO Request will be submitted at a later date												
A. Mission Description and Budget Item Justification												
The DMS&T program has a two-pronged approach: 1) technology initiatives and 2) specific single projects. Technology initiatives, in collaboration with the Joint Defense Manufacturing Technology Panel (JDMTP) and industry, identify and develop investment strategies to advance the manufacturing processes needed to support the specific technology. Above-the-shop-floor investments focus on new manufacturing processes that have potential to significantly improve manufacturing efficiencies. Single specific projects address investment opportunities not associated with selected technology initiatives and enable the program to respond to urgent, compelling manufacturing needs and provide seed funding to more high risk-high payoff technologies.												
Data calls are launched through two methods to identify technology initiatives and single specific issues requiring investment. One method is through the JDMTP. The JDMTP is comprised of the ManTech Directors from the Services, Defense Logistics Agency, and Office of Secretary of Defense (OSD). The call is distributed through the ManTech Directors to the four JDMTP sub panels: Metals Processing and Fabrication Subpanel, Composites Processing and Fabrication Subpanel, Electronics Processing and Fabrication Subpanel and Advanced Manufacturing Enterprise Subpanel. Potential candidates are evaluated by the JDMTP based on criteria set forth in the call and announcements and down-selected for further development prior to final selection. The other method is through Broad Agency Announcements to industry. Priority is given to investments that support affordability and producibility of critical enabling manufacturing technologies that cut across multiple platforms. Investments also balance defense priorities in specialty materials, electronics, propulsion and power, and manufacturing processes including "above the shop floor" (lean and business technologies facilitating interoperable manufacturing). Final projects are selected by the OSD ManTech Director, considering input from the JDMTP and Director of Manufacturing, and as approved by Deputy Assistant Secretary of Defense, Manufacturing and Industrial Base Policy (MIBP). Technology initiatives and projects are executed at the Component level.												
B. Accomplishments/Planned Programs (\$ in Millions)									FY 2012	FY 2013	FY 2014	
Title: Advanced Electronics Manufacturing - Advanced RF Packaging									2.375	1.875	0.000	
Description: This effort applies an existing radar system already in production to satisfy a low-cost, open-architecture radar requirement for the Littoral Combat Ship (LCS) program. This program will reduce the cost of the current radar system by \$1M per ship set, and will fit into the existing TRS-3D top side and below decks available footprint. The open architecture configuration will allow upgrades for new technologies over the lifetime of the program as well as offer lower cost via the potential for open competition for the radar's building blocks. Radar manufacturing and support capability will be transferred from a foreign company to a domestic company and facility. Transmit/Receive (T/R) module packaging cost will be reduced through near-												

PE 0603680D8Z: *Defense Wide Manufacturing Science and Technology ...*

Office of Secretary Of Defense

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense			DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>		R-1 ITEM NOMENCLATURE PE 0603680D8Z: <i>Defense Wide Manufacturing Science and Technology Program</i>		PROJECT P680: <i>Manufacturing Science and Technology Program</i>	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2012	FY 2013	FY 2014
<p>hermetic, commercial Monolithic Microwave Integrated Circuit (MMIC) packaging and automated Surface Mount Technology (SMT) assembly techniques, reducing touch labor costs. Model Based Enterprise (MBE) concepts will be integrated to ensure supportability and technology refresh via an Intelligent Technical Data Package. The commercial packaging effort for T/R module components as a part of this program will have a direct impact on the Volume Search Radar (VSR) on CVN-79 – creating a \$1M/hull cost savings for the Navy. This effort will provide the Navy with the first truly open architecture radar solution that will be able to accommodate different Monolithic Microwave Integrated Circuit (MMIC) technologies, Line Replaceable Unit (LRU) technologies, processor, and power supplies from multiple vendors. The system will use fiber optics to connect the above-deck equipment (antenna) with the below-deck equipment (signal processing and control) which will allow greater flexibility in location of below-deck equipment (allowing a lower center of gravity and thus improved ship stability).</p> <p>FY 2012 Accomplishments: The project contract began in November 2011 and the Transition Plan was signed by all stakeholders in December 2011. All Technical Data Package (TDP) related software and hardware was received, installed and is functional. A complete drawing package for the TDP was received. Requirements Traceability Matrix and Rational DOORS data was received. Development of the S-band Open-architecture Component Knowledge and Event Tester (SOCKET) LRU based verification system is in progress. The SOCKET test equipment was specified and ordered. The SOCKET system requirements definition was completed. The SOCKET Kernel is under configuration management and revision control via a WindChill environment. The SOCKET Preliminary Design Review was completed. Supplier evaluation for the design and production of the PowerBook Transmit/Receive (T/R) module was completed. The decision was made to re-design the PowerBook in house, leveraging the existing design, and making use of Advanced RF Packaging and Automated Assembly ManTech improvements.</p> <p>FY 2013 Plans: Develop the S-band Open-architecture Component Knowledge and Event Tester (SOCKET) Graphical User Interface (GUI), interface to test equipment, Intelligent Technical Data Package (ITDP) interface, data logging & LRU test scripts, and training & simulator software. Complete the SOCKET Critical Design Review. Complete SOCKET integration and testing, and a SOCKET string test. Write SOCKET test reports and the user manual. Complete the SOCKET LRU based verification system and deliver the SOCKET hardware and software to the Navy.</p> <p>Complete gallium nitride (GaN) component supplier evaluation and selection for the Transmit/Receive (T/R) module. Complete PowerBook T/R module Preliminary Design Review (PDR), Critical Design Review (CDR). Build, test, and qualify the PowerBook module. Conduct System Engineering training. Complete land-based radar integration and testing. Initiate the sub-array string testing. Complete the String Test Verification Demonstration. Deliver the final Intelligent Technical Data Package (ITDP).</p>					

PE 0603680D8Z: *Defense Wide Manufacturing Science and Technology ...*
Office of Secretary Of Defense

UNCLASSIFIED

Page 4 of 19

R-1 Line #47

Volume 3 - 248

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603680D8Z: <i>Defense Wide Manufacturing Science and Technology Program</i>	PROJECT P680: <i>Manufacturing Science and Technology Program</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
Complete the transfer of radar system production from the offshore COTS manufacturer to the domestic manufacturer. Complete the Radar Producibility Analysis and Final Project Report.			
Title: Advanced Electronics Manufacturing - Chip Scale Atomic Clock		4.394	4.000
<p>Description: Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR) systems require precise timekeeping even if the Global Positioning System (GPS) is unavailable. The size, weight, power, and cost components of conventional atomic clocks are too high for tactical applications. Chip Scale Atomic Clock (CSAC) provides improved long-term frequency stability that gets integrated into long-term time accuracy. The focus of this project is leveraging Defense Advanced Research Projects Agency (DARPA) investments in the CSAC technology to reduce operational costs and transition beyond custom fabrication of the current CSAC. Objectives include improving the existing batch manufacturing processes such as atomic cell filling, cell sealing, physics package assembly, and sub-system testing to reduce the “touch hours” required for CSAC assembly and testing. Development of a network of multiple vendors to foster competition and ensure a viable supply base is a complementary goal. Current manual assembly processes can produce CSAC in small quantities with low yield at high cost (\$8,000/unit). The DMS&T funding enables producibility at an affordable cost (\$100–\$300/unit). Successful performance enables an environment of continued operation of critical C4ISR systems, regardless of the presence or absence of global positioning system (GPS). The ability to rapidly reacquire GPS military code in a hostile Electro Magnetic Interference (EMI) environment is an additional targeted benefit.</p> <p>FY 2012 Accomplishments: Demonstrated automated assembly of physics package (top/sub levels). Enabled physics package tester. Reduced electronics Bill of Materials >50%. Identified yield limitations in laser selection. Physics package redesign implies a manufacturing rate of >30K units/yr is possible (exceeding the project goal by 50%). Signed Tech Transition Agreement with program of record (Product Director Positioning Navigation and Timing). Provided Phase I prototypes to Army Communications-Electronics Research, Development and Engineering Center for evaluation.</p> <p>FY 2013 Plans: Sign a Tech Transition Agreement with an additional program of record (Joint Counter Radio Controlled Improvised Explosive Device Electronic Warfare (JCREW). Re-tool automated assembly for improved physics package design and yield engineering. Conduct Phase II prototype assembly and testing. Demonstrate the assembly run rate, validate the cost model. Achieve an end-of-project objective of a Technology Readiness Level (TRL)7 and Manufacturing Readiness Level (MRL)8. Deliver Phase II prototypes. Document the final CSAC architecture and components, operating procedures and software interface requirements.</p>			

PE 0603680D8Z: *Defense Wide Manufacturing Science and Technology ...*

Office of Secretary Of Defense

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603680D8Z: <i>Defense Wide Manufacturing Science and Technology Program</i>	PROJECT P680: <i>Manufacturing Science and Technology Program</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
Achieve Low Rate Initial Production (LRIP) readiness. Realize final production capability goals. Transition to GPS Wing, JCREW, and other programs of record.			
Title: Advanced Electronics Manufacturing - Large Affordable Substrates Description: High performance infrared (IR) focal plane arrays (FPAs) are grown on Cadmium Zinc Telluride (CZT) substrates that are currently only available in relatively small wafer sizes. This effort will leverage prior and concurrent Department of Defense (DoD) investments to enable a domestic source to manufacture larger CZT substrates. The results will be reduced cost and assured availability of CZT substrates that will enable affordable, high performance ground and air IR sensor systems with rapid wide area search, long range ID, and dual band multispectral aided target detection capability against difficult targets while on-the-move. Large, affordable CZT substrates from a domestic source will initially transition on FPAs for the 3rd Gen forward-looking infrared imaging systems (FLIR) Engine Engineering Manufacturing Development program, to be followed by multiple transitions to space, strategic, and tactical systems. FY 2012 Accomplishments: Design reviews of a furnace capable of handling larger boules were completed. Continued boule growth and substrate polishing efforts. Produced and tested 720p Focal Plane Arrays (FPAs). Matured vertical gradient freeze boule growth. Incorporated domestic substrates into various IR programs including AIDE LRAS3 (rapid prototype in-theater system). Cut and characterized one CdZnTe boule to produce substrates for downstream manufacturing processes. FY 2013 Plans: Complete installation of the furnace for boule and substrate manufacturing. Evaluate the potential growth of boules of increasing size. Improve uniformity and reduce precipitates size in boule. Evaluate critical substrate factors that are part of the final substrate specification, such as parallelism, total thickness variation, chipping, scratches, etc. Initiate a Low Rate Production status. Conduct a final demonstration of the product. Obtain a TRL6/MRL7 level. Participate in a 3rd Gen Forward Looking Infrared Radar Development and Demonstration build.		0.825	0.500
Title: Advanced Electronics Manufacturing - Sensor Hardening Description: The F-35 Joint Strike Fighter (JSF) has the requirement to minimize low and high powered laser effects on mission accomplishment. Current F-35 Electro-Optical Targeting System (EOTS) and Electro-Optical Distributed Aperture System (EODAS) focal plane arrays (FPAs) suffer manufacturing yield and cost issues. This effort will leverage prior and concurrent DoD investments in laser protection technology to make manufacturing improvements that incorporate laser protection technology into the FPA's Read-Out Integrated Circuits (ROICs) while concurrently reducing ROIC defects (improving yield) and minimizing the total cost to F-35 to meet this requirement. The goal is to increase the Transition Readiness Level/Manufacturing Readiness Level to TRL/MRL 6 (demonstrate/produce prototype system or subsystem in a relevant environment) and to transition laser-		0.096	0.750

PE 0603680D8Z: *Defense Wide Manufacturing Science and Technology ...*

Office of Secretary Of Defense

UNCLASSIFIED

Page 6 of 19

R-1 Line #47

Volume 3 - 250

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603680D8Z: <i>Defense Wide Manufacturing Science and Technology Program</i>	PROJECT P680: <i>Manufacturing Science and Technology Program</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
<p>hardened FPAs in time for the F-35 Block 5 Upgrade. These technologies are applicable not just for F-35, but to any Medium Wavelength Infrared detector, including those on tactical and reconnaissance sensor systems.</p> <p>FY 2012 Accomplishments: Continued Manufacturing Readiness Assessments (MRA) for both EOTS and EODAS FPA manufacturers. Initiated an FPA production scale-up effort which yielded multiple Grade A devices (hybridized ROICs). Began integration of FPA devices into dewars. Completed thermal cycle testing of an initial group of dewars. Began life cycle testing. Completed a hardened ROIC Critical Design Review. Provided the ROIC design to the foundry. Determined the thermal modeling and placement concepts for limiters in dewars. Evaluated/identified numerous qualified alternative foundries and ROIC designers. Continued efforts to address FPA damage through enhancement of the ROIC detector, incorporating design changes simultaneously with wafer scale-up to increase manufacturability. Initiated system engineering studies on targeting and warning systems.</p> <p>FY 2013 Plans: Conclude FPA production scale-up activities to achieve a TRL6/MRL6 level. Make available a Hardened EOTS FPA and a Hardened EODAS FPA. Conclude system engineering studies on targeting and warning systems. Continued life cycle testing. Initiate additional thermal cycle testing of dewars. Begin a second version of the ROIC/detector hybridization effort. Conduct another MRA. Complete the ROIC fabrication. Finish the FPA build. Conduct laser susceptibility testing at Wright Patterson Air Force Base. Conduct transitional activities in preparation for the F-35 Block 5 Upgrade decision point in FY 2014.</p>			
<p>Title: Advanced Electronics and Optics</p> <p>Description: Advanced Electronics is a series of efforts addressing advanced manufacturing technologies for a wide range of applications such as sensors, radars, power generation, switches, and optics for defense applications. These efforts provide significant productivity and efficiency gains in the defense manufacturing base. These manufacturing technologies accelerate delivery of technical capabilities to impact current warfighting operations, and manufacturing technologies to reduce the cost, acquisition time and risk of our major defense acquisition programs.</p> <p>Tin Whisker Mitigation project: One significant issue is the need to move toward lead-free electronics. However, current methods to produce lead-free solder create further issues such as the formation of unwanted tin whisker structures, which can cause electronics to short out. The Tin Whisker Mitigation project will demonstrate controlled grain structure in soldered joints and plated surfaces. The objective is to show significantly reduced or completely prevented tin whisker growth, while maintaining the original performance characteristics of the test components.</p> <p>Silicon Carbide (SiC) High Efficiency Power Switches: Another emerging manufacturing technology undergoing development is for Silicon Carbide High Efficiency Power Switches to enable a new class of power electronics that allows flexible new architectures</p>		0.626	5.255
			10.640

PE 0603680D8Z: *Defense Wide Manufacturing Science and Technology ...*

Office of Secretary Of Defense

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603680D8Z: <i>Defense Wide Manufacturing Science and Technology Program</i>	PROJECT P680: <i>Manufacturing Science and Technology Program</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
<p>at higher voltages, higher frequencies, less volume / weight, higher temperatures, higher efficiency (reduced fuel consumption), and better power quality for Program Executive Office Ground Combat Systems and the Air and Missile Defense Radar Radar Power Conversion Module.</p> <p>Mini Short Wave Infrared (SWIR) Cameras and ManTech for SWIR Imagers: Thermoelectric Cooler (TEC)-less SWIR imagers are being developed that are smaller, use less power, have a lower cost than currently available SWIR imagers, and offer improved functionality over sensors presently in use. These new SWIR imagers will be used by warfighters including SOF to see target designation lasers during day and night, to identify friend or foe at long range at night, and to operate with covert lasers. Applications include several night vision and targeting system programs with the Army, Navy, Air Force, and SOCOM.</p> <p>Manufacturability of Vertical Cavity Surface Emitting Lasers (VCSELs): One emerging manufacturing technology undergoing development focuses on the manufacturability of VCSELs. This effort will allow the enhanced use of high-power laser diode technologies by reducing their operational cost, increasing their reliability and yield, and improving their large array scalability without substantially increasing the processing and packaging requirements. Will apply a modern factory approach of a fab-less front-end with specialized in-house process steps, allowing more flexibility for DoD procurement cycles and leveraging installed, previously-invested capital. This project is expected to benefit numerous programs, including: PUMA, RAVEN, TigerShark, Anubis, Spectre-FINDER, Speckles, TigerMoth, WAAS, PAWS, IPODS, AngelFire, MAV-OBAT, nLoss, LOS-short, CLRF, JETS, IDNST, TLDS, Big Safari, OEF, OIF, STINGER, and ARGUS.</p> <p>Future efforts will focus on advances in fuel cells, radars, conformal sensors, and solder free electronics.</p> <p>FY 2012 Accomplishments: Tin Whisker Mitigation project: Initiated mitigation manufacturing activities, including tests on the lead-free joints and plates to demonstrate the elimination of tin whiskers. Fabricated and tested controlled grain structures during solder deposition process to test whisker propensity and perform other mechanical tests. Assessed the solder joint quality effect that treatments have on surface plating, wave, Surface Mount Technology reflow, hot bar, and hand soldering processes with lead-free soldering. Effort addressed: 1) reduction of internal stresses that cause tin whisker formation; 2) strength of the solder joint to cause pad cratering; 3) crystal orientation and cross-sectional analysis of a variety of solder joints; and 4) improvement for electrochemical migration during Surface Insulation Resistance testing with marginal levels of contamination.</p> <p>FY 2013 Plans:</p>			

PE 0603680D8Z: *Defense Wide Manufacturing Science and Technology ...*
Office of Secretary Of Defense

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603680D8Z: <i>Defense Wide Manufacturing Science and Technology Program</i>	PROJECT P680: <i>Manufacturing Science and Technology Program</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
SiC High Efficiency Power Switches. Focus on improvements in SiC starting materials. Continue efforts to increase SiC wafer size to 6". Reduce substrate defects, including micropipe density, to improve device yield. Begin power device fabrication using 6" substrates.			
Mini SWIR Cameras and ManTech for SWIR Imagers: Develop robust 4" wafer processes to reduce breakage and increase yield. Improve backside processing costs.			
Manufacturability of VCSELs: Initiate hermetic design efforts, creating hermetic packaging for VCSEL arrays. Develop a "hermetic by design" VCSEL chip process technology by processing direct passivation schemes directly onto the wafer to extend the operating life and shelf-life. Begin to standardize the package at the sub-mount and heat-sink level. This is required for ease of insertion to replace edge-emitting products in use by the marketplace and will increase packaging throughput of high power arrays.			
FY 2014 Plans: SiC High Efficiency Power Switches: Develop manufacturing technologies to increase throughput and decrease cost of SiC power devices through enhanced material growth and high-yield device fabrication processes. Continue power device fabrication using 6" substrates.			
Mini SWIR Cameras and ManTech for SWIR Imagers: Continue efforts to improve wafer level processing to improve yields and reduce costs. Improve hybridization yields and costs; develop a high throughput, self aligning process. Reduce packaging costs with automation of die bonding and wire bonding. Plan for sensor packaging and camera calibration tasks.			
Manufacturability of VCSELs: Continuing hermetic design and standardized packaging efforts. Explore low-cost standard packaging alternatives for high-volume system insertion opportunities. Develop low-cost wafer level packages compatible with Pick-n-Place and Surface Mount Technology PCB-stuffing assembly lines, using multilayer ceramics and PCB technology to remain consistent with wafer-scale packaging. Evaluate cooling technologies to determine the most cost-effective, manufacturable techniques.			
Title: Advanced Materials Manufacturing - Advanced Body Armor		0.913	1.250
Description: While current body armor is effective, it is too heavy for some threats, environments, and operations. Even a 10% reduction in system weight would significantly increase warfighter acceptance, mobility, agility, and endurance. This effort will leverage prior DoD investments to mature three complimentary manufacturing technologies that will reduce body armor weight by 10%-15% while improving ballistic performance and flexibility. Cost will be reduced 5%-10% and cycle time will be reduced			0.000

PE 0603680D8Z: *Defense Wide Manufacturing Science and Technology ...*
Office of Secretary Of Defense

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603680D8Z: <i>Defense Wide Manufacturing Science and Technology Program</i>	PROJECT P680: <i>Manufacturing Science and Technology Program</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
<p>by 10X-20X. The project will mature three manufacturing technologies for lighter weight armor from a capability to produce the technologies in a laboratory to a capability to produce them in an environment representative of a production facility. The three technologies are: 1) Dissimilar Material Assembly Technology to integrate ceramic, polymer adhesives, composites, and other organic and inorganic constituents into a unified body armor system. 2) Co-consolidation processing, to reduce cost and cycle time for the production of composite material enabling 10% lighter armor while maintaining ballistic performance. 3) Multi-scale modification of ballistic ceramics and associated processes, which will include new additive processes and metallic substrates to improve ballistic integrity and manage adverse shock events due to ballistic impact.</p> <p>FY 2012 Accomplishments: Successfully demonstrated novel backing architecture to reduce back face deformation. Eight percent weight reduction demonstrated on flat plate configurations using modified ceramic processes and ceramic powder compositions. First-of-its-kind Dissimilar Materials Assembly System (DMAS) machine design complete. Built, installed, and operational. DMAS directly enables 20-40% reduction in touch labor associated with complicated assembling of composite backing materials.</p> <p>FY 2013 Plans: Technology down-select initiated (including composite, ceramic, adhesive, and encapsulation sub-processes). Demonstrate 10% lighter (5.5 pounds for size medium) ESAPI side plate. Conduct interlayer materials bonding and assembly. Develop evaluation parameters and complete ballistic and related testing. Process down select and integration. Enable LRIP process development.</p>			
<p>Title: Advanced Materials Manufacturing - Field Assisted Sintering Technology (FAST)</p> <p>Description: This effort addresses limitations of conventional sintering processes. Conventional sintering takes from hours to days in a sintering oven, and the beneficial characteristics of nano-structured materials are lost when the material is sintered. FAST has the potential to dramatically reduce cycle time and manufacturing costs while maintaining the beneficial characteristics of nano-structured materials. The FAST process passes a pulsed direct current through the part while it is pressed in a die, and the combination of rapid heating and compressive loading results in fine grained, fully dense materials in short processing times that are not possible with conventional sintering processes. Many parts that are made with a powder press and sinter process are candidates for FAST, but this project will focus on ceramic body and vehicle armor, tungsten kinetic energy penetrators, infrared windows, heat sinks for electromagnetic propulsion cooling, and hypersonic and high temperature for enhanced performance jet propulsion.</p> <p>FY 2012 Accomplishments: Fabricated explosively formed penetrators and components, ballistic tiles, and functional components. Demonstrated faster process in fabricating ceramic matrix composite components with fiber's structural properties maintained. Demonstrated</p>		0.500	0.450
			0.000

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603680D8Z: <i>Defense Wide Manufacturing Science and Technology Program</i>	PROJECT P680: <i>Manufacturing Science and Technology Program</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
experimentally the benefit of WC (Tungsten Carbide) additives for minimizing grain growth in both Ta (Tantalum) and W (Tungsten). Began sintering study on WC-12%Co. Designed molds for mass production by FAST.			
FY 2013 Plans: Extend Area Protection & Survivability Warhead Testing. Fabrication of automated sample handling system, implementation/testing of automation, optimization of automation system, document process efficiency/cost savings.			
Title: Enterprise and Emerging Processes - Rapid Manufacturing of Aerospace Structures Description: There is a strong need to fabricate timely and affordable aerospace structures in a production environment for rapid fielding of materials and systems to serve the defense manufacturing base. An example of a system that could benefit from additive manufacturing is one in which there are multiple, complex, embedded systems, such as air flow control actuators within an inlet duct. This program involves design, fabrication, testing and performance analysis of various parts using additive manufacturing. Complex designs such as conformal lattice structures, with high strength and low mass, are highly advantageous for small remotely piloted aircraft, but may only be successfully manufactured using methods such as additive manufacturing. FY 2012 Accomplishments: Used conformal lattice software developed to optimize lightweight conformal lattice structures for small Remotely Piloted Aircraft (RPA). Completed mechanical analysis of nanomodified polymeric parts and microwave post processing densification. Completed thermal control upgrades for greater thermal uniformity and material densification. Designed small RPA using conformal lattice structure approach (wings, tail, fuselage, nosecone). Cost comparison to carbon fiber composite structure initiated. Manufactured inlet duct actuator inserts with integrated powered resonance tubes (PRTs) using additive manufacturing techniques. Manufactured various PRT designs and air flow testing was compared to the theoretical values. Built composite tooling using a washout mandrel additive manufacturing. Test the full composite inlet duct built on the polymeric additive manufacturing tool with active flow control inserts also manufactured using one of the two polymeric additive manufacturing techniques. Complete flight test for the conformal lattice structure RPA, along with Final program reviews.		0.516	0.000
Title: Advanced Materials Manufacturing Description: Advanced Materials Manufacturing is a series of efforts addressing advanced manufacturing technologies for a wide range of materials such as composites, metals, ceramics, nanomaterials, metamaterials, and low observables. These efforts will provide significant productivity and efficiency gains in the defense manufacturing base. These manufacturing technologies will accelerate delivery of technical capabilities to impact current warfighting operations, and manufacturing technologies to reduce the cost, acquisition time and risk of our major defense acquisition programs.		4.524	6.311
			8.680

PE 0603680D8Z: *Defense Wide Manufacturing Science and Technology ...*
Office of Secretary Of Defense

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense			DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>		R-1 ITEM NOMENCLATURE PE 0603680D8Z: <i>Defense Wide Manufacturing Science and Technology Program</i>		PROJECT P680: <i>Manufacturing Science and Technology Program</i>	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2012	FY 2013	FY 2014
Advanced materials manufacturing technologies undergoing development include materials for ballistic survivability and materials for rapid fabrication of structural components.					
Cast Eglin Steel: An effort is underway to establish Cast Eglin steel chemistry specs to maximize strength and ductility for maximum protection and effectiveness for Hard and Deeply Buried Target (HDBT) targets. Will create a primary casting process for the single piece cast underbody protection system, and bomb bodies. Developing cast-in pockets, slopes, and curves in order to meet geometric and blast requirements.					
Cold Spray Deposition: The objective for Cold Spray Deposition is to create a proven repair process and original equipment manufacturer applied corrosion/wear prevention treatment for magnesium gearbox housings and parts on numerous platforms. Inability to repair is causing significant readiness, sustainment, and safety issues (20% of the fleet is affected at any given time). Working with the original equipment manufacturer to transition the process to industry to treat new parts and to maintain, repair, and overhaul condemned gearboxes in storage.					
Net-Shaped Field Assisted Sintering Technology (FAST): FAST will set the processing limits and qualify the process for the production of two ultra high temperature materials components that require full density materials with nano tailored microstructures that are not achievable via other processes. This technology addresses near net shaped, thin walled axial rocket nozzle inserts (flute shaped) made from W (Tungsten) and TaC alloys and sharp leading edges with attachment features made from Hf-based ceramics. This effort will mature the manufacturing readiness of conventional FAST while reducing costs and providing faster delivery times.					
Fastener Fill: The F-35 Fastener Fill project will address the challenges incurred in the manual fastener fill installation process, which can take as long as 2 minutes per fastener and provides no indication of installation quality other than feel. With over 40,000 fasteners per aircraft for F-35, this is a significant manufacturing issue. In addition, excess materials must be manually skived to meet flushness requirements. The project objective is to refine the contractor's prototype Rapid Intelligent Fastener Fill System which is an automated combination melt, compress, and skive tool capable of installing fastener fill material in less than 15 seconds per fastener.					
Automated and Rapid Boot Installation Process: This process will reduce the labor-intensive nature of the installation procedures, which are not suitable for full-rate production and represent 40% of the cost in component finishing. A risk assessment analysis has identified the following areas to be targeted: (1) automation of the hand-cut/trimmed, multi-piece boot installations; (2)					

PE 0603680D8Z: *Defense Wide Manufacturing Science and Technology ...*

Office of Secretary Of Defense

UNCLASSIFIED

Page 12 of 19

R-1 Line #47

Volume 3 - 256

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603680D8Z: <i>Defense Wide Manufacturing Science and Technology Program</i>	PROJECT P680: <i>Manufacturing Science and Technology Program</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
automation of additional trimming, bonding, and pasting activities currently performed manually; (3) improved quality of technician skill/training; and (4) reduction of the waste incurred in cutting/darting boots.			
FY 2012 Accomplishments: Cast Eglin Steel: Request for Proposal, conducted contract award evaluation, and awarded contract. Cold Spray: Project Kickoff June 5, 2012. Created a proven repair process developed by the US Army Research Laboratory and the original equipment manufacturer applied corrosion/wear prevention treatment for magnesium gearbox housings on numerous platforms. Inability to repair was causing significant readiness, sustainment, and safety issues. Net-Shaped Field Assisted Sintering (FAST): The near net shape densification by Field FAST were explored using TaC-based composite powders. Two different vertical die designs were developed and tested to produce a near net shape, nozzle throat. The preliminary results showed that the near net shape consolidation by FAST was successful, resulting in close to ideally dense microstructures. Fastener Fill: Released Request for Proposal, conducted contract award evaluation, and awarded contract. Automated and Rapid Boot Installation: Released Request for Proposal, conducted contract award evaluation, and awarded contract. FY 2013 Plans: Cast Eglin Steel: Establish Eglin steel chemistry specifications to maximize strength and ductility for maximum protection, and maximum effectiveness for hard and deeply buried targets. Create a primary casting process for the single piece cast underbody protection system, and bomb bodies. Employ an integrated computational casting process model to simulate the net-shape casting process to mitigate potential processing problems. Cold Spray: Work with the original equipment manufacturer to transition the process to industry to treat new parts and to maintain, repair, and overhaul condemned gearboxes in storage. Process validation & repair demonstration. Net-shaped FAST: Complete high temperature bend strength with grain size analysis and melting point estimations. Down-select for the carbide dispersoid and conduct a more detailed processing study. Fabricate a large billet in the large FAST unit for enough material to conduct a detailed thermal-mechanical behavior analysis. Develop understanding between processing conditions and			

PE 0603680D8Z: *Defense Wide Manufacturing Science and Technology ...*
Office of Secretary Of Defense

UNCLASSIFIED

Page 13 of 19

R-1 Line #47

Volume 3 - 257

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603680D8Z: <i>Defense Wide Manufacturing Science and Technology Program</i>	PROJECT P680: <i>Manufacturing Science and Technology Program</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
morphology, mechanical and thermal properties and Non-Destructive Evaluation results. Start fabrication of prototype and scale-up to near net shape nozzle and segmented leading edge.				
Fastener Fill: Develop automation plan and integrate into robotic arm. Modify Rapid Intelligent Fastener Fill System current applications to include hard to reach areas such as inlet ducts and QC verification to ensure the fill dot has been installed and skived per requirements.				
Automated and Rapid Boot Installation:. Automated boot kit development and pressure sensitive adhesive application development.				
FY 2014 Plans: Cast Eglin Steel: Validate cast process that ensures cast in pockets, slopes, and curves in order to meet geometric and blast requirements that also facilitate ease of next higher level assembly. Eglin Steel processing developments are planned to have full scale demonstrations.				
Cold Spray: Original equipment manufacturer demonstration & qualification of the UH-60 Sump Housing. System prove-out analysis and engineering validations are scheduled.				
Net-shaped FAST: Complete validation and durability testing then proceed with a nozzle and leading edge component demonstration. The team will document process efficiency, and then identify cost reductions and savings; then support transition to industry.				
Fastener Fill: Installation at Northrop Grumman Palmdale F-35 inlet duct manufacturing line and qualification and testing which includes first article acceptance.				
Automated and Rapid Boot Installation: Single piece injection molding applications development along with automated hole & drilling applications development which will include scanning & compensation analysis. In-process first article inspection planning to coincide with manufacturing development.				
Title: Enterprise and Emerging Manufacturing		4.257	1.575	2.721
Description: Enterprise and Emerging Manufacturing is a series of efforts addressing advanced manufacturing technologies and enterprise business practices for defense applications. Key focus areas include direct digital (or additive) manufacturing, advanced manufacturing enterprise, machining, robotics, assembly, and joining. These manufacturing technologies and				

PE 0603680D8Z: *Defense Wide Manufacturing Science and Technology ...*

Office of Secretary Of Defense

UNCLASSIFIED

Page 14 of 19

R-1 Line #47

Volume 3 - 258

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603680D8Z: <i>Defense Wide Manufacturing Science and Technology Program</i>	PROJECT P680: <i>Manufacturing Science and Technology Program</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
<p>enterprise business practices will accelerate delivery of technical capabilities to impact current warfighting operations, and manufacturing technologies to reduce the cost, acquisition time and risk of our major defense acquisition programs.</p> <p>With our adversaries forced to innovate rapidly to survive, it's become increasingly important for the U.S. military to improve its own agility and flexibility. The focus is to find a solution to overcome a burdensome acquisition cycle requiring a great amount of cost, time, security, and storage space. Through the use of secure satellite data links or a local parts database, warfighters can access CAD designs for replacement parts, allowing them to repair equipment without the need to establish supply chains or wait for shipments. It allows operators to modify a part's design based on its performance in the field.</p> <p>Emerging manufacturing technologies undergoing development include: Large-scale, challenge for advanced, interoperable machine tool applications, and methods for exchange of 3D official technical data throughout the supply chain and between government and contractors.</p> <p>National Additive Manufacturing Innovation Institute (NAMII): Collaborative efforts with NAMII enable the production of finished parts directly from digital data such as 3D Computer-aided design (CAD) drawings. It provides almost limitless freedom to designers, allowing the use of very complicated geometries. It is as economical to produce single items as it is to produce thousands and thus undermines economies of scale. Using additive manufacturing would allow for rapid replacement of parts in the field and enable deployed units to remain mission-ready. Through the use of secure satellite data links or a local parts database, warfighters near deployment locations could access CAD designs for replacement parts, allowing them to repair equipment without the need to establish supply chains or wait for shipments. It would allow operators to modify a part's design based on its performance in the field. There is a strong need to fabricate timely and affordable aerospace structures in a production environment for rapid fielding of materials and systems. An example of a system that could benefit is an air flow control actuator within an inlet duct. This program involves design, fabrication, testing and performance analysis of various parts using additive manufacturing. Complex designs, such as conformal lattice structures, may only be successfully manufactured using methods such as additive manufacturing.</p> <p>MTConnect Challenge: The MTConnect Challenge focuses on developing manufacturing solutions (tools) using newly developed MTConnect interoperable protocol, for use on machining platform development. MTConnect is an open communication standard that provides the capability to pass data from machine tools to higher level systems for further processing using the XML based standard.</p> <p>Framework for Assessing Cost and Technology (FACT): Producibility analysis tools will be matured so that component performance, manufacturing processing techniques and cost can be simultaneously considered to achieve an optimum design</p>			

PE 0603680D8Z: *Defense Wide Manufacturing Science and Technology ...*

Office of Secretary Of Defense

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603680D8Z: <i>Defense Wide Manufacturing Science and Technology Program</i>	PROJECT P680: <i>Manufacturing Science and Technology Program</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
<p>solution. Current producibility analysis tools do not reuse and connect existing design, manufacturing and cost models. Sustainment and Maintenance will be impacted by maturing advanced sustainability analyses operating within FACT to reduce sustainment costs associated with spare parts acquisition and weapon system maintenance. The technology will enable correct selection of a manufacturing process to minimize cost given the estimated spare part lot sizes. Block Upgrades or Recapitalization using FACT will be critical for performing analyses associated with integrating new requirements into an existing platform to highlight the manufacturing and lifecycle costs associated with the necessary changes to the weapon system in order to meet new operational requirements.</p> <p>FY 2012 Accomplishments: MT Connect Challenge: Launched a shop floor application (including machine tools)challenge. Initiated an effort to engage and stimulate a broader base of software and system architects, to develop advanced enterprise, facility, and machine control applications based on extensions to the MTConnect standard to enable a more efficient and competitive domestic manufacturing infrastructure for the defense enterprise. Began an effort to create valuable tools and applications that can be easily adopted by manufacturing, especially the lower tier producers, to enhance their manufacturing capabilities and support DoD supply chain management goals. Established subcontractors contract agreements.</p> <p>NAMII: Developed a national roadmap for additive manufacturing in metals, electronics, and polymers. Launched initial projects to improve additive manufacturing methods for DoD weapons systems.</p> <p>FY 2013 Plans: MTConnect Challenge: Study the incorporation of in situ metrology, process controls, and non-destructive evaluation techniques to measure/improve part quality and system performance. Execute concepts to improve build rates, manufacturing throughput, process reliability, and yield. Research materials, part, and component characterization to better understand structure/process/property relationships to maximize potential effectiveness. Enable the rapid design and fabrication of current and future platforms through integration of digital product designs and manufacturing capability models.</p> <p>Framework for Assessing Cost and Technology (FACT): Identify, solicit, and plan desired improvements to current capabilities. Reduce the time required to perform tradeoff analyses for new system production planning (such as for the Amphibious Combat Vehicle). This will improve the integrated nature of the components, reducing the risk of underperformance and/or becoming too costly.</p> <p>FY 2014 Plans: MTConnect Challenge: Review submissions for accuracy, credibility, effectiveness, and potential savings data. Complete an evaluation and assessment of the competing offerings, determine the winning entries, and award the prizes.</p>			

PE 0603680D8Z: *Defense Wide Manufacturing Science and Technology ...*

Office of Secretary Of Defense

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603680D8Z: <i>Defense Wide Manufacturing Science and Technology Program</i>	PROJECT P680: <i>Manufacturing Science and Technology Program</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
Framework for Assessing Cost and Technology (FACT): Evaluate and model current data to 3D annotated baseline technical data for insertion to a PLM-to-PLM information data exchange format. It is anticipated that benefits associated with updating design specifications to accommodate welding and machining processes will begin for the LTV in the 2Q-FY15, with the benefits for the M777 spare parts project to be realized starting in the 3Q-FY15.			
Title: Advanced Manufacturing Innovation Institutes Description: Technical innovation and leadership in manufacturing are essential to sustaining the foundations of economic prosperity to enable our military to maintain technological advantage and global dominance. To support these goals, Institutes for Manufacturing Innovation (IMI) will serve as regional hubs to accelerate technological innovation into commercial application and concurrently develop the educational competencies and production processes via shared public-private sectors. Collaborative execution and funding by the Departments of Defense (DoD), Energy (DoE), and Commerce (DoC), NASA, and the National Science Foundation (NSF) to support the establishment of the IMIs will spur industry cost-share for manufacturing innovation and quickly develop a pathway for technology-focused regional hubs for collaboration among government, industry, and academia that will meet critical government and Warfighter needs. The concept of these institutes is highlighted in the President's Council of Advisors on Science and Technology (PCAST) report titled "Capturing Domestic Competitive Advantage in Advanced Manufacturing," published in July 2012. FY 2014 Plans: Establish two Advanced Manufacturing Innovation Institutes to address Intelligent Design and Manufacturing (IDM) and III-V Opto-Electronics Manufacturing Innovation.		0.000	12.000
Accomplishments/Planned Programs Subtotals		19.026	34.041
		FY 2012	FY 2013
Congressional Add: Industrial Base Innovation Fund FY 2012 Accomplishments: Program investments were executed in manufacturing technology that: addressed urgent operational needs; expanded domestic manufacturing capacity; and addressed concerns over limited competition or reliance on foreign sources for certain defense products. The IBIF programs all addressed key defense-wide manufacturing science and technology issues, with the additional requirements of addressing surge and/or diminishing material source issues. In addition, these programs all had a clear transition path with implementation on a current platform or one undergoing acquisition targeted to be within 2-3 years of		30.000	-

PE 0603680D8Z: *Defense Wide Manufacturing Science and Technology ...*
Office of Secretary Of Defense

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 3: Advanced Technology Development (ATD)		R-1 ITEM NOMENCLATURE PE 0603680D8Z: Defense Wide Manufacturing Science and Technology Program	PROJECT P680: Manufacturing Science and Technology Program
		FY 2012	FY 2013
project completion. The following areas of investment were executed to enable a diverse suite of advanced manufacturing production improvements: - Connecting American Manufacturing – created a national-level, integrated framework to enable rapid, high-density, multi-sector brokering between buyers and US suppliers - Additive manufacturing initiative – created a large collaboration on additive manufacturing, which enabled innovative research, transition to multiple DoD platforms, and educational opportunities - Non-Destructive Evaluation (NDE) for Electron Beam additive manufacturing – developed rapid and affordable NDE techniques for Ti and other metal parts manufactured using a directed energy additive technique - Read-out Integrated Circuit for Electro-optical distributed aperture system (EODAS) – redesigned, fabricated, tested, and laser hardened EODAS ROIC to use state-of-the-art foundry equipment and increase yield. - Slurry Dip Automation – developed an automated dipping and slurry management system for flare countermeasure products that effectively eliminated human operators from the dangerous process - On-tool Inspection of Fiber Placement – developed non-destructive evaluation and quality inspection techniques within the fiber placement head for in-process, rapid inspection, improving yield and process control - Curved transparent armor – developed manufacturing technology of transparent armor, which enabled curved and thinner transparent structures and decreasing cost - Transparent Ceramics – Sapphire – created an approach to determine the significant factors affecting the velocity of single crystal growth of large sheet sapphire production. - Quallion Lithium-ion 6T Vehicle Starter Battery – Developed a lithium-ion military vehicle starter battery that significantly improves power and energy density of the standard 6T lead acid battery. Implemented semi-automated manufacturing processes to move this key component into high volume production and utilize Quallion Zero-Volt cells to reduce life cycle costs. - Saft Lithium Ion Energy Storage – Developed lithium ion electrochemical solution integrated with appropriate packaging and systems engineering that provides a Starting / Lighting / Ignition battery for military 14 Volt systems. This program will prime the pump of domestic lithium battery manufacture in large volumes. - Multi Function Periscope – specified goals and requirements, and began design work to develop a periscope for armored vehicles that merges an external view with sensor and vehicle health data. Multiple users benefitted from these programs including Air Force/Navy F-35 users, Army/Air Force flare users, and Special Operations Command.			
Congressional Adds Subtotals		30.000	0.000

PE 0603680D8Z: *Defense Wide Manufacturing Science and Technology ...*

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense			DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603680D8Z: <i>Defense Wide Manufacturing Science and Technology Program</i>	PROJECT P680: <i>Manufacturing Science and Technology Program</i>	

C. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2012</u>	<u>FY 2013</u>	<u>FY 2014</u> <u>Base</u>	<u>FY 2014</u> <u>OCO</u>	<u>FY 2014</u> <u>Total</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• (BA3) 0603680F: <i>Air Force ManTech</i>											
• (BA7) 0708045A: <i>Army ManTech</i>											
• (BA7) 0708011N: <i>Navy ManTech</i>											
• (BA7) 0708011S: <i>DLA ManTech</i>											

Remarks

D. Acquisition Strategy

Not applicable for this item. Outyear data for "Other Program Funding" is contained within the Service budgets.

E. Performance Metrics

The majority of project performance metrics are specific to each effort and include measures identified in the project plans. The metrics include items such as target dates from project work break down schedules, production measures, production goals, production numbers and demonstration goals and dates. In addition, generic performance metrics applicable to the Defense-Wide Manufacturing, Science and Technology (DMS&T) program includes attainment of previous administration goal, "Speed technology transition focused on warfighting needs". The metrics for this objective and the objective of DMS&T is to transition 30% of completing demonstrations program per year. Due to the relatively new time frame of the DMS&T program, transition rates for completed efforts for this new project are not available yet.

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE							
0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>					PE 0603699D8Z: <i>Emerging Capabilities Technology Development</i>							
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
Total Program Element	-	43.377	24.662	61.971	-	61.971	45.706	44.058	44.438	45.893	Continuing	Continuing
P795: <i>Emerging Capabilities Technology Development</i>	-	43.377	24.662	34.971	-	34.971	17.706	16.058	15.438	15.893	Continuing	Continuing
P369: <i>Disruptive Technology Demonstrations</i>	-	0.000	0.000	27.000	-	27.000	28.000	28.000	29.000	30.000	Continuing	Continuing

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

Note

The FY 2014 funding increase is directly related to the funding insertion of the new "Disruptive Technology Demonstrations" project. Resulting from the guidelines provided by the Secretary of Defense in the Defense Strategic Guide (Sustaining Global Leadership: Priorities for 21st Century Defense), the reallocation of funds will support the identification and demonstration of disruptive solutions. These resources will support specific time-sensitive capability needs that address Secretary/Department Strategic Vectors and Chairman's Gap Assessment of capability shortfalls. The funding increase to P795: Emerging Capabilities Technology Development for FY 2014 supports Department-wide S&T priorities and advanced developmental prototyping.

A. Mission Description and Budget Item Justification

This funding develops emerging capabilities and advanced developmental prototypes in support of near and mid-term irregular warfare and stability operations. The framework is guided by the Office of the Assistant Secretary of Defense, Research and Engineering (ASD(R&E)), the Deputy Assistant Secretary of Defense of Rapid Fielding (DASD RF), and the Rapid Reaction Technology Office (RRTTO) science and technology objectives and focus areas. With an emphasis on interagency and Service partnerships, initiatives are developed to pursue risk-reducing prototypes and demonstrations in order to produce capability options that anticipate and inform formal joint and interagency requirements and acquisition processes. Individual projects generally span a two to three year period and are demonstrated and fielded in spirals within the project timeline. During FY 2012 and FY 2013, RRTTO continued to expand its maritime and irregular warfare portfolio as a complement to the existing maritime technology demonstrator and ground, and Intelligence, Surveillance, and Reconnaissance (ISR) portfolios and in FY 2014 RRTTO will continue these efforts and enhance its focus on developmental rapid prototyping. This program element has evolved from exclusive support of force transformation activities to the activities described above, which is more closely aligned with departmental goals.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense	DATE: April 2013
-------------------------------------------------------------------------------------------------	-------------------------

APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603699D8Z: <i>Emerging Capabilities Technology Development</i>
-----------------------------------------------------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------

B. Program Change Summary (\$ in Millions)	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total
Previous President's Budget	26.160	24.662	24.675	-	24.675
Current President's Budget	43.377	24.662	61.971	-	61.971
Total Adjustments	17.217	0.000	37.296	-	37.296
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	17.225	-			
• SBIR/STTR Transfer	-	-			
• Baseline Adjustments	-	-	37.296	-	37.296
• Other Adjustments	-0.008	-	-	-	-

Change Summary Explanation

FY 2012: Increase of \$17.217 million is due to congressional reprogramming of \$16.700 million for the Enhanced Mortar Target Acquisition System (EMTAS)/ Advanced Mortar Protection system (AMPS), and net adjustments of \$0.517 million from SBIR/STTR, reprogrammings and other adjustments to support OSD efforts.

FY 2014: Net increase is due to a baseline adjustment that reflects DoD priorities and requirements.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 3: Advanced Technology Development (ATD)					R-1 ITEM NOMENCLATURE PE 0603699D8Z: Emerging Capabilities Technology Development				PROJECT P795: Emerging Capabilities Technology Development			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
P795: Emerging Capabilities Technology Development	-	43.377	24.662	34.971	-	34.971	17.706	16.058	15.438	15.893	Continuing	Continuing
# FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012												
## The FY 2014 OCO Request will be submitted at a later date												
A. Mission Description and Budget Item Justification												
This Program Element was a new start in FY 2012 and reflects a transition from 0605799D8Z to 0603699D8Z in FY 2012.												
This funding develops emerging capabilities and advanced developmental prototypes in support of near and mid-term irregular warfare and stability operations. The framework is guided by the Office of the Assistant Secretary of Defense, Research and Engineering (ASD(R&E)), the Deputy Assistant Secretary of Defense of Rapid Fielding (DASD RF), and the Rapid Reaction Technology Office (RRTO) science and technology objectives and focus areas. With an emphasis on interagency and Service partnerships, initiatives are developed to pursue risk-reducing prototypes and demonstrations in order to produce capability options that anticipate and inform formal joint and interagency requirements and acquisition processes. Individual projects generally span a two to three year period and are demonstrated and fielded in spirals within the project timeline. During FY 2012 and FY 2013, RRTO continued to expand its maritime and irregular warfare portfolio as a complement to its existing maritime technology demonstrator and ground, and Intelligence, Surveillance, and Reconnaissance (ISR) portfolios and in FY 2014 RRTO will continue these efforts and enhance its focus on developmental rapid prototyping. This program element has evolved from exclusive support of force transformation activities to the activities described above, which is more closely aligned with departmental goals.												
B. Accomplishments/Planned Programs (\$ in Millions)									FY 2012	FY 2013	FY 2014	
Title: Overwatch									23.447	6.271	6.936	
Description: Overwatch is an overarching ground capability development effort which is leveraging technology and new concepts to fill ground combat and interagency capability gaps. It contains multiple initiatives seeking to cultivate and leverage emerging technologies and concepts to counter the current and future challenges characteristic of the irregular warfare environment. Projects are oriented toward increasing warfighter effectiveness on the battlefield and/or the development/enhancement of “whole of government” irregular warfare capabilities.												
The capability development effort furthers interagency capabilities by pursuing concept experimentation/validation, interoperability enhancements, and command and control development. Ground capabilities focus on command and control, force protection, situational awareness, and networked, cooperative engagement. These solutions include completed operational assessments, equipment prototypes, or validated concepts which can be used to inform and drive formal procurement processes and/or policy decisions.												

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense			DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>		R-1 ITEM NOMENCLATURE PE 0603699D8Z: <i>Emerging Capabilities Technology Development</i>		PROJECT P795: <i>Emerging Capabilities Technology Development</i>	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2012	FY 2013	FY 2014
<p><i>FY 2012 Accomplishments:</i></p> <p>Project Overwatch executed 14 active subordinate projects in FY 2012: the Enhanced Mortar Target Acquisition System (EMTAS)/Advanced Mortar Protection System (AMPS); Intelligent Small Unit Power (ISUP), Campaign Planning and Assessment Requirements/Identifying Human and Technological Resource Requirements; High Speed-Hostile Fire Detection System (HFDS); Forward Operating Base Defense Integrated Protection Initiative; Off-the-shelf Guided Munitions; Walking Papers: Building Geospatial Understanding; QuickNETS—Humanitarian Assistance/Disaster Relief effort; Spectral Management effort for uniforms and equipment; Building Effective Institutions; NeXTech; Advanced Countermeasure Prototype; Buoyant Body Armor, and Humanitarian Assistance/Disaster Relief (HA/DR) Test Center.</p> <p>New start projects in FY 2012 were: the NexTech project to identify potentially game-changing, disruptive technologies for DoD, and provide a model for analyzing the potential implications of emerging technologies from technical, social, political, legal and ethical perspectives; the Advanced Countermeasure Prototype effort to develop a low-cost prototype counter-rocket-propelled grenade (RPG)/surface to air missile protective capability for rotary wing aircraft; the Spectral Management project to reduce equipment and uniform signatures across the infrared spectrum by producing prototype materials to mitigate this vulnerability; the Buoyant Body Armor project to develop lightweight, more flexible, buoyant body armor while providing a similar level of protection as the armor currently used; and the HA/DR-Test Center to stand up a technology experimentation center in the Philippines in support of U.S. Pacific Command (USPACOM)/U.S. Marine Corps Forces Pacific Command (MARFORPAC) in conjunction with the Armed Forces of the Philippines.</p> <p>The EMTAS/AMPS systems completed a one year deployment to Afghanistan and received a \$16.7M congressional reprogramming to support a USCENTCOM Joint Urgent Operational Needs Statement (JUONS) request for an additional twenty systems. The HFDS was demonstrated in various configurations, which resulted in its consideration for transition to the US Army, US Marine Corps and US Navy. The Forward Operating Base Defense Integrated Protection Initiative deployed a suite of capabilities to two Forward Operating Bases in Afghanistan; the Army is analyzing the results. QuickNETS deployed multiple times in support of exercises in U.S. Pacific Command (USPACOM) and U.S. Southern Command (USSOUTHCOM) areas of operation with great success and is working towards a transition into the Unclassified Information Sharing Enterprise Service (UIS) with the Department of Defense, Chief Information Officer (DoD CIO). In addition, an FY 2011 program — Gunslinger Package for Advanced Convoy Security (GunPACS) — transitioned to the US Marine Corps, which allocated funding to maintain the GunPACS capability deployed in theater. The Marine Corps Requirements Oversight Council will determine whether to support the procurement of additional GunPACS systems in support of an Urgent Needs Statement from USMC users.</p> <p><i>FY 2013 Plans:</i></p> <p>Walking Papers and QuickNETS will be assessed for continuing requirements and/or closed/transitioned, while NexTech, Advanced Countermeasure Prototype, Buoyant Body Armor, Spectral Management, ISUP, and HA/DR-Test Center will continue</p>					

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603699D8Z: <i>Emerging Capabilities Technology Development</i>	PROJECT P795: <i>Emerging Capabilities Technology Development</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
<p>in their project developments. New projects for FY 2013 will include: Electromagnetic Environmental Understanding which will explore how social media and emerging network technologies can be identified and exploited by a tactical unit, and the Net-Zero Engagement project which will identify more cost effective ways of engaging in unstable and transitioning states. Additional projects will be developed and informed by ASD (R&E), DASD (RF) and RRT0 objectives and focus areas.</p> <p>FY 2014 Plans: Four projects will continue in FY 2014: Advanced Countermeasure Prototype will culminate in a controlled intercept demonstration; Buoyant Body Armor will test and demonstrate; Electromagnetic Environmental Understanding will test and deploy with an operational unit; and HA/DR-Test Center will become self-sufficient and operate under USPACOM control. Potential new starts for FY 2014 include Light Detection and Ranging (LIDAR) based hostile fire detection and geo-location; and a new helmet liner designed to identify and classify potential over-pressure situations leading to traumatic brain injuries. Additional projects will be developed and informed by ASD (R&E) DASD, (RF) and RRT0 objectives and focus areas.</p>			
<p>Title: Maritime Irregular Warfare/Stiletto</p> <p>Description: The Maritime Irregular Warfare portfolio investigates and develops irregular warfare capability gaps in the maritime domain. Projects explore the development of counter evolved non-state capabilities such as semi- and fully- submersible vehicles and swarms, countering unmanned swarms, maritime non-lethal weapons systems, and low cost littoral fire support, among other capabilities. This expanded effort to address maritime capability gaps builds on and leverages the Stiletto dedicated maritime demonstration vessel. Stiletto is a maritime demonstration platform designed to assist in the rapid transition of emerging technologies across the range of military operations to higher Technology Readiness Levels. The 88-foot long boat is an experimental, all carbon fiber craft that was purposefully designed to rapidly acquire, integrate, and employ new capabilities to explore the military utility of emerging technologies and concepts of operation for special and expeditionary forces. The Stiletto program, managed in partnership with the Naval Surface Warfare Center's Combatant Craft Division and the Naval Air Warfare Center Aircraft Division's Warfare Innovation Cell, streamlines the experimentation process and helps facilitate the rapid demonstration, exploration, and risk reduction of emerging technologies and capabilities.</p> <p>FY 2012 Accomplishments: The Maritime Irregular Warfare portfolio initiated several new projects in FY 2012. The Naval Underwater Threat Interrogation and Covert Assessment Systems (NAUTICAS) is a project to non-invasively identify contraband materials such as explosives or illegal drugs being transported by maritime vessels underway. In FY 2012, NAUTICAS was selected as the centerpiece of a joint Navy/Joint Improvised Explosive Device Defeat Organization (JIEDDO) effort to detect Home Made Explosives (HME) in maritime domains. The Inflatable Catamaran (I-Cat) Structural Loads Testing and I-Cat Hull Construction and Design Improvement received the endorsement of the Commander for Naval Special Warfare (NSW), as well as significant contributions from U.S. Special Operations Command (USSOCOM) and the Office of Naval Research. The Inflatable Catamaran projects are intended to demonstrate and test improvements to the Combat Rubber Raiding Craft (CRRC). Concurrently with execution of this project,</p>		3.605	6.270
			6.942

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense			DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>		R-1 ITEM NOMENCLATURE PE 0603699D8Z: <i>Emerging Capabilities Technology Development</i>		PROJECT P795: <i>Emerging Capabilities Technology Development</i>	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2012	FY 2013	FY 2014
<p>NSW designated the inflatable catamaran as one of a family of future craft known as Combatant Craft Light (CCL Mk 1), a program of record with an Initial Operating Capability in FY 2016. The Common Maritime Technology Working Group (CMTWG) was formed in FY 2012 to unify the combatant/small craft community and developed a crosswalk of science and technology (S&T) needs and requirements based on input from the US Navy, US Marine Corps, US Army, US Coast Guard, and Special Warfare community. Priorities identified through the CMTWG were used to inform future Capability Demonstrations aboard Stiletto. Stiletto doubled the number of demonstrations it performed in FY 2012 over the previous year by working more closely with operational commands through exercises like Trident Warrior and Trident Spectre. Twenty-five separate technologies were demonstrated during Trident Spectre 2012 which was sponsored by the Naval Special Warfare Support Activity-2. During Trident Warrior 2012 at Fort Eustis, VA, Stiletto served as a “control ship” for multiple unmanned autonomous vessels. During FY 2012, Stiletto also demonstrated multiple radar systems, remote stabilized weapon systems, Command, Control, Communications, Computers, and Intelligence (C4I) capabilities, full motion video, and unmanned system launch and recovery. In FY 2012, Stiletto revised its business model to create three Capability Demonstrations per year. Each capability demonstration is guided by an individual lead organization or command and is focused on that organization’s articulated capability needs. In order to preserve Stiletto’s outreach to non-traditional businesses by providing a low-cost, accessible demonstration venue, Stiletto continued to offer open technology demonstration periods throughout the year.</p> <p>FY 2013 Plans:</p> <p>Projects will focus on partnerships with the US Navy, US Coast Guard, US Army Watercraft Systems, US Special Operations Command (USSOCOM), US Southern Command (USSOUTHCOM), and other operational users. In FY 2013, NAUTICAS will continue development with the Navy and JIEDDO, moving from the lab environment to real world, controlled environment, and testing within the Continental United States (CONUS). The goal is to have a successful prototype system that leads to the development of an operationally deployable prototype. Continuing in FY 2013, the Inflatable Catamaran project will improve the existing design and construction processes for the inflatable hull component of the CCL Mk 1 inflatable catamaran with an initial operating capability in FY 2016. The improved hull form will increase durability, reliability and maintainability. The new design will provide significantly increased speed, range, payload, and improved riding, supporting missions such as Maritime Area Denial. The CMTWG will identify the lead organizations for Stiletto Capability Demonstrations and continue to analyze common small craft technology needs in FY 2013. Potential new Maritime Irregular Warfare projects for FY 2013 include demonstration of the Spike Non-Line of Site (NLOS) system in cooperation with US Navy Director of Expeditionary Warfare and US Naval Air Systems Command; development of the Spar buoy deployable ocean sensor system with the US Navy Director of Expeditionary Warfare and other partners; and an effort to focus on emerging advanced undersea weapons and sensors. The Maritime Irregular Warfare focus area will continue to support Stiletto’s maritime technology demonstrations. Emerging capabilities will be demonstrated on Stiletto during three Capability Demonstrations in FY 2013, including participation in Trident Warrior and Trident Spectre, as well</p>					

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603699D8Z: <i>Emerging Capabilities Technology Development</i>	PROJECT P795: <i>Emerging Capabilities Technology Development</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
as three Technology Demonstration periods throughout the year. Priority will be given to demonstrations that directly assist an acquisition program, with specific focus on technology transition.			
FY 2014 Plans: The Maritime Irregular Warfare portfolio will continue to develop and demonstrate state-of-the-art capabilities in anticipation of future needs, such as the Spar buoy deployable ocean sensor system and advanced unmanned surface and undersea systems focused on ASD(R&E), DASD RF, and RRTO objectives and focus areas. Emerging capabilities will continue to be demonstrated on Stiletto during three Capability Demonstrations with operational commands and interagency partners, as well as joint operational demonstrations and exercises. Technology Demonstration opportunities will continue to be offered to non-traditional businesses to help mature their systems and increase engagement with the warfighter in the development process.			
Title: Hybrid Airship Description: In conjunction with the National Aeronautics and Space Administration (NASA) - Ames Research Center, the United States Air Force (USAF) Research Laboratory, and U.S. Transportation Command (USTRANSCOM), the Department of Defense has developed a hybrid airship demonstration vehicle known as Pelican, which is a non-deployable technology demonstrator that integrates four independent technologies into a single, rigid aeroshell variable buoyancy (RAVB) air vehicle. The project will demonstrate the technical maturity of a scalable vertical takeoff and landing airship. Key technologies include a buoyancy management system to enable ballast-independent operations, composite lightweight rigid internal structure to reduce environmental restrictions, a responsive low-speed/hover control system with associated control algorithms, and a ground handling subsystem to enable operations on unimproved landing surfaces. The program objectives are to mitigate long-term technical risks by integrating and demonstrating a suite of technologies with the potential to reduce operational constraints on future heavy-lift hybrid, buoyant-aircraft development programs. In FY 2011, the project was reduced to a four-year program by accelerating the funding needed to complete vehicle design, analysis, subsystem prototyping/testing, systems integration, construction and ground testing. The project is scheduled to end in early Fiscal Year 2013, with a hangar demonstration of the four main project objectives. FY 2012 Accomplishments: The funding increase in FY 2012 was used for acceleration and technical risk reduction to the hybrid airship initiative and completion of the Pelican vehicle. By the end of FY 2012, Pelican completed subsystems and integration onto the vehicle. FY 2013 Plans: Pelican will demonstrate the ability to operate without ballast, operate on the ground without additional ground crew, maintain its shape without using gas pressure and demonstrate low speed control. These activities will be performed using FY 2012 funding. Following that demonstration, the objective of this effort is to leverage the work done to date and advance the data		12.500	6.000
			0.000

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603699D8Z: <i>Emerging Capabilities Technology Development</i>	PROJECT P795: <i>Emerging Capabilities Technology Development</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
collection, measurement of performance objectives and technical risk mitigation of future airship design. FY 2013 is the final year supporting this effort, and Assistant Secretary of Defense Research and Engineering (ASD(R&E))/Deputy Assistant Secretary of Defense (DASD) Rapid Fielding (RF)/Rapid Reaction Technology Office (RRTO) sponsorship will end. This effort will inform the Department and help guide the decision process to explore future airship designs.			
Title: Intelligence, Surveillance, and Reconnaissance (ISR)/Thunderstorm/Space		3.223	5.141
<p>Description: This portfolio examines and explores emerging technologies to complement the US Air Force (USAF), the National Reconnaissance Office (NRO), DoD's ISR Task Force and other interagency initiatives in Intelligence, Surveillance, and Reconnaissance (ISR). In addition, the portfolio addresses the National Space Strategy objectives to preserve and protect the space environment with a focus on developing applications for employment by the tactical user. The flagship project for this portfolio is Thunderstorm, an enduring multi-Intelligence technology demonstration for the Office of Secretary of Defense (OSD), interagency partners, Combatant Commands (COCOMs), Services, academia, government laboratories and commercial vendors. Thunderstorm demonstrations provide an opportunity to evaluate and assess the capabilities of new, emerging and transformational ISR technologies, and related information collection, processing, exploitation, and dissemination (PED) capabilities in mission-related, geographically, and operationally relevant environments prior to full-scale employment. Thunderstorm demonstration objectives, performance measures, lessons learned, post-demonstration assessments and data evaluation serve to inform future DoD ISR concepts of operations and remote PED capabilities.</p> <p>FY 2012 Accomplishments: Funding supported the planning and execution of the Thunderstorm Spiral 5.0 technology demonstration. Execution of this summer 2012 spiral in Customs and Border Protection's Rio Grande Valley (RGV) Sector leveraged partnerships with the Department of Homeland Security (DHS), Customs and Border Protection (CBP), U.S. Coast Guard (USCG), National Geospatial-Intelligence Agency (NGA), U.S. Northern Command (NORTHCOM), Joint Task Force-North (JTF-N), U.S. Southern Command (USSOUTHCOM) and the Joint Inter-Agency Task Force-South (JIATF-S). The RGV Sector offered multi-intelligence demonstration opportunities against land, air, sea and littoral scenarios and the possibility to examine cross-domain tip/cue architectures. These scenarios served to challenge ISR assets in multiple domains and highlighted the strengths and weaknesses in each. The scenarios also demonstrated how technology, when used in conjunction with existing threat procedures, can mitigate an adversary's ability to achieve tactical surprise and advantage.</p> <p>A classified project was started in partnership with the National Reconnaissance Office (NRO) to develop the capability to transfer large data files from theater to the U.S. using a commercial-off-the-shelf Satellite Communications (SATCOM) High Data Rate Modem. The project is reducing the time (from weeks to hours) to transfer large data files from theater to Contiguous United States (CONUS)-based analysts.</p> <p>FY 2013 Plans:</p>		5.967	

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603699D8Z: <i>Emerging Capabilities Technology Development</i>	PROJECT P795: <i>Emerging Capabilities Technology Development</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
<p>Thunderstorm Spirals 13-1 and 13-2 planning began in early FY 2013. Both spirals will build on Spiral 5.0 lessons learned in the RGV Sector. Spiral 13-1's primary focus will be to further characterize and counter asymmetrical maritime threats and inform tactics, techniques, and procedures to detect and discriminate suspicious open water, littoral and maritime-to-land transition activity. Execution of the spring 2013 spiral will leverage partnerships with CBP, JIATF-S, JTF-N, the USCG, NGA, NRO, USSOUTHCOM and USNORTHCOM. Spiral 13-2 will be executed in summer 2013. This spiral builds upon Spiral 13-1 and places emphasis on the maritime-to-land transition activity and the ability for suspicious actors to quickly dissolve themselves into an urban or rural population. This spiral incorporates National Technical Capabilities into the strategic framework. Also in FY 2013, Thunderstorm Spiral 14-1 planning will begin. This spiral will take place in the CBP Detroit Sector and will once again leverage DHS, USCG, CBP, NGA, USNORTHCOM and JTF-N support. The winter 2014 spiral will focus on the transition of actors into a large urban/suburban populace.</p> <p>In the space arena, projects will be pursued that focus on increasing satellite utility, developing transformational satellite capabilities for the tactical user and efforts to improve space situational awareness. With the high value and long lead time to replace space assets, the goal is to preserve and protect these capabilities.</p> <p>The classified project initiated in partnership with the NRO to develop the capability to transfer large data files from theater to the U.S. via a commercial-off-the-shelf SATCOM High Data Rate Modem will conclude and transition to the NRO as the primary customer. The project reduces the time (from weeks to hours) to transfer large data files from theater to CONUS-based analysts.</p> <p>FY 2014 Plans:</p> <p>Planning will continue for subsequent Thunderstorm spirals building on the experience garnered from previous spirals. In 2014, Spiral 14-1 will be executed in the Detroit Sector of CBP. The winter 2014 spiral will focus on the transition of actors into a large urban/suburban populace.</p> <p>Planning will also begin for Spiral 14-2, which will examine new, emerging and transformational ISR capabilities against asymmetric maritime, riverine, airborne and land challenges.</p> <p>Space projects focused on new and emerging space technology with the goal of recognizing and mitigating technological surprise and improving multi-Intelligence sensing, processing, exploitation and dissemination capabilities will be emphasized.</p>			
<p>Title: Science and Technology Support to Information Operations (IO)</p> <p>Description: This portfolio will apply the Rapid Reaction Technology Office (RRTO) business model of relatively low cost, short duration, high-impact, gap filling investments to complement DoD, the Department of State (DoS), and DHS initiatives in the areas of Information Operations, Strategic Communication, and Public Diplomacy. Projects of particular interest include efforts</p>		0.602	0.980
			1.326

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense			DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>		R-1 ITEM NOMENCLATURE PE 0603699D8Z: <i>Emerging Capabilities Technology Development</i>		PROJECT P795: <i>Emerging Capabilities Technology Development</i>	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2012	FY 2013	FY 2014
<p>to fill gaps in tools and capabilities that support the National Counterterrorism Strategy and the Countering Violent Extremism (CVE) Abroad Framework by developing influence assessment capabilities, measures of effectiveness, social media analysis, and counter-narrative capabilities. Specific support to United States Combatant Commands (COCOM) needs will be coordinated through the Director for Information Operations in the Office of the Under Secretary of Defense for Policy, Special Operations and Low Intensity Conflict (SO/LIC) and the Joint Staff.</p> <p>FY 2012 Accomplishments: RRTO completed an update to its previous survey and gap analysis (published in FY 2009) of the US Government's S&T efforts for communication and persuasion abroad, broadening the field to include information operations. The May 2012 update by the Center for Naval Analyses (CNA) focused on assessing existing and needed technical capabilities to respond in a systemic, rapid, sustained, and measurable way to adversarial narratives being used to undermine US military and security efforts. It also identified technologies to rapidly analyze and respond to those narratives in the information environment. The final report identified gaps in seven areas to guide future project development: analytical tools, production, content delivery, research, planning, training, and evaluation tools. The new analysis was distributed to stakeholders through DoD, COCOMs, DoS, academia, and private industry. Four new projects were started in FY 2012 to support Information Operations and CVE needs in partnership with SO/LIC, the COCOMs, and the DoS's Center for Strategic Counterterrorism Communications (CSCC). NORTHCOM Influence Assessment Capability (NIAC) Education and Training (NET) Research Project One (NETp-1) applied a social science research based approach to develop assessors' capabilities to tailor socio-political data collection, evaluation, and analysis to a given Theater Campaign Plan objective or effect under study. CVE Messaging is an effort for the CSCC's Digital Outreach Team, coordinated in support of SO/LIC and US Central Command (USCENTCOM) interests, to develop the capability to track and assess the spread and impact of al-Qa'ida (AQ) propaganda in mainstream online environments. Further, it assessed the concurrent spread and impact of counter-messaging campaigns. This project built on Sandia National Laboratory's existing capabilities to track and assess the spread and impact of AQ propaganda in mainstream online environments, attributed counter-messaging by the CSCC Digital Outreach Team and assisted in guiding Geographic Combatant Command (GCC) influence and influence assessment efforts. In FY 2012, some of the technical capabilities from the CVE Messaging project were transitioned to US Pacific Command, which will continue to fund the tools as part of its Information Operations efforts. In addition, the Information Operations Assessment Foundation project was started with the Joint Information Operations Warfare Center to identify and adapt best practices in influence assessment for the DoD's IO Assessment Framework. A new project was also initiated with USCENTCOM and SO/LIC to develop mobile applications in support of CVE activities.</p> <p>FY 2013 Plans: Projects funded in FY 2013 will support Information Operations and CVE needs in partnership with SO/LIC, DoS's CSCC, U.S. Agency for International Development (USAID), and DHS's Science and Technology (S&T) Human Factors programs. NORTHCOM's NETp-1 project will advance to its next spiral, incorporating Commander Joint Task Force (CTJF) – Horn of</p>					

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603699D8Z: <i>Emerging Capabilities Technology Development</i>	PROJECT P795: <i>Emerging Capabilities Technology Development</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
<p>Africa (HOA), U.S. Southern Command (USSOUTHCOM), and the Joint Information Operations Warfare Center as transition partners. DoS's CVE Messaging Impact project will continue, with participation from USCENTCOM and contributions from the Countering Terrorism Technical Support Office (CTTSO). The Information Operations Assessment Foundation will continue in support of SO/LIC and the Joint Staff to identify and adapt best practices from DoD as well as commercial marketing experience in influence assessment and will be used to form the DoD framework for Information Operations Assessment. Development of mobile applications in support of USCENTCOM will continue. A potential new project will focus on developing tools to improve understanding of the information environment in the littorals in support of the Marine Corps Information Operations Command.</p> <p>FY 2014 Plans: Projects will focus on developing technologies and capabilities in the areas of influence assessment, measurement of effectiveness, social network analysis, advanced communications technologies, and other areas identified through partnerships with other DoD, COCOM, and interagency stakeholders.</p>			
<p>Title: Advanced Developmental Prototyping</p> <p>Description: The Department will drive innovation in aviation, space, maritime and ground combat systems in a fiscally constrained environment through advanced prototyping. This portfolio will focus on cost-effective, limited duration projects to design, develop and deliver full-scale operational prototypes of cutting-edge land, sea, air and space systems. These prototypes will be delivered to joint and Service users to evaluate operational capability under realistic conditions and often against current capabilities or anticipated threats. Potential venues for prototype assessment include assets such as the Stiletto Maritime Demonstration Program and Thunderstorm ISR integration exercises. Knowledge and experience gained through those demonstrations will help develop new warfighting concepts and inform requirements and technical feasibility of future acquisition programs. These initial prototype efforts will help reduce the cost of future acquisition programs and stimulate efforts beyond traditional defense industrial base activities. Development of advanced prototypes will involve partnerships with industry and academia and permit operational users to gain insight into future technology-enabled strategies and tactics. Advanced developmental prototyping provides a mechanism to guard against technological surprise, preserve industrial base capabilities, impose asymmetric strategic costs on potential adversaries, and explore innovative, technology-enabled military capabilities.</p> <p>FY 2014 Plans: Developmental prototyping will be a new focus area in FY 2014. Plans for FY 2014 include pursuing development of concepts and designs that will result in fieldable prototype systems in one to two years. Candidate efforts will address the Department's S&T priorities, including unmanned air, ground, and underwater systems; low-cost space access; advanced rotorcraft capabilities; directed energy; energy efficient engine technology; electronic warfare; global access Intelligence, Surveillance, Reconnaissance (ISR) systems; dismounted soldier systems; vehicle active protection; and installation/base efficiency, sustainment & protection. Two to three advanced prototype efforts will start in FY 2014 leveraging joint or Service partnerships and involving operational commands in the evaluation of field-ready prototypes in realistic military environments. Additional new efforts will examine and</p>		0.000	13.800

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>		R-1 ITEM NOMENCLATURE PE 0603699D8Z: <i>Emerging Capabilities Technology Development</i>	PROJECT P795: <i>Emerging Capabilities Technology Development</i>
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
find possible leverage points to improve the state of the art for rapid prototyping. Potential efforts may include improved materials, reduced prototyping costs and/or improved cycle times for prototyping activities.			
Accomplishments/Planned Programs Subtotals		43.377	24.662
C. Other Program Funding Summary (\$ in Millions) N/A			
Remarks			
D. Acquisition Strategy N/A			
E. Performance Metrics In FY 2014, generic performance metrics applicable to Emerging Capabilities includes attainment of DoD Strategic Objective 3.5.2D. The title of this objective is "Maintain a strong technical foundation within the Department's Science and Technology (S&T) program" and the metrics for this objective is to transition 40% of completing demonstrations program per year. In addition, project completions and success are monitored against schedules and deliverables stated in the proposals and statements of work. The metrics include items such as target dates, production measures, fielding dates, and demonstration goals and dates. In FY2012, Emerging Capabilities Technology Development had 100 percent of its completing projects successfully transition.			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 3: Advanced Technology Development (ATD)					R-1 ITEM NOMENCLATURE PE 0603699D8Z: Emerging Capabilities Technology Development				PROJECT P369: Disruptive Technology Demonstrations			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
P369: Disruptive Technology Demonstrations	-	0.000	0.000	27.000	-	27.000	28.000	28.000	29.000	30.000	Continuing	Continuing
[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012 ^{##} The FY 2014 OCO Request will be submitted at a later date												
Note Resulting from the guidelines provided by the Secretary of Defense in the Defense Strategic Guide (Sustaining Global Leadership: Priorities for 21st Century Defense), the FY 2014 funding increase will address specific time-sensitive capability needs and anticipatory concerns while maintaining low cost and small footprint operations. These resources will support specific time-sensitive capability needs that address Secretary/Department Strategic Vectors and Chairman's Gap Assessment of capability shortfalls.												
A. Mission Description and Budget Item Justification The Disruptive Technology Demonstrations project is a technology initiative to address time-sensitive capability needs and anticipatory concerns while maintaining low cost, small footprint operations. These resources are a result of capability shortfalls identified in the Defense Strategic Guide (Sustaining Global Leadership: Priorities for 21st Century Defense). The program objectives are to identify, rapidly integrate, and demonstrate disruptive, anticipatory products suited to quick deployment that fall outside of individual Service developments. Disruptive technology demonstrations will leverage low cost, commercial, and often low technology options that don't conform to the typical DoD acquisition business model but have the potential to disrupt and change warfighting capabilities by avoiding or creating technological surprise. Disruptive technology demonstrations can be either stand-alone technology or concept demonstrations, or utilize one of the existing Architecture and Integration venues for rapid technology architecture and assessment such as the Joint Experimentation Range Complexes (JERCs).												
B. Accomplishments/Planned Programs (\$ in Millions)									FY 2012	FY 2013	FY 2014	
Title: Disruptive Technology Demonstrations									0.000	0.000	27.000	
Description: Technology Initiative to address time-sensitive, capability needs, anticipatory concerns and low-cost, small footprint operations. These resources are a result of Secretary/Department Strategic Vectors resulting from the capability shortfall identification in the Chairman's Gap Assessment. The program objectives are to identify, rapidly integrate, and demonstrate disruptive, anticipatory products suited to quick deployment that fall outside of individual Service developments. Disruptive demonstrations will leverage low cost, commercial, and often low technology options that don't conform to the typical DoD acquisition business model but have the potential to disrupt and change warfighting capabilities by avoiding or creating technological surprise. Disruptive demonstrations can be either stand-alone technology or concept demonstrations or utilize one of the existing Architecture and Integration venues for rapid technology architecture and assessment such as the Joint Experimentation Range Complexes (JERCs).												

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>		R-1 ITEM NOMENCLATURE PE 0603699D8Z: <i>Emerging Capabilities Technology Development</i>	PROJECT P369: <i>Disruptive Technology Demonstrations</i>
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
FY 2014 Plans: Disruptive Technology Demonstrations will focus on addressing anticipatory concerns, and small footprint, low-cost operations, among others. Utilizing low cost, commercial, or low technology options outside the typical DoD acquisition business model, this initiative will demonstrate capabilities with the potential to disrupt and change warfighting that are suitable for rapid fielding and acquisition. Disruptive demonstrations can be either stand-alone technology or concept demonstrations or utilize one of the existing Architecture and Integration venues for rapid technology architecture and assessment. Projects will be selected in the execution year based on the Secretary/Department Strategic Vectors.			
Accomplishments/Planned Programs Subtotals		0.000	0.000
C. Other Program Funding Summary (\$ in Millions) N/A			
Remarks			
D. Acquisition Strategy The primary acquisition strategy for funding Disruptive Technology Demonstrations will be through the use of Military Inter-Departmental Purchase Requests (MIPRS). The specifics of each MIPR will be dependent upon the development center, laboratory, contractor or agency requirements and needs. If an Inter-Agency agreement is required, compliance and coordination of the agreement will be completed in coordination with the receiving activity and Federal Acquisition Regulation 17.5.			
E. Performance Metrics In FY 2014, generic performance metrics applicable to these RDT&E initiatives includes attainment of DoD Strategic Objective 3.5.2D. The title of this objective is "Maintain a strong technical foundation within the Department's Science and Technology (S&T) program" and the metrics for this objective is to transition 40 percent of completing demonstration programs per year. Performance metrics are specific to each Disruptive Technology Demonstration effort and include measures identified in the management approach, Statement of Work (SOW) and Period of Performance (POP). In addition, completions and successes are monitored against schedules and deliverables stated in the initiative's management approach.			

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE							
0400: Research, Development, Test & Evaluation, Defense-Wide BA 3: Advanced Technology Development (ATD)					PE 0603711D8Z: Joint Robotics Program/Autonomous Systems							
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
Total Program Element	-	9.481	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
P710: Joint Robotics Program/ Autonomous Systems	-	9.481	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

Note

This program ends in FY 2012.

A. Mission Description and Budget Item Justification

This program supported the technology development activities of the Joint Ground Robotics Enterprise (JGRE) with a focus on the development of subsystems and components, and efforts to integrate subsystems and components into system prototypes for field experiments and/or tests in simulated environments. Projects delivered advanced technology with direct relevance to enhancing warfighters' capabilities that have been identified during operational assessments and field feedback of current unmanned systems. By exercising its oversight role through a Technology Advisory Board, O-6 Council and Senior Steering Group (Flag level), Joint Ground Robotics applied this program to enable coordination between the Services and places emphasis on interoperability and commonality among unmanned ground systems. The primary purpose of this program supported efforts to overcome technology barriers in the thrust areas of unmanned ground system technologies to include Autonomous and Tactical Behaviors, Manipulation Technologies, Collaborative Operations, Interoperability, Man-portable Unmanned Ground Systems, and Technology Transition/Transformation. Development and integration of technologies within the thrust areas of unmanned ground system technologies expedited technology transition from the laboratory to operational use. The technologies are generally at Technology Readiness Levels (TRL) of three or four with the intent to mature them through JGRE efforts to TRL six.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense	DATE: April 2013
-------------------------------------------------------------------------------------------------	-------------------------

APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603711D8Z: <i>Joint Robotics Program/Autonomous Systems</i>
-----------------------------------------------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------

B. Program Change Summary (\$ in Millions)	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total
Previous President's Budget	9.516	0.000	0.000	-	0.000
Current President's Budget	9.481	0.000	0.000	-	0.000
Total Adjustments	-0.035	0.000	0.000	-	0.000
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-0.032	-			
• SBIR/STTR Transfer	-	-			
• Other Adjustments	-0.003	-	-	-	-

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 3: Advanced Technology Development (ATD)					R-1 ITEM NOMENCLATURE PE 0603711D8Z: Joint Robotics Program/ Autonomous Systems				PROJECT P710: Joint Robotics Program/Autonomous Systems			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
P710: Joint Robotics Program/ Autonomous Systems	-	9.481	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012 ^{##} The FY 2014 OCO Request will be submitted at a later date												
A. Mission Description and Budget Item Justification												
This Joint Robotics Program/Autonomous Systems program supported the technology development activities of the Joint Ground Robotics Enterprise (JGRE) with a focus on the development of subsystems and components, and efforts to integrate subsystems and components into system prototypes for field experiments and/or tests in simulated environments. Projects delivered advanced technology with direct relevance to enhancing war fighters' capabilities that have been identified during operational assessments and field feedback of current unmanned systems. By exercising its oversight role through a Technology Advisory Board, O-6 Council and Senior Steering Group (Flag level), Joint Ground Robotics applied this program to enable coordination between the Services and places emphasis on interoperability and commonality among unmanned ground systems. The primary purpose of this program supported efforts to overcome technology barriers in the thrust areas of unmanned ground system technologies to include Autonomous and Tactical Behaviors, Manipulation Technologies, Collaborative Operations, Interoperability, Man-portable Unmanned Ground Systems, and Technology Transition/Transformation. Development and integration of technologies within the thrust areas of unmanned ground system technologies expedited technology transition from the laboratory to operational use. The technologies are generally at Technology Readiness Levels (TRL) of three or four with the intent to mature them through JGRE efforts to TRL six.												
B. Accomplishments/Planned Programs (\$ in Millions)									FY 2012	FY 2013	FY 2014	
Title: Command, Communication & Control									1.113	0.000	0.000	
Description: Development of data delivery, control and display, or task execution technologies enhanced unmanned ground vehicle operations, reduced operator loads and improved effectiveness. Development and integration of communication, mission planning, human-robot interface technologies, and advanced intelligence capabilities supported robotic operations.												
FY 2012 Accomplishments:												
1) Natural Human Robot Interface.												
- Tracked technologies were combined with state-variable information describing the mission to determine the proper supporting behavior for the robot under the current conditions, somewhat analogous to the synergistic interaction of a hunter and a bird-dog.												
- A non-obtrusive human-robot interface was developed that allowed the Warfighter to employ the same equipment currently used to communicate with other Warfighters in order to interact with the Unmanned Ground Vehicles to supervise or modify its behavior if needed, thus obviating the need for a dedicated Operator Control Unit.												
2) Distributed Control & Data for Small Unmanned Ground Vehicles.												

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603711D8Z: <i>Joint Robotics Program/ Autonomous Systems</i>	PROJECT P710: <i>Joint Robotics Program/Autonomous Systems</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
<ul style="list-style-type: none"> - Investigated and developed distributed control system. <p>FY 2013 Plans: Efforts continuing based on FY 2012 funding.</p> <ul style="list-style-type: none"> 1) Natural Human Robot Interface. - Platform demonstrations and final report will be completed. 2) Distributed Control & Data for Small Unmanned Ground Vehicles. - Technology Demonstration and assessments will be performed to examine technology in operational environment. 			
<p>Title: Interoperability</p> <p>Description: Promoted and guided technology development to meet joint requirements and promoted ground as well as air unmanned systems interoperability. Supported the bridging of currently incompatible robots and controllers from various manufacturers, using different communications channels and hardware. Optimized best features of prior/ongoing research efforts into a maturing, standardized system that was easily ported to robotic platforms used throughout the Department of Defense.</p> <p>FY 2012 Accomplishments: Interoperability Profiles - effort continued based on FY 2011 funding.</p> <ul style="list-style-type: none"> - Extended Interoperability Profile, Version 0 to autonomous systems, specifically those with Applique Kits. <p>FY 2013 Plans: Interoperability Profiles - effort continuing based on no-cost period of performance extension.</p> <ul style="list-style-type: none"> - Develop testing capability/environment associated with the Interoperability Profiles for autonomous systems. - Verified test environment/procedures, an Applique Kit prototype solution was provided and tested. 		0.000	0.000
<p>Title: Manipulation</p> <p>Description: Incorporation of new or existing technologies enabled a greater range of robotic manipulation, supported the development of mobile manipulation, and improved manipulator performance. Development of these technologies enabled unmanned systems to conduct highly dexterous tasks that today are accomplished manually, but currently place war fighters in extremely vulnerable and dangerous situations.</p> <p>FY 2012 Accomplishments:</p> <ul style="list-style-type: none"> 1) Highly Dexterous Manipulators for Explosive Ordnance Disposal Robots. - Developed and completed integration of Haptic feedback. - System integration (arm, end effector interface and end effector) and system testing was performed. - Received dexterous hardware support. 		0.715	0.000

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603711D8Z: <i>Joint Robotics Program/ Autonomous Systems</i>	PROJECT P710: <i>Joint Robotics Program/Autonomous Systems</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
2) Modular Point to Manipulate. - Integrated hardware onto representative Explosive Ordnance Detection Unmanned Ground Vehicles in a modular way that does not rely heavily on precise, manipulator-specific calibration or hard-coded algorithms.			
Title: Mission/Platform Specific Description: Development of a technology addressed the requirements of a particular mission or integrated with a specific platform. FY 2012 Accomplishments: Counter Tunnel Exploitation/Mapping. - Developed Autonomy Architecture. - Developed 3D Mapping Capability. - Integrated first generation Sensor Suite. - Miniaturized Sensor Suite. - Conducted experiments of the Bore Hole Apparatus and the Snakebot. FY 2013 Plans: Counter Tunnel Exploitation/Mapping - effort continuing based on FY 2012 funding. - Integrate sensor suite onto the platform. - Conduct user assessment of the system. - Finalize report on system progress and development.		1.615	0.000
Title: Navigation Description: Development of reliable motion planning, path planning, obstacle detection/obstacle avoidance, characterization, and decision analysis capabilities based on the perceived environment and specific missions outlined for the robot. FY 2012 Accomplishments: Autonomous Mobility Applique System Joint Capability Technology Demonstration. - Provided scalable autonomy in a single material solution agnostic of vehicle platform. - Comprised of two kits: (1) an Autonomy Kit and (2) a By-wire kit. The Autonomy Kit included the intelligence, sensing, and control capabilities necessary for semi-autonomous behaviors. - Enabled scalable autonomy through incorporation of a flexible open framework with defined interfaces. - Provided an A kit that provided scalable autonomy and was transferable between platforms with minimum modification and configuration enabling a single point solution for existing manned vehicle fleet.		0.415	0.000
Title: Outreach & Harmonization		1.465	0.000

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603711D8Z: <i>Joint Robotics Program/ Autonomous Systems</i>	PROJECT P710: <i>Joint Robotics Program/Autonomous Systems</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
<p>Description: Promoted and guided technology development and demonstration through joint requirements with DoD entities, United States government agencies and other civilian organizations that promoted the proliferation of ground robotic vehicle capability understanding.</p> <p>FY 2012 Accomplishments:</p> <ul style="list-style-type: none"> 1) University Support and Outreach. <ul style="list-style-type: none"> - Supported and funded both the intelligent ground vehicle competition sponsored by association for unmanned vehicle systems international and the senior capstone program at the United States Air Force Academy. 2) Cost Benefit Analysis. <ul style="list-style-type: none"> - Determined the appropriate mission areas for the Cost Benefit Analysis. - Developed a framework for estimating the potential integration of robotic systems. - Analyzed the cost-effectiveness and the net benefit of the potential robotic solutions in the selected areas of the framework. 3) Test & Evaluation (T&E). <ul style="list-style-type: none"> - Data gathering efforts determined the current capabilities and capability gaps for T&E with regards to UGVs. - Developed methodology to fill the T&E gaps. - Implemented test procedures to fill the gaps identified. 			
<p>Title: Perception</p> <p>Description: Development of post-processing software technologies (proprioceptive and/or exetroceptive) enhanced unmanned ground vehicle perception capabilities for navigation, manipulation, and general unmanned ground vehicle situational awareness in a wide range of environments and conditions.</p> <p>FY 2012 Accomplishments:</p> <ul style="list-style-type: none"> 1) Adverse Environment Obstacle Detection. <ul style="list-style-type: none"> - Preliminary analysis determined the prime areas of competence of candidate sensor solutions, and the combination of sensors most promising for a set of representative Unmanned Ground Vehicle (UGV) scenarios. 2) Real Time Radio Modeling. <ul style="list-style-type: none"> - Integrated with Building Properties into the model. - Integrated Building Properties with Tank-Automotive Research Development Center Image Generator . - Integrated Building Properties with Tank-Automotive Research Development Center Unmanned Ground Vehicle. - Development of Urban Canyon Models. - Built Clearing/Urban Canyon Comparison Analysis. - Development of rain, snow, wind, and smoke models. 3) 3D Mapping for Off Road Terrain. 		3.292	0.000
			0.000

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603711D8Z: <i>Joint Robotics Program/ Autonomous Systems</i>	PROJECT P710: <i>Joint Robotics Program/Autonomous Systems</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
<ul style="list-style-type: none"> - Applied proven 2D mapping capabilities to 3D sensors. - Tested at both day and night in indoor environments with some clutter and in outdoor, non-planar surfaces. <p>4) Negative Obstacle Detection.</p> <ul style="list-style-type: none"> - Analyzed the perception requirements for negative obstacle detection conducted to include. - Conducted survey and analysis of existing solutions. - Developed reference design. - Tested and simulated reference design. <p>5) Enhanced Traversability Analysis for Small Unmanned Ground Vehicles.</p> <ul style="list-style-type: none"> - Fused newly available small, multi-return, 3D lidar data with camera imagery. - Built upon current methods for traversability analysis. <p>FY 2013 Plans: Efforts continuing based on FY 2012 funding.</p> <p>1) Adverse Environment Obstacle Detection.</p> <ul style="list-style-type: none"> - Develop the final system involving multi-sensor solutions for obstacle detection in adverse environments. <p>2) Real Time Radio Modeling.</p> <ul style="list-style-type: none"> - Development of rain, snow, wind, and smoke models. - Integration with Tank-Automotive Research Development Center Image Generator. - Integration with Tank-Automotive Research Development Center Unmanned Ground Vehicle. - Weather Comparisons Analysis. <p>3) 3D Mapping for Off Road Terrain.</p> <ul style="list-style-type: none"> - Develop prototype. - Optimize software off-road terrain. - Develop software solutions to output 3D maps to 3D visualization software. <p>4) Negative Obstacle Detection (NOD).</p> <ul style="list-style-type: none"> - Continue to refine design. - Implement design in hardware. - Modify existing sensors suites to meet NOD issues. - Develop data fusion and algorithms for the sensors. - Test design on a midsized UGV over a wide variety of terrains, negative obstacles types and sizes, and vehicle speeds. <p>5) Enhanced Traversability Analysis for Small Unmanned Ground Vehicles.</p> <ul style="list-style-type: none"> - Apply the new sensor data to vegetation classification and 3D geometry of the terrain. 			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense									DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 3: Advanced Technology Development (ATD)				R-1 ITEM NOMENCLATURE PE 0603711D8Z: Joint Robotics Program/ Autonomous Systems				PROJECT P710: Joint Robotics Program/Autonomous Systems			
B. Accomplishments/Planned Programs (\$ in Millions)									FY 2012	FY 2013	FY 2014
- Conduct tests on various small UGV configurations to track robustness and portability to varying platform types.											
Title: Vision/Sensors									0.866	0.000	0.000
Description: Development of technologies (hardware and software) enhanced unmanned ground vehicle sensory (visual, audible and/or tactile) capabilities for navigation, manipulation, and general unmanned ground vehicle situational awareness in a wide range of environments and conditions.											
FY 2012 Accomplishments: Three-dimensional (3D) Improvised Explosive Device Sweep Detection - Conducted initial trajectory planning work using Commercial Off The Shelf / Government Off The Shelf simulation tools using 3D sensor data from a man-transportable UGV in a relevant environment within the simulator as well as a kinematically and dynamically correct model of the manipulator and base platform.											
FY 2013 Plans: 3D Improvised Explosive Device Sweep Detection - effort continuing based on FY 2012 funding. - Transition algorithms to real hardware (platform, manipulator, and sensors) . - Develop and capture test plans and performance metrics. - Conduct a Human Robot Interface study and design will be conducted and implemented for this specific application.											
Accomplishments/Planned Programs Subtotals									9.481	0.000	0.000
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
• (BA4) PE 0603709D8Z : Joint Robotics Program	10.932	0.000	0.000		0.000	0.000	0.000	0.000		Continuing	Continuing
• (BA5) PE 0604709D8Z : Joint Robotics Program	2.705	0.000	0.000		0.000	0.000	0.000	0.000		Continuing	Continuing
Remarks											
D. Acquisition Strategy N/A											
E. Performance Metrics 1. Technologies funded & developed were reviewed by Capability Area focused working groups to determine progress, transition plans, and relevance of each project.											

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603711D8Z: <i>Joint Robotics Program/ Autonomous Systems</i>	PROJECT P710: <i>Joint Robotics Program/Autonomous Systems</i>
<p>2. Project plans were submitted, evaluated and analyzed by the Joint Robotics Ground Enterprises management and technical staff for risk and progress.</p> <p>3. Project progressed toward goals and milestones and were assessed during mid-year and end-of-year reviews.</p> <p>4. Technologies developed by the Joint Robotics Ground Enterprises (JGRE) were tracked and documented using the DOD Technology Readiness Level (TRL) scale for developing TRL three or four technologies to TRL six and adhering to the integrated baselines with regard to cost and schedule.</p>		

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY

0400: *Research, Development, Test & Evaluation, Defense-Wide*
BA 3: *Advanced Technology Development (ATD)*

R-1 ITEM NOMENCLATURE

PE 0603716D8Z: *Strategic Environmental Research and Development Program (SERDP)*

COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013[#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
Total Program Element	-	64.220	65.282	72.324	-	72.324	75.832	78.147	83.196	85.047	Continuing	Continuing
P470: <i>Strategic Environmental Research and Development Program (SERDP)</i>	-	64.220	65.282	72.324	-	72.324	75.832	78.147	83.196	85.047	Continuing	Continuing

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

Congress established the Strategic Environmental Research and Development Program (SERDP) in 1990 (10 U.S.C. Section 2901-2904) to address Department of Defense (DoD) and Department of Energy (DOE) environmental concerns. It is conducted as a DoD program, jointly planned and executed by the DoD, DOE, and the Environmental Protection Agency (EPA), with strong participation by other Federal agencies, industry, and academia. SERDP's objective is to improve DoD mission readiness and environmental performance by providing new scientific knowledge and cost-effective technologies in the areas of Environmental Restoration, Munitions Response, Resource Conservation and Climate Change, and Weapons Systems and Platforms. SERDP does this by addressing high priority DoD environmental technology requirements. SERDP enhances military operations, improves military systems' effectiveness, enhances military training/readiness, sustains DoD's training and test ranges and installation infrastructure, and helps ensure the safety and welfare of military personnel and their dependents by eliminating or reducing the generation of pollution and use of hazardous materials and reducing the cost of remedial actions and compliance with environmental laws and regulations. As a secondary benefit, SERDP helps solve significant national and international environmental problems. The keys to a growing list of SERDP technological successes are the ability to respond aggressively and proactively to priority defense environmental needs; the pursuit of world-class technical excellence; and an emphasis on constant technology transfer.

B. Program Change Summary (\$ in Millions)

	<u>FY 2012</u>	<u>FY 2013</u>	<u>FY 2014 Base</u>	<u>FY 2014 OCO</u>	<u>FY 2014 Total</u>
Previous President's Budget	64.565	65.282	66.552	-	66.552
Current President's Budget	64.220	65.282	72.324	-	72.324
Total Adjustments	-0.345	0.000	5.772	-	5.772
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments	-0.345	0.000	5.772	-	5.772

PE 0603716D8Z: *Strategic Environmental Research and Development*
P...

Office of Secretary Of Defense

UNCLASSIFIED

Page 1 of 6

R-1 Line #52

Volume 3 - 289

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY	R-1 ITEM NOMENCLATURE	
0400: Research, Development, Test & Evaluation, Defense-Wide BA 3: Advanced Technology Development (ATD)	PE 0603716D8Z: Strategic Environmental Research and Development Program (SERDP)	

Change Summary Explanation

The revised funding levels for FY14 are due to the need to address high priority programs within AT&L as determined by senior leadership. For SERDP this includes additional funding to address high priority issues including emerging groundwater contaminants, munitions response in the underwater environment, and development of munitions with fewer environmental impacts.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 3: Advanced Technology Development (ATD)					R-1 ITEM NOMENCLATURE PE 0603716D8Z: Strategic Environmental Research and Development Program (SERDP)				PROJECT P470: Strategic Environmental Research and Development Program (SERDP)			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
P470: Strategic Environmental Research and Development Program (SERDP)	-	64.220	65.282	72.324	-	72.324	75.832	78.147	83.196	85.047	Continuing	Continuing
[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012												
^{##} The FY 2014 OCO Request will be submitted at a later date												
A. Mission Description and Budget Item Justification												
Congress established the Strategic Environmental Research and Development Program (SERDP) in 1990 (10 U.S.C. Section 2901-2904) to address Department of Defense (DoD) and Department of Energy (DOE) environmental concerns. It is conducted as a DoD program, jointly planned and executed by the DoD, DOE, and the Environmental Protection Agency (EPA), with strong participation by other Federal agencies, industry, and academia. SERDP’s objective is to improve DoD mission readiness and environmental performance by providing new scientific knowledge and cost-effective technologies in the areas of Environmental Restoration, Munitions Response, Resource Conservation and Climate Change, and Weapons Systems and Platforms. SERDP does this by addressing high-priority DoD environmental technology requirements. Technologies developed by SERDP enhance military operations, improve military systems’ effectiveness, enhance military training/readiness, sustain DoD’s training and test ranges and installation infrastructure, and help ensure the safety and welfare of military personnel and their dependents by eliminating or reducing the generation of pollution and use of hazardous materials and by reducing the cost of remedial actions and compliance with environmental laws and regulations. As a secondary benefit, SERDP helps solve significant national and international environmental problems. The keys to a growing list of SERDP technological successes are the ability to respond aggressively and proactively to priority defense environmental needs; the pursuit of world-class technical excellence; and an emphasis on constant technology transfer.												
B. Accomplishments/Planned Programs (\$ in Millions)									FY 2012	FY 2013	FY 2014	
Title: Environmental Restoration									17.068	17.967	18.697	
Description: Environmental Restoration (ER) reduces DoD’s liabilities by developing technologies for the cost-effective detection, characterization, containment, and remediation of contamination in soil, sediments, and water.												
FY 2012 Accomplishments: New research initiatives focused on the highest priority DoD requirements to reduce DoD’s liabilities by developing technologies for the cost-effective detection, characterization, containment, and remediation of contamination in soil, sediments, and water. Specific Statements of Need were released and projects initiated that will address the development of sustainable wastewater treatment processes for forward operating bases and assessing the environmental fate and impacts of insensitive munitions compounds. Details are available at www.serdp-estcp.org .												
FY 2013 Plans:												

PE 0603716D8Z: Strategic Environmental Research and Development P...

Office of Secretary Of Defense

UNCLASSIFIED

Page 3 of 6

R-1 Line #52

Volume 3 - 291

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603716D8Z: <i>Strategic Environmental Research and Development Program (SERDP)</i>	PROJECT P470: <i>Strategic Environmental Research and Development Program (SERDP)</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
New research initiatives will focus on the highest priority DoD requirements to reduce DoD's liabilities by developing technologies for the cost-effective detection, characterization, containment, and remediation of contamination in soil, sediments, and water. Specific Statements of Need were released and proposals are being selected that will address in situ remediation of 1,4-dioxane-contaminated groundwater and improved remediation technologies for treatment of chlorinated solvent-contaminated groundwater. Details are available at www.serdp-estcp.org . FY 2014 Plans: New research initiatives will focus on the highest priority DoD requirements to reduce DoD's liabilities by developing technologies for the cost-effective detection, characterization, containment, and remediation of contamination in soil, sediments, and water.				
Title: Munitions Response (MR) Description: Munitions Response (MR) develops detection, discrimination, and remediation technologies for Unexploded Ordnance (UXO) to address the significant DoD liability in the Military Munitions Response Program. Investments are also made to improve active range clearance and to reduce generation of UXO during live fire testing and training operations. FY 2012 Accomplishments: New research initiatives focused on the highest priority DoD requirements in underwater UXO detection and discrimination, advanced sensors, signal processing, supporting technologies, and protocols to reduce the costs associated with detecting and remediating UXO on land and underwater. Statements of Need were released and projects initiated to address these issues. Details are available at www.serdp-estcp.org . FY 2013 Plans: New research initiatives will focus on the highest priority DoD requirements in underwater UXO detection and discrimination, advanced sensors, signal processing, supporting technologies, and protocols to reduce the costs associated with detecting and remediating UXO on land and underwater. Statements of Need were released and proposals are being selected to address these issues. Details are available at www.serdp-estcp.org . FY 2014 Plans: New research initiatives will focus on the highest priority DoD requirements in underwater UXO detection and discrimination, advanced sensors, signal processing, supporting technologies, and protocols to reduce the costs associated with detecting and remediating UXO on land and underwater.		8.496	8.396	9.117
Title: Resource Conservation and Climate Change (RC) Description: Resource Conservation and Climate Change (RC) develops the science and technologies required to sustain training and testing ranges.		21.545	21.839	24.324

PE 0603716D8Z: *Strategic Environmental Research and Development*
P...

Office of Secretary Of Defense

UNCLASSIFIED

Page 4 of 6

R-1 Line #52

Volume 3 - 292

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 3: Advanced Technology Development (ATD)	R-1 ITEM NOMENCLATURE PE 0603716D8Z: Strategic Environmental Research and Development Program (SERDP)	PROJECT P470: Strategic Environmental Research and Development Program (SERDP)		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
FY 2012 Accomplishments: New research initiated in FY 2012 included assessing the impacts of climate change on Alaskan ecological systems; improving the understanding of the behavioral ecology of cetaceans; developing fundamental and applied science required to manage and restore forested ecosystems on Department of Defense (DoD) lands; and improving our understanding of source-sink dynamics for populations of species of relevance to DoD resource managers. A description of all RC projects funded in FY 2012 can be found at www.serdp-estcp.org . FY 2013 Plans: New research initiatives will focus on the highest priority DoD requirements to develop the science and technologies required to sustain training and testing ranges and respond to requirements in the 2010 QDR, including the assessment of climate change impacts to DoD installations. Specific Statements of Need were released and proposals are being selected for funding to address these issues. Details are available at www.serdp-estcp.org . FY 2014 Plans: New research initiatives will focus on the highest priority DoD requirements to develop the science and technologies required to sustain training and testing ranges and respond to requirements in the 2010 QDR, including the assessment of climate change impacts to DoD installations.				
Title: Weapons Systems and Platforms (WP) Description: Weapons Systems and Platforms (WP) develops technologies and materials that reduce the waste and emissions associated with the manufacturing, maintenance, and use of DoD weapons systems and platforms to reduce future environmental liabilities and their associated costs and impacts. FY 2012 Accomplishments: New initiatives included the development of chemical agent resistant powder topcoats; scale-up and formulation of green insensitive secondary explosives; waste-to-energy converters for overseas contingency operations; and assessing the reliability of tin-whisker-mitigating conformal coatings. A description of all WP projects funded in FY 2012 can be found at www.serdp-estcp.org . FY 2013 Plans: New research initiatives will focus on the highest priority DoD requirements to develop technologies and materials that reduce the waste and emissions associated with the manufacturing, maintenance, and use of DoD weapons systems and platforms to reduce future environmental liabilities and their associated costs and impacts. Specific Statements of Need were released to address the development of non-isocyanate Polymers for Military Topcoats, Ionic Liquids Technology, environmentally advantaged		17.111	17.080	20.186

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603716D8Z: <i>Strategic Environmental Research and Development Program (SERDP)</i>	PROJECT P470: <i>Strategic Environmental Research and Development Program (SERDP)</i>		
B. Accomplishments/Planned Programs (\$ in Millions) submunitions, and the application of synthetic biological techniques for energetic materials. Details are available at www.serdpestcp.org . FY 2014 Plans: New research initiatives will focus on the highest priority DoD requirements to develop technologies and materials that reduce the waste and emissions associated with the manufacturing, maintenance, and use of DoD weapons systems and platforms to reduce future environmental liabilities and their associated costs and impacts.		FY 2012	FY 2013	FY 2014
Accomplishments/Planned Programs Subtotals		64.220	65.282	72.324
C. Other Program Funding Summary (\$ in Millions) N/A Remarks D. Acquisition Strategy N/A E. Performance Metrics Performance in this program is monitored at two levels. At the lowest level, each of the more than 160 individual projects is measured against both technical and financial milestones on a quarterly and annual basis. At a program-wide level, progress is measured against DoD's environmental requirements and the development of technologies that address these requirements as well as the transition of these technologies to either to demonstration and validation programs or to direct use in the field.				

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE							
0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>					PE 0603727D8Z: <i>Joint Warfighting Program</i>							
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
Total Program Element	-	10.276	8.403	8.431	-	8.431	8.643	8.910	9.056	9.232	Continuing	Continuing
P727: <i>Joint Warfighting</i>	-	10.276	8.403	8.431	-	8.431	8.643	8.910	9.056	9.232	Continuing	Continuing

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

The level of resourcing for the Joint Warfighting Program (JWP) program reflects iterative reductions from efficiencies and budget reductions, which reduces the Department's ability to develop flexible responsive solutions to emerging war fighter needs. The OSD JWP account underwrites two related activities supporting development of the Department's joint warfighting capabilities. In anticipation of constrained military budgets, there will be increased demand for JWP support as Combatant Commanders will be under pressure to refine their requests for supplementary capabilities to define their capability requirements, and identify potential solution options.

The Joint Advanced Warfighting Program (JAWP) segment provides innovative and responsive analytic support on joint capability development serving the needs of joint capability clients. It provides an independent source to examine potential remedies for mission capability gaps and can establish a framework for accelerated acquisition, subsequent field experiments, and capability demonstrations. JAWP often represents the first effort to define alternative solutions across the range of Doctrine, Organization, Training, Material, Leadership and Personnel-Facilities. JAWP resources sustain a small dedicated staff of civilian operation research analysts (currently hosted by the Institute for Defense Analysis – IDA). Administered by the Joint Operations Support cell within OSD/AT&L, the JAWP conducts an annual call for inputs from Combatant Command staffs elements that formulate Capability Gap assessments and technology based initiatives. Project selection is undertaken in consultation with the OSD staffs serving AT&L and Policy and with elements of the Joint Staff.

The balance of JWP resources are dedicated to analytic support for joint capabilities and joint customers. JWP provides a safety net for analytic support responding to emergent joint capability requirements and capability gaps. Typical projects funded with JWP include translation of capability gap assessments into actionable military needs statements, identification of candidate solutions via experimentation, translation of solution concepts into field demonstrations, and remedy of joint capability gaps in partnership with Defense agents for doctrine changes and technology development. JWP resources dedicated to direct support joint commands provides analytic expertise not normally allocated via formal staffing billets. In this activity, JWP underwrites small grants to invigorate employment of experimentation and analysis, to formulate strategies to resolve joint capability gaps, and to stimulate participation in the Department enterprises for joint experimentation and joint capability development. JWP resources also research and development of tools supporting joint commander analytic efforts.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense	DATE: April 2013
-------------------------------------------------------------------------------------------------	-------------------------

APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603727D8Z: <i>Joint Warfighting Program</i>
-----------------------------------------------------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------

B. Program Change Summary (\$ in Millions)	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total
Previous President's Budget	10.310	8.403	8.571	-	8.571
Current President's Budget	10.276	8.403	8.431	-	8.431
Total Adjustments	-0.034	0.000	-0.140	-	-0.140
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• FY 2014 Internal Adjustments	-	-	-0.140	-	-0.140
• Other rogram Adjustment	-0.034	-	-	-	-

Change Summary Explanation

FY 2014 baseline adjustments support higher priorities in the departmant.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 3: Advanced Technology Development (ATD)					R-1 ITEM NOMENCLATURE PE 0603727D8Z: Joint Warfighting Program				PROJECT P727: Joint Warfighting			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
P727: Joint Warfighting	-	10.276	8.403	8.431	-	8.431	8.643	8.910	9.056	9.232	Continuing	Continuing

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

The OSD Joint Warfighting Program (JWP) account underwrites two related activities supporting development of the Department's joint warfighting capabilities. In anticipation of constrained military budgets, there will be increased demand for JWP support as Combatant Commanders will be under pressure to refine their requests for supplementary capabilities.

The Joint Advanced Warfighting Program (JAWP) segment provides innovative and responsive analytic support on joint capability development serving the needs of joint capability clients. It provides an independent source to examine potential remedies for mission capability gaps and can establish a framework for accelerated acquisition, subsequent field experiments, and capability demonstrations. JAWP often represents the first effort to define alternative solutions across the range of Doctrine, Organization, Training, Material, Leadership and Personnel-Facilities. JAWP resources sustain a small dedicated staff of civilian operation research analysts (currently hosted by the Institute for Defense Analysis – IDA). Administered by the Joint Operations Support cell within OSD/AT&L, the JAWP conducts an annual call for inputs from Combatant Command staffs elements that formulate Capability Gap assessments and technology based initiatives. Project selection is undertaken in consultation with the OSD staffs serving AT&L and Policy and with elements of the Joint Staff.

The balance of JWP resources are dedicated to analytic support for joint capabilities and joint customers. JWP provides a safety net for analytic support responding to emergent joint capability requirements and capability gaps. Typical projects funded with JWP include translation of capability gap assessments into actionable military needs statements, identification of candidate solutions via experimentation, translation of solution concepts into field demonstrations, and remedy of joint capability gaps in partnership with Defense agents for doctrine changes and technology development. JWP resources dedicated to direct support joint commands provides analytic expertise not normally allocated via formal staffing billets. In this activity, JWP underwrites small grants to invigorate employment of experimentation and analysis, to formulate strategies to resolve joint capability gaps, and to stimulate participation in the Department enterprises for joint experimentation and joint capability development. JWP resources also research and development of tools supporting joint commander analytic efforts.

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2012	FY 2013	FY 2014
Title: Support for Joint Capability Analysis	5.460	4.503	4.578
Description: JWP supports COCOMs by promoting the use of joint experimentation to address challenges specific to their theater or functional missions. It aims to reinvigorate COCOM staff capabilities to employ rigorous analysis and experimentation methodologies in support of specific mission assignments. It allows COCOM staffs to identify capability gaps and explore potential solutions "trial and error" limited objective experiments experiment to understand a concept or technology that addresses a specific COCOM challenge.			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603727D8Z: <i>Joint Warfighting Program</i>	PROJECT P727: <i>Joint Warfighting</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
<p><i>FY 2012 Accomplishments:</i> FY 2012 Output- -Initiated a pilot program with the Naval Post Graduate School to demonstrate a methodology through field experimentation that allows combatant commands to explore and identify capability performance parameters and attributes toward identifying potential solutions for capability gaps. The initial project included support to USNORTHCOM and USSOUTHCOM, and included the Department of Homeland Security. -USPACOM initiated an Integrated Cyber Operations project to allow for the coordination and synchronization of cyberspace operations with other war fighting domains. The project, currently in its developmental phase, will allow USPACOM to develop, test and train on emerging cyber and electronic capabilities through experimentation, and in rigorous field validation during exercises. -In response to Defense Planning Guidance tasking to forge cooperative approaches to common security problems and reduce dependency on DoD, supported the development of an operational methodology and concept to describe the business practices with other U.S. Government agencies, the private sector and partner nations.</p> <p><i>FY 2013 Plans:</i> Continue the pilot program with the Naval Post Graduate School to demonstrate a methodology through field experimentation that allows combatant commands to explore and identify capability performance parameters and attributes toward identifying potential solutions for capability gaps in support of Combatant Commands. Continue to provide resources to COCOMs to enable experimentation cells to employ joint experimentation that identifies and addresses regional capability gaps, explores potential solutions, and improves understanding of new technologies and concepts. Empower the COCOM staffs to employ rigorous analysis and experimentation methodologies in support of their specific mission assignments, to assess their own needs critically and to examine viable capability gap solutions.</p> <p><i>FY 2014 Plans:</i> Continue to provide resources to COCOMs to enable experimentation cells to employ joint experimentation that identifies and addresses regional capability gaps, explores potential solutions, and improves understanding of new technologies and concepts. Empower the COCOM staffs to employ rigorous analysis and experimentation methodologies in support of their specific mission assignments, to assess their own needs critically and to examine viable capability gap solutions.</p>			
<p><i>Title:</i> Joint Advanced Warfighting Program (JAWP)</p> <p><i>Description:</i> The Joint Advanced Warfighting Program (JAWP) segment provides innovative, responsive and timely analytic support on joint capability development serving the needs of Combatant Commanders. It provides an independent source to examine potential remedies for mission capability gaps and can establish a framework for subsequent field experiments, capability demonstrations or accelerated acquisition. JAWP often represents the first effort to define alternative solutions across the range of Doctrine, Organization, Training, Material, Leadership and Personnel-Facilities. JAWP resources underwrite a small dedicated</p>		4.816	3.900
			3.853

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603727D8Z: <i>Joint Warfighting Program</i>	PROJECT P727: <i>Joint Warfighting</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
<p>staff of civilian military operation research analysts (currently hosted by the Institute for Defense Analysis - IDA). Administered by the Joint Operations Support cell within OSD/AT&L, the JAWP conducts an annual call for inputs from Combatant Command staffs elements that formulate Capability Gap assessments and technology based initiatives. Project selection is undertaken in consultation with the OSD staffs serving AT&L and Policy and with elements of the Joint Staff.</p> <p>FY 2012 Accomplishments: FY 2012 Output- -Initiated a comprehensive survey of Department of Defense modeling & simulation (M&S) tools to identify and characterize campaign, and mission models. Delivered a framework that detailed models and analytical tools for Joint Staff and OSD(Policy) planners. -Analyzed and assessed the Integrated Gaming System to determine the needs of the combatant commands planners' use of tools and gaming to support the Adaptive Planning and Execution (APEX) process. -Conducted an in-depth analysis of the Naval Post Graduate approach to field experimentation and capability demonstration and its applicability for combatant commands to leverage in order to identify and refine capability performance attributes for potential solutions to capability gaps. -Developed and assessed alternative joint US campaign-level courses of action relevant to four future defense planning scenarios in support of OSD(Policy). -In support of USAFRICOM, identified and analyzed how Somali pirate methodology to network and move, store and spend their money resources. -In support of USCENTCOM, analyzed the effectiveness of brigade-level activities using data from Regional South Command in Afghanistan focusing on non-kinetic activities including counter threat finance cells, biometrics, provincial reconstruction teams, and development assistance projects.</p> <p>FY 2013 Plans: The Joint Advanced Warfighting Program (JAWP) segment will provide innovative, responsive and timely capability development pathways and recommendations for field experiments conducted by Combatant Commands, and approaches for rapid acquisition. It will provide an independent source for enabling capability development suitable for joint experimentation undertaken by the joint Commands. The findings of these investigative analyses frequently explore joint capability development via experiments and prototype demonstrations leading toward potential material solutions. It will enable COCOMs to do experiments in the field that addresses regional capability gaps, explores potential solutions, and improves understanding of new technologies. Empower the COCOM staffs to employ rigorous analysis methodologies in support of their specific mission assignments, to assess their own needs critically and to examine viable capability gap solutions.</p> <p>FY 2014 Plans:</p>			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>		R-1 ITEM NOMENCLATURE PE 0603727D8Z: <i>Joint Warfighting Program</i>	PROJECT P727: <i>Joint Warfighting</i>
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
<p>The Joint Advanced Warfighting Program (JAWP) segment will provide innovative, responsive and timely capability development pathways and recommendations for rapid acquisition, field experiments conducted by Combatant Commands. It will provide an independent source for enabling capability development suitable for joint experimentation undertaken by the joint Commands. The findings of these investigative analyses frequently explore joint capability development via experiments and prototype demonstrations leading toward potential material solutions. It will enable COCOMs to do experiments in the field that addresses regional capability gaps, explores potential solutions, and improves understanding of new technologies. Empower the COCOM staff s to employ rigorous analysis and experimentation methodologies in support of their specific mission assignments, to assess their own needs critically and to examine viable capability gap solutions.</p>			
Accomplishments/Planned Programs Subtotals		10.276	8.403
C. Other Program Funding Summary (\$ in Millions)			
N/A			
Remarks			
D. Acquisition Strategy			
N/A			
E. Performance Metrics			
Performance is measured through metrics including (1) objective validation of enhanced COCOM capabilities to perform joint missions in their assigned theaters and areas of responsibility, (2) documented delivery effective joint operational concepts, (3) confirmed production of refined and validated capability descriptions.			

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE							
0400: Research, Development, Test & Evaluation, Defense-Wide BA 3: Advanced Technology Development (ATD)					PE 0603755D8Z: High Performance Computing Modernization Program							
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
Total Program Element	0.000	23.000	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
P507: High Performance Computing Modernization Program	0.000	23.000	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

Note

The President's Budget Request for FY 2012 realigned the High Performance Computing Modernization Program (HPCMP) from the Office of the Secretary of Defense (OSD), program element (PE) 0603755D8Z to the Department of the Army, PE 0603461A. Due to Continuing Resolution Authority restrictions in early FY 2012, \$23.000 million was executed from OSD PE 0603755D8Z. The balance of the FY 2012 appropriated budget was executed from 0603461A. FY 2013 and out-year funding for the HPCMP was and will continue to be requested under 0603461A.

A. Mission Description and Budget Item Justification

Today, the Department of Defense (DoD) faces many challenges. The High Performance Computing Modernization Program (HPCMP) provides cost effective tools the Department needs to address the most difficult defense problems. These tools include modern high performance computing hardware, parallel software, wide area networking services and the expertise to use them. The HPCMP helps enables DoD personnel to:

- Conduct basic research into areas such as materials, fuels, turbulence, proteins, electromagnetic fields, signal image relationships, structural response, blast effects, and combustion;
- Conduct applied research into areas such as aerodynamics applied to fighter and transport manned and unmanned aircraft, automated target recognition; hydrodynamics applied to new hull forms, structural performance of new armor and penetrator concepts, and explosives performance;
- Design elements of weapon systems such as the Hellfire missile, F-35, MRAP, C-17, the Javelin missile, and directed energy weapons systems;
- Test and evaluate weapons system performance on systems such as F-16, F-22, F-35, C-17, FCS, AIM-9X, GBU-39 and Striker;
- Immediately support urgent operations for efforts such as counter IED, hurricane Katrina related flood modeling, and the 2010 gulf oil spill migration modeling.

High Performance Computing has been identified as a key enabling technology essential to achieving the DoD's research development, test and evaluation (RDT&E) objectives. Validated requirements collected across the DoD reflect the needs of 4,400 scientists and engineers located at hundreds of locations (DoD Laboratories, Test Centers, academic institutions and commercial businesses). The integrated HPCMP consists of DoD Supercomputing Resource Centers (DSRCs), the Defense Research and Engineering Network (DREN), and Software Application Support. DSRCs are responsible for as large a part of DoD's RDT&E computational workload as feasible. DSRCs provide extensive capabilities to address user requirements for hardware, software, and programming environments. Dedicated HPC project investments (DHPIs) augment the DSRCs to form the total HPCMP computational capability. DHPIs address critical HPC requirements that cannot be met at DSRCs,

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY

0400: *Research, Development, Test & Evaluation, Defense-Wide*
BA 3: *Advanced Technology Development (ATD)*

R-1 ITEM NOMENCLATURE

PE 0603755D8Z: *High Performance Computing Modernization Program*

such as real-time, and near real-time computing requirements, and leverage significant HPC and mission expertise located at these remote sites. All elements of the HPCMP are interconnected with all S&T and T&E user sites via the Defense Research and Engineering Network. DREN provides the flexible wide area network fabric needed by the RDT&E community to support technology demonstrations and distributed test and evaluation events in addition to providing access to the supercomputing centers. The Software Application Support component develops critical common DoD applications programs that run efficiently on advanced HPC systems, supports technology transition activities with academic and commercial institutions, trains users, and builds collaborative programming environments. The Computational Research and Engineering Acquisition Tools and Environments (CREATE) produces supercomputer-based engineering design and test tools, improving the acquisition process for major weapons systems.

The High Performance Computing Modernization Program transferred from the Office Secretary of Defense to the Department of the Army in FY 2012.

B. Program Change Summary (\$ in Millions)	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total
Previous President's Budget	0.000	0.000	0.000	-	0.000
Current President's Budget	23.000	0.000	0.000	-	0.000
Total Adjustments	23.000	0.000	0.000	-	0.000
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Baseline Adjustments	23.000	-	-	-	-

Change Summary Explanation

The HPCMP was realigned from OSD to the Department of the Army in FY 2012. Due to Continuing Resolution Authority restrictions in early FY 2012, \$23.000 million was executed from OSD PE 0603755D8Z. Program funding for the remainder of FY 2012 and out-years can be found in Army PE 0603461A.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE				PROJECT			
0400: Research, Development, Test & Evaluation, Defense-Wide BA 3: Advanced Technology Development (ATD)					PE 0603755D8Z: High Performance Computing Modernization Program				P507: High Performance Computing Modernization Program			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
P507: High Performance Computing Modernization Program	0.000	23.000	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

Note

The President's Budget Request for FY 2012 realigned the High Performance Computing Modernization Program (HPCMP) from the Office of the Secretary of Defense (OSD), program element (PE) 0603755D8Z to the Department of the Army, PE 0603461A. Due to Continuing Resolution Authority restrictions in early FY 2012, \$23.000 million was executed from OSD PE 0603755D8Z. The balance of the FY 2012 appropriated budget was executed from 0603461A. FY 2013 and out-year funding for the HPCMP was and will continue to be requested under 0603461A.

A. Mission Description and Budget Item Justification

The Department of Defense (DoD) High Performance Computing (HPC) Modernization Program supports the needs of the warfighter for technological superiority and military dominance on the battlefield by providing advanced computational services to U.S. weapons system scientists and engineers. By exploiting continuous advances in HPC technology, the defense research, development, test and evaluation (RDT&E) community is able to resolve critical scientific and engineering problems more quickly and with more precision. The results of these efforts feed directly into the acquisition process by improving weapons system designs through an increased fundamental understanding of materials, aerodynamics, chemistry, fuels, acoustics, signal image recognition, electromagnetics, and other areas of basic and applied research. As such, HPC has been identified as a key enabling technology essential to achieving the objectives of the DoD's RDT&E.

The program primarily provides supercomputing services through DoD Supercomputing Resource Centers (DSRCs). Additionally, support for specialized programs is provided through dedicated HPC project investments (DHPs). DHPs support a one-time need and have no support tail within the HPC Modernization Program. Centers and DHPs directly support the DoD RDT&E laboratories and test centers and are accessible to local and remote scientists and engineers via high-speed network access. An integral part of the program is providing for the adaptation of broadband, widely used applications and algorithms to address RDT&E requirements, along with continued training of users as new system designs and concepts evolve. The program pursues continuous interaction with the national HPC infrastructure, including academia, industry, and other government agencies to facilitate the sharing of knowledge, tools, and expertise.

Annually validated requirements, collected across the DoD reflect the needs of 4,400 scientists and engineers located at hundreds of locations (DoD Laboratories, Test Centers, academic institutions and commercial businesses), and to drive program decisions. The integrated HPC program consists of DoD Supercomputing Resource Centers; the Defense Research and Engineering Network (DREN); and Software Application Support. DSRCs are responsible for as large a fraction of DoD's S&T and T&E computational workload as feasible. DSRCs provide extensive capabilities to address user requirements for hardware, software, and programming environments. DHPs augment the DSRCs to form the total HPC Modernization Program computational capability. DHPs address critical HPC requirements that cannot be met at DSRCs, such as real-time, and near real-time computing requirements, and leverage significant HPC and mission expertise located at these remote sites. All elements

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 3: Advanced Technology Development (ATD)	R-1 ITEM NOMENCLATURE PE 0603755D8Z: High Performance Computing Modernization Program	PROJECT P507: High Performance Computing Modernization Program		
<p>of the HPC Modernization Program are interconnected with all S&T and T&E user sites via the DREN. Additionally, the Software Application Support component develops critical common DoD applications programs that run efficiently on advanced HPC systems, supports technology transition activities with academic and commercial institutions, trains users, and builds collaborative programming environments.</p> <p>True modernization of DoD’s HPC capability and fulfillment of the program's vision and goals requires an on-going program strategy that addresses all aspects of HPC. While advancing the level of hardware performance is critical to success, the higher objective is to enable better scientific research, T&E environments, and technology development for superior weapons, warfighting, and related support systems. The Program goals are to (1) acquire, deploy, operate and maintain best-value supercomputers; (2) acquire, develop, deploy and support software applications and computational work environments that enable critical DoD research, development and test challenges to be analyzed and solved; (3) acquire, deploy, operate and maintain a communications network that enables effective access to supercomputers and to distributed S&T/T&E computing environments; (4) continuously educate the RDT&E workforce with the knowledge needed to employ computational modeling effectively and efficiently; and (5) promote collaborative relationships among the DoD computational science community, the national computational science community and minority serving institutes.</p> <p>The DREN provides wide area network (WAN) connectivity among the Department's S&T and T&E communities. The DREN is implemented through an Intersite Services Contract awarded to MCI (WORLD COM) during FY 2002. A new DREN network services contract was awarded in FY 2011. DREN currently provides services to sites throughout the continental United States, Alaska, Hawaii, and can be extended overseas where necessary. A Secret DREN using common Secret systems high key with NSA certified Type-1 encryptors that can transport classified traffic at OC-3 (155 Mbps) has also been deployed. The HPC Modernization Program employs state-of-the-art WAN security and strong host and user security creating a defense-in-depth security architecture.</p> <p>The High Performance Computing Modernization Program transferred from the Office Secretary of Defense to the Department of the Army in FY 2012.</p>				
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
Title: Department of Defense Supercomputing Resource Centers		6.000	0.000	0.000
Description: The program supports DoD Supercomputing Resource Centers that are responsible for as large a fraction of DoD's S&T and T&E computational workload as feasible. Dedicated HPC project investments (DHPIs) support a one-time need and have no legacy within the HPC Modernization Program.				
FY 2012 Accomplishments: Successfully devolved the HPCMP to the Department of the Army to support continued sustainment and modernization of HPC systems, storage, and scientific data analysis and visualization capabilities to fulfill a significant portion of the S&T and T&E community HPC requirements. Continued computational services to scientists and engineers located at DoD Laboratories, Test Centers, academic institutions and commercial businesses. These services enabled basic research, applied research, design elements of weapon systems, test and evaluation of weapons system				
Title: Networking		11.000	0.000	0.000

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>		R-1 ITEM NOMENCLATURE PE 0603755D8Z: <i>High Performance Computing Modernization Program</i>	PROJECT P507: <i>High Performance Computing Modernization Program</i>
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
Description: The Defense Research and Engineering Network (DREN) provides wide area network (WAN) connectivity among the Department's S&T and T&E communities and provides the computer and network security for the HPCMP. FY 2012 Accomplishments: Successfully devolved the HPCMP to the Department of the Army to support a continuance of DREN services that link all elements of the program and provide network security and enhancements. Maintained a flexible WAN fabric allowing the DoD RDT&E community to support technology demonstrations and distributed T&E events. Continued collaborative work with the federal networking community and standards associations to assure the DREN remains compatible with technology changes.			
Title: Software Applications Description: Software Applications provide for the adaptation of broadband, widely used applications and algorithms to address RDT&E requirements, continued training of users as new system designs and concepts evolve, and continuous interaction with the national HPC infrastructure, including academia, industry, and other government agencies to facilitate the sharing of knowledge, tools, and expertise. FY 2012 Accomplishments: Successfully devolved the HPCMP to the Department of the Army in support of continued software applications development. This enabled continued development of supercomputer-based engineering designs and test tools to improve the acquisition for major weapons systems; a greater emphasis on engineering applications; development of shared scalable applications to exploit scalable HPC assets; an Academic Outreach Program to universities across the United States; and computational and computer science support to the DoD HPC user community.		6.000	0.000
Accomplishments/Planned Programs Subtotals		23.000	0.000
C. Other Program Funding Summary (\$ in Millions)			
N/A			
Remarks			
D. Acquisition Strategy			
N/A.			
E. Performance Metrics			
Strategic Goals supported are as follows:			
Defense Supercomputing Resource Centers - Method of Measurement: Habus (HPCMP standard measurement of computational performance)			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603755D8Z: <i>High Performance Computing Modernization Program</i>	PROJECT P507: <i>High Performance Computing Modernization Program</i>
<p>FY 2010: Existing Baseline – 2024.0/ Planned Performance Improvement - Requirement Goal – 2000.0/ Actual Performance Improvement – 2251.0 FY 2011: Existing Baseline – 4275.0/ Planned Performance Improvement - Requirement Goal – 475.0 (Change to a two year procurement cycle reduced the Requirement Goal to 475 from 1575. The remaining increases will occur in FY 2012 and FY 2013)/ Actual Performance Improvement – 476.0 FY 2012: Defense Supercomputing Resource Centers were transferred to Department of the Army.</p> <p>Networking - Method of Measurement: Gigabits per second</p> <p>FY 2010: Existing Baseline – 30.6/ Planned Performance Improvement - Requirement Goal – 1.0/ Actual Performance Improvement – 2.1 FY 2011: Existing Baseline – 32.7/ Planned Performance Improvement - Requirement Goal – 1.0/ Actual Performance Improvement – 1.388 FY 2012: Networking was transferred to Department of the Army.</p> <p>Software Applications - Methods of Measurement: Customer Satisfaction on a 0-5 scale</p> <p>FY 2010: Existing Baseline – 4.2/ Planned Performance Improvement - Requirement Goal – 4.2/ Actual Performance Improvement – 4.2 FY 2011: Existing Baseline – 4.2/ Planned Performance Improvement - Requirement Goal – 4.2/ Actual Performance Improvement – 4.2 FY 2012: Software Applications were transferred to Department of the Army.</p> <p>Comment: All FY 2010 and FY 2011 actual performance metrics met or exceeded those planned.</p>		

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE							
0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>					PE 0603781D8Z: <i>Software Engineering Institute (SEI)</i>							
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
Total Program Element	-	27.189	30.036	19.008	-	19.008	19.522	20.162	18.528	18.953	Continuing	Continuing
P781: <i>Software Engineering Institute (SEI)</i>	-	20.234	22.735	11.660	-	11.660	11.994	12.422	10.649	10.956	Continuing	Continuing
P783: <i>Software Producibility Initiative</i>	-	6.955	7.301	7.348	-	7.348	7.528	7.740	7.879	7.997	Continuing	Continuing

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

Note

To ensure that the Department of Defense (DoD) retains a differential advantage over potential adversaries, Defense-Wide software research and development will include this Program Element (PE) 0603781D8Z and a new budget activity (BA) 2, SEI Applied Research, PE 0602751D8Z. Funding for Advanced Technology Development in PE 0603781D8Z will decrease beginning in FY 2014 to reflect a pivot toward more fundamental research that will enable the DoD to address longer-term challenges in software technology and engineering. When combined together, the two PEs represent a level of investment consistent with previous plans.

A. Mission Description and Budget Item Justification

Software is key to meeting the DoD's increasing demand for high-quality, affordable, and timely national defense systems. Systemic software issues are significant contributors to poor program execution, and reliance on software-intensive mobile and net based products and systems has been increasing (e.g., Joint Tactical Radio System, DDG-1000, Joint Strike Fighter, F-22, and Army Modernization). As stated in the 2010 National Research Council of the National Academy of Sciences report entitled Critical Code, "It is dangerous to conclude that we are reaching a plateau in capability and technology for software producibility." The report notes that software is "...unconstrained by traditional physical engineering limitations..." and what we can accomplish is derived "...from [the] human intellectual capacity to conceptualize and understand systems..." With growing global parity in software engineering, the DoD must maintain leadership to avoid strategic surprise. The Software Engineering Institute (SEI) Program Element (PE) addresses the critical need to research, develop, and rapidly transition state-of-the-art software technology, tools, development environments, and best practices to improve the engineering, management, fielding, evolution, acquisition, and sustainment of software-intensive DoD systems. The SEI PE's program of work seeks to coordinate across the Department and the Services and leverages expertise in industry and academia to enable the development of joint capabilities.

Software is more pervasive than ever and computer programs are growing in size and complexity. Designing, managing, and securing integrated, complex, and large-scale mission-critical systems are abilities that the DoD and Defense Industrial Base (DIB) have not yet mastered. The P781 project within this PE funds research and development at the SEI Federally Funded Research and Development Center (FFRDC). The SEI FFRDC is an institute which enables the exploitation of emerging software technology by bringing engineering, management, and security discipline to software acquisition, development, and evolution. The SEI FFRDC focuses on software technology areas judged to be of the highest payoff in meeting defense needs. To ensure that the DoD retains a differential advantage over potential adversaries, research funding at the SEI FFRDC will include a new Budget Activity 2 funding line beginning in FY 2014. The reduction in P781 in this line beginning

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY

0400: *Research, Development, Test & Evaluation, Defense-Wide*
BA 3: *Advanced Technology Development (ATD)*

R-1 ITEM NOMENCLATURE

PE 0603781D8Z: *Software Engineering Institute (SEI)*

in FY 2014 is offset by the creation of the new line, the SEI Applied Research PE. The creation of this new line represents a pivot toward more fundamental research that will enable the DoD to address longer-term challenges in software technology and engineering. The SEI Applied Research PE will also increase the collaboration opportunities for the SEI FFRDC with academia and attract top research talent to the SEI.

Private sector investment has created rapid advances in information technologies, but the pace of transition to DoD applications is often very slow or the commercial applications do not meet DoD unique needs, e.g., high assurance software or large-scale integrated systems. The DoD needs to create opportunities to discover emerging technologies, to evaluate their potential to fit DoD needs, and where appropriate, conduct critical tests of the technologies under DoD conditions. The P783 project within this PE funds the Software Producibility Initiative. The Software Producibility Initiative works across the Services, industry, and academia to research and transition software science and tools that address the capacity to design, produce, assure, and evolve software-intensive systems in a predictable manner while effectively managing risk, cost, schedule, quality, and complexity.

B. Program Change Summary (\$ in Millions)	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total
Previous President's Budget	29.347	30.036	30.616	-	30.616
Current President's Budget	27.189	30.036	19.008	-	19.008
Total Adjustments	-2.158	0.000	-11.608	-	-11.608
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-2.149	-			
• SBIR/STTR Transfer	-	-			
• Baseline Adjustments	-	-	-11.608	-	-11.608
• Other Adjustments	-0.009	-	-	-	-

Change Summary Explanation

FY 2014 baseline adjustments are reflective of DoD priorities and requirements.

To enhance the SEI's role as a Research and Development FFRDC, the Department created the new SEI Applied Research PE 0602751D8Z in FY 2014 to offset the reduction in P781 in this PE. The Department is splitting funding for research at the SEI FFRDC across these two PEs to address both longer-term challenges in software technology and engineering (0602751D8Z) and to continue to benefit from the proven experience the SEI FFRDC has with developing and transitioning advanced technology (0603781D8Z). The two PEs represent a level of investment consistent with previous plans.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 3: Advanced Technology Development (ATD)					R-1 ITEM NOMENCLATURE PE 0603781D8Z: Software Engineering Institute (SEI)				PROJECT P781: Software Engineering Institute (SEI)			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
P781: Software Engineering Institute (SEI)	-	20.234	22.735	11.660	-	11.660	11.994	12.422	10.649	10.956	Continuing	Continuing
[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012												
^{##} The FY 2014 OCO Request will be submitted at a later date												
A. Mission Description and Budget Item Justification												
The SEI Federally Funded Research and Development Center (FFRDC) was established in 1984 as an integral part of the Department of Defense's (DoD's) initiative to identify, evaluate, and transition software engineering technologies and practices. The SEI maintains unique software research and program support capabilities in a space where the Defense Industrial Base (DIB) and academia cannot as readily address challenges. The mission of the SEI is to provide DoD with technical leadership and innovation through research and development to advance the practice of software engineering and technology. The Institute works across Government, industry, and academia to improve the state of software engineering from the technical, acquisition, and management perspectives. The SEI engages in research and development of critical software technologies and tools, and collaborates with the larger software engineering research community. It facilitates rapid transition of software engineering technologies into practice, and evaluates emerging software engineering technologies to determine their potential for improving software-intensive DoD systems. Since its inception, the SEI has helped to transform the fields of software engineering and acquisition, network security, real-time systems, software architectures, and software-engineering process management.												
To enhance the SEI's role as a Research and Development FFRDC, the Department has created a new PE: SEI Applied Research, 0602751D8Z, beginning in FY 2014. The reduction in P781 in this PE beginning in FY 2014 is offset by the creation of the SEI Applied Research PE. The Department is splitting funding for research at the SEI FFRDC across these two PEs to address both longer-term challenges in software technology and engineering (0602751D8Z) and to continue to benefit from the proven experience the SEI FFRDC has with developing and transitioning advanced technology (0603781D8Z, P781).												
B. Accomplishments/Planned Programs (\$ in Millions)									FY 2012	FY 2013	FY 2014	
Title: SOFTWARE ENGINEERING INSTITUTE (SEI) RESEARCH									20.234	22.735	11.660	
Description: SEI research projects are awarded on a competitive basis across the SEI. The number of projects will vary from year to year based on the size and scope of proposed projects. Research projects cross-cut the FFRDC's experience base in order to advance existing SEI research initiatives and explore new technical ideas. SEI research focuses on the most significant and pervasive software challenges within the DoD such as computing for real-time and embedded-systems, multi-core programming, computing at the tactical edge, System of System architectures, discovering effective agile methods to develop DoD-scale systems, cyber-security, and measurement-driven methods to improve the efficiency of acquisition programs.												
FY 2012 Accomplishments:												

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>		R-1 ITEM NOMENCLATURE PE 0603781D8Z: <i>Software Engineering Institute (SEI)</i>	PROJECT P781: <i>Software Engineering Institute (SEI)</i>	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2012	FY 2013
<ul style="list-style-type: none"> • Empirically identified architecture and agile practices that balance the tension between speed and agility in support of rapid and incremental development of software-reliant systems. • Developed an approach for managing architectural rework in an iterative and incremental development environment and demonstrated the approach on an embedded real-time system case study. • Defined a fault ontology and a mechanism for associating it with architecture models to specify failure modes, error propagation, and error mitigation. Applied this framework to several safety-critical network-based systems to facilitate their verification. • Developed, analyzed, and field tested resource allocation and market-inspired approaches for Adaptive Quality of Service (AQoS) in tactical environments. • Collected and analyzed architecture knowledge from two commercial software platforms to inform an approach for designing and using common platform operating environments. • Developed advanced quality-attribute analyses for high-confidence cyber-physical DoD systems (including avionics mission and flight computing) for timing of parallelized tasks and to reduce concurrency errors. • Empirically analyzed the effectiveness of multiple insider threat mitigation patterns as part of an evolving mitigation pattern language that is designed to help enterprise architects mitigate threats. • Investigated exploratory new technology ideas in the early detection of insider threats. • Developed architectures and prototypes for "Situational Awareness Mash-ups" that support rapid integration with multiple back-end data sources for context awareness applications on handheld devices, and for offload to virtual machine-based "cloudlets" in tactical environments. • Demonstrated techniques to facilitate detection and mitigation of software vulnerabilities in applications, tools, and standards. • Galvanized several community groups (e.g., Government, DoD contractors, and academia) to formalize an understanding of the challenges and strategies for successfully adopting agile practices in government acquisition programs. • Constructed an initial behavioral model of program stakeholder interactions to show how joint program dynamics tend to drive toward failure. This allows the simulation and analysis of new approaches to help acquisition staff understand how to better manage these situations. • Developed semantic hash techniques to predict similarity between malware functions and evaluated the techniques on samples from the CERT malware catalog. • Explored semantic methods for simplifying obfuscated malware and conducted a study of obfuscation prevalence in the CERT malware catalog. • Developed methods for early DoD lifecycle cost estimation, including using historical records and expert inputs. This allows probabilistically modeling of programmatic and technological uncertainties that influence program execution and cost. • Developed new algorithms for assigning sporadic real-time tasks to processor cores of heterogeneous multi-core processors to guarantee their timing behavior. 				
FY 2013 Plans:				

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603781D8Z: <i>Software Engineering Institute (SEI)</i>	PROJECT P781: <i>Software Engineering Institute (SEI)</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
<ul style="list-style-type: none"> • Continue competitive awards within the SEI for novel research. • Refine economic foundations and measurable analysis of value-driven incremental software development by focusing on the role of quality-attributes in architecture related costs (e.g., rework or delay) and increment planning in DoD acquisition programs. • Develop a dependency analysis model and theoretical foundations for architecture decision making that reduces integration risks in iterative and incremental development for DoD acquisition programs. • Analyze software project data to determine the efficacy of incremental and iterative practices as related to project outcomes. • Determine the contribution of architecture fault model framework evidence to confidence in cyber-physical system behavior as a complement to traditional review and testing evidence. • Develop large-scale simulations to further develop and validate theory of adaptive quality-of-service for DoD distributed systems. • Apply economic cost-benefit reasoning to develop new design methods for common software platform architectures that evolve in response to new operational needs. • Develop quality-attribute analyses for high-confidence cyber-physical DoD systems for timing of multi-core software. • Extend software code analysis techniques to mobile environments to detect and rectify vulnerabilities in DoD mobile systems faster than our adversaries can exploit them. • Develop an improved behavior-based malware detector to defend DoD mobile devices. • Develop a portability strategy that allows mobile computing components to execute across a wide spectrum of computing environments. • Explore enhanced vulnerability discovery methods by coupling symbolic execution, concrete execution, and black-box fuzz testing to facilitate the discovery of software defects. • Explore ideas to reduce latent software defects using analytics based on vulnerability and software development process data. • Collect and analyze relevant baseline data to further validate insider threat mitigation patterns and develop a rigorous composition method as a foundation for evolving the mitigation pattern language toward more systematic application by system architects. • Investigate tools to detect malicious network traffic. • Identify and develop algorithms to enable flexible division of labor among humans and automation for Unmanned Aircraft Systems. • Produce patterns, prototypes, and examples for software development on heterogeneous high-performance computer architectures in the area of graph analytics. • Use analytic techniques, including research from the Mining Software Repositories community, to build tools to assist Certification and Accreditation efforts for Open Source Software. • Continue early lifecycle cost estimation research for pre-Milestone A evaluations. • Develop empirically grounded, quantitative relationships between Bayesian models of program change drivers and cost estimation model inputs. 			
			FY 2014

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603781D8Z: <i>Software Engineering Institute (SEI)</i>	PROJECT P781: <i>Software Engineering Institute (SEI)</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
<ul style="list-style-type: none"> • Develop a method to support rapid analysis of changes to social networks in order to provide more timely feedback to soldiers and first responders. • Develop software for a rapidly-deployable, scalable autonomous sensor network to support soldiers in activities such as recon, ambush, and search-and-rescue operations. • Develop methods for extracting class definitions and relationships from object-oriented malware using automated semantic analysis. • Develop next generation disassembly algorithms to improve the quality of automated static analysis and build confidence in the correctness of that disassembly. • Develop a functional model for prioritizing malware threats based on execution behavior allowing for faster identification, analysis, and mitigation. • Explore the extent of threats posed by malware residing on a solid-state hard drive to the security of its host system as well as potential solutions to the problems discovered. • Develop science, techniques, and tools to generate and use better synthetic data for test & evaluation of cyber-security technology. • Formulate an investment model that can forecast capital requirements for software sustainment. • Investigate the use of machine learning, social network measurement, and analysis techniques to facilitate large-scale coordinated stakeholder engagement in architecture decisions and requirements elicitation. • Finalize identification of those projects that would benefit from a complimentary applied research component under the new BA 2 PE. <p>FY 2014 Plans:</p> <ul style="list-style-type: none"> • Continue competitive awards within the SEI for novel research. • Increase the research focus on economic foundations and measurable analysis of value-driven incremental development, including analysis of empirical results in a broad range of DoD settings to refine models and integrate them into tools. A significant portion of this work will transition to the new SEI Applied Research PE (0602751D8Z). • Investigate how value-driven incremental development analysis techniques can assist with relating requirements to architecture for improved system and software integration. • Continue investigation of the architecture fault model framework in incremental qualification and certifications of safety-critical cyber-physical DoD systems. • Develop design principles that account for DoD networking infrastructure constraints for an adaptive quality-of-service approach and verify market mechanisms in realistic settings. • Develop new methods that leverage reuse of software and architecture patterns in common platform operating environments to provide assurance and accelerate test, integration, and certification of DoD systems-of-systems. 			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603781D8Z: <i>Software Engineering Institute (SEI)</i>	PROJECT P781: <i>Software Engineering Institute (SEI)</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
<ul style="list-style-type: none"> • Develop quality-attribute analyses for high-confidence cyber-physical DoD systems to coordinate timing of the computational and physically-related aspects of DoD systems. • Extend the architecture, algorithms, and prototypes that support rapid analysis of social networks; rapidly-deployable and scalable autonomous sensor networks; and the mobile component portability strategy to other scenarios and environments. • Support the reduction of software defects through data analysis, leading to the prevention of the defects in the software design phase of the software development lifecycle. • Evaluate trends in the insider threat problem based on over 15 years of CERT case data and forecast insider threat mitigation patterns needed to support sustained protection against insider threats. • Extend and integrate work in group-context-awareness, cloudlets and situational awareness mashups to exploit contextual information and autonomy, thereby providing increased computational capability and reducing cognitive load. • Empirically measure the contribution of select security and resilience practices to reducing the occurrence and impact of disruptive events. • Pursue assurance-at-scale; provide direct, artifact-focused means to support acceptance evaluation of software-reliant systems. • Extend dynamic testing capabilities to encompass exploit generation and cyber-defense testing to ensure secure DoD applications. • Continue investigating the detection of malicious network traffic by automating the extraction of indicators and continue to improve capabilities to discover relationships between malware artifacts. • Continue investigating disassembly algorithms to improve the quality of automated static analysis and build confidence in the correctness of that disassembly. • Simulate and evaluate algorithms for flexible division of labor among humans and automation for Unmanned Aircraft Systems, in operationally significant scenarios. • Expand the work to produce patterns, prototypes, and examples for software development on heterogeneous high-performance computer architectures in the area of graph analytics. • Continue the use of analytic techniques, including research from the Mining Software Repositories (MSR) community, to build tools to assist Certification and Accreditation efforts for Open Source Software. • Continue early lifecycle cost estimation research for pre-Milestone A evaluations. • Build on the investigation of the use of statistical algorithms and automated tools to identify anomalous data in DoD program repositories. • Continue to investigate the use of machine learning, social network measurement, and analysis techniques to facilitate large-scale coordinated stakeholder engagement in architecture decisions and requirements elicitation. 			
Accomplishments/Planned Programs Subtotals		20.234	22.735
			11.660

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603781D8Z: <i>Software Engineering Institute (SEI)</i>	PROJECT P781: <i>Software Engineering Institute (SEI)</i>
-----------------------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------	---------------------------------------------------------------------

C. Other Program Funding Summary (\$ in Millions)

Line Item	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
• BA 2, PE # 0602751D8Z, P278: <i>Software Engineering Institute Applied Research</i>	0.000	0.000	11.107		11.107	11.330	11.614	11.766	11.970	Continuing	Continuing

Remarks

To ensure that the Department of Defense (DoD) retains a differential advantage over potential adversaries, Defense-Wide software research and development will include this PE and PE 0602751D8Z (Software Engineering Institute Applied Research). When combined together, the two PEs represent a level of investment consistent with previous plans. Funding for Advanced Technology Development in PE 0603781D8Z will decrease beginning in FY 2014 to reflect a pivot toward more fundamental research that will enable the DoD to address longer-term challenges in software technology and engineering.

D. Acquisition Strategy

N/A

E. Performance Metrics

- Transition of tools and practices for use in DoD programs of record and to the Defense Industrial Base (DIB), and number of agencies and organizations sponsoring work.
- Number of publications in refereed journals and peer reviewed reports.
- Number of external research collaborations and interactions with the broader software engineering research community.
- Adoption of coding standards and process techniques by standards bodies, working groups, and software/systems engineering organizations.
- Number of training courses and curricula developed to contribute to the growth of capability in the software engineering research and development community and software/system acquisition workforce.
- Development of new scalable technical and software-enabled cyber security approaches that address software assurance and improve enterprise resiliency.
- Reduced number of mission-critical software-reliant acquisition program failures and cost and schedule overruns, as well as quantitative improvements in overall system cost, time to develop, and performance – this will be evidenced by: reductions in time to test software and the amount of rework required; improved ability to articulate software requirements; development of techniques that offer orders of magnitude improvement in software productivity; development of new software algorithms and abstractions; and decreased number of software defects found through application of effective process and software development methods.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense									DATE: April 2013			
APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE				PROJECT			
0400: Research, Development, Test & Evaluation, Defense-Wide BA 3: Advanced Technology Development (ATD)					PE 0603781D8Z: Software Engineering Institute (SEI)				P783: Software Producibility Initiative			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
P783: Software Producibility Initiative	-	6.955	7.301	7.348	-	7.348	7.528	7.740	7.879	7.997	Continuing	Continuing
# FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012												
## The FY 2014 OCO Request will be submitted at a later date												
A. Mission Description and Budget Item Justification												
Shortcomings in software development often lead to schedule slippage, cost growth, and mission compromise. These shortcomings can frequently be traced to software development technologies which are not capable of addressing the scale and complexity of the software needed in today’s systems. The Software Producibility Initiative seeks to conduct an integrated program of research from applied research through demonstration and evaluation to advance the state-of-the-art in the producibility of software for DoD systems, particularly those systems characterized by high complexity, need for robustness, information assurance, real-time performance, and physical distribution. The Initiative maintains a portfolio of work relevant to the Warfighter and DoD needs by periodically evaluating technology development efforts, retiring those that are under performing, and starting new efforts based on risk-reward priority. The Initiative demonstrates new underlying software technology and tools in various domains, e.g., Networks, Modeling and Simulation, Avionics, Signal Intelligence, where DoD can benefit and enhance the transition paths for the underlying technology.												
B. Accomplishments/Planned Programs (\$ in Millions)									FY 2012	FY 2013	FY 2014	
Title: SOFTWARE PRODUCIBILITY INITIATIVE									6.955	7.301	7.348	
Description: The Software Producibility Initiative seeks to improve the DoD’s ability to design, build, test, and sustain software-intensive systems which meet mission critical requirements, exhibit predictable behavior, and enable evolution and interoperability. Technology thrust areas include specification of complex requirements; “correct-by-construction” software development; scalable composition; high-confidence software and middleware; system architectures for network-centric environments; technologies for system visualization, testing, verification, and validation; model-driven development approaches; timing techniques for real-time embedded-systems; static and run-time analysis of software; design tools and development environments; and secure and efficient coding practices. Major performers include the Space and Naval Warfare Center (SPAWAR), Naval Research Laboratory (NRL), and the Air Force Research Laboratory (AFRL), as well as academia and industry.												
FY 2012 Accomplishments:												
• Selected performers from a competitive solicitation to begin work in the areas of distributed and multi-core processing; technology for completeness, development, testing, and sustainment; instrumentation and monitoring; and tools to improve the efficiency of legacy software analysis, integration, and evolution.												
• Continued the development of the software engineering collaboration environment: increased the number of challenge problems and their difficulty, continued to engage existing users and attract new users, and identified opportunities for transition in FY 2013.												

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603781D8Z: <i>Software Engineering Institute (SEI)</i>	PROJECT P783: <i>Software Producibility Initiative</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
<ul style="list-style-type: none"> • The SEI FFRDC began development of a technology roadmap in software producibility and is providing advice to senior levels of the DoD in its FFRDC role as a trusted agent. • Assessed the effectiveness of the accelerated synchronous behavior technique in representative systems and determined it was too immature to transition to DoD users. • Exploration of model-based design for systems-of-systems to allow scaling-up to DoD-scales resulted in several peer-reviewed publications. • Developed capability to create models & services and increased usability of the graphical interface in a development tool that allows scalable models developed by domain experts to be quickly connected graphically (by non-domain experts) to form hierarchical sets of models that can be executed on laptops and generic multi-core workstations as well as high-performance computing machines. • Developed and evaluated algorithms to improve the design, development, and optimization of complex software systems, including: efficient coding, tools for programming and efficiently using multi-core computers, and software for real-time embedded-systems and cyber-physical systems. • Completed an evidence based comparative assessment of the effectiveness of middleware developed under the Initiative to improve the portability and reuse of software. Critical aspects of this effort transitioned to a classified program. • Designed, extended, and investigated tools for constructing and analyzing timed models of cyber-physical systems. • Investigated a unified model-centric approach for integrating model-driven development across all phases and programs of the systems engineering lifecycle. • Designed algorithms and implemented a proof-of-concept development tool that reduces software bloat and speeds up execution time in C and C++ programs. • In collaboration with the SEI FFRDC, began analysis of Adaptive Quality of Service (AQoS) mechanisms that are being developed in an effort to help increase the performance of distributed software systems. • Began analysis of software engineering acquisition data to determine Return on Investment. <p>FY 2013 Plans:</p> <ul style="list-style-type: none"> • In response to the FY 2012 solicitation, plan to continue and initiate work in the areas of distributed and multi-core processing; technology for completeness, development, testing, and improved sustainment; instrumentation and monitoring; and tools to improve the efficiency of legacy software analysis, integration, and evolution. • Seek opportunities to modify the open solicitation to address emerging DoD software technology needs. • Speed the transition of software research and development that increases the affordability of acquisition programs in accordance with the DoD's Better Buying Power initiative. • Transition the responsibility for the software engineering collaboration environment to the SEI FFRDC. 			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603781D8Z: <i>Software Engineering Institute (SEI)</i>	PROJECT P783: <i>Software Producibility Initiative</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
<ul style="list-style-type: none"> • Develop the underlying software techniques to allow scalable models developed by domain experts to be quickly connected graphically to form hierarchical models that can be executed on laptops and generic multi-core workstations, as well as, HPC (high-performance computing) machines. • Identify which techniques supporting model-based design of complex, heterogeneous, software intensive systems are sufficiently mature for transition into industrial practice, which require further research investment, and which should be abandoned. • Continue the exploration of model-based design for systems of systems to allow scaling-up to DoD-scales. • Improve the efficiency of existing DoD sustainment activities by transitioning new tools and techniques to make correcting, upgrading, or adapting legacy code more efficient. • Identify evidence-based measures of the effectiveness of various software tools and acquisition practices on the costs of DoD programs. • Continue investigating tools for constructing and analyzing timed models of cyber-physical systems. • Continue and expand work to reduce software bloat and speed up execution time in C, C++, and other-languages. • Continue analysis of Adaptive Quality of Service (AQoS) mechanisms that are being developed in an effort to help increase the performance of distributed software systems. • Continue analysis of software engineering acquisition data to determine Return on Investment. • Continue development of a technology roadmap in Producibility, and use the SEI FFRDC as a trusted advisor. <p>FY 2014 Plans:</p> <ul style="list-style-type: none"> • Solicit further responses from the open solicitation. Plan to continue and initiate work in the areas of distributed processing and multi-core processing; technology for completeness, development, testing, and sustainment; instrumentation and monitoring; and tools to improve the efficiency of legacy software analysis, integration, and evolution. • Seek opportunities to modify the open solicitation to address emerging DoD software technology needs. • Speed the transition of software research and development that increases the affordability of acquisition programs in accordance with the DoD's Better Buying Power initiative. • Continue to improve the efficiency of existing DoD sustainment activities by investing in new tools and techniques to make correcting, upgrading, or adapting legacy code more efficient. • Continue the exploration of model-based design for systems-of-systems to allow scaling-up to DoD-scales. • Enhance the software engineering collaboration environment. • Complete transition of the underlying software techniques for graphical composition of scalable models developed by non-domain experts. • Continue to identify which techniques supporting model-based design of complex, heterogeneous, software intensive systems are sufficiently mature for transition into industrial practice, which require further research investment, and which should be abandoned. 			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603781D8Z: <i>Software Engineering Institute (SEI)</i>	PROJECT P783: <i>Software Producibility Initiative</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
<ul style="list-style-type: none"> • Continue to identify evidence-based measures of the effectiveness of various software tools and acquisition practices on the costs of DoD programs. • Continue investigating tools for constructing and analyzing timed models of cyber-physical systems. • Continue and expand work to reduce software bloat and speed up execution time in C, C++, and other-languages. • Continue analysis of Adaptive Quality of Service (AQoS) mechanisms that are being developed in an effort to help increase the performance of distributed software systems. • Continue analysis of software engineering acquisition data to determine Return on Investment. • Complete development of a technology roadmap in Producibility, and use the SEI FFRDC as a trusted advisor. 			
Accomplishments/Planned Programs Subtotals		6.955	7.301
C. Other Program Funding Summary (\$ in Millions) N/A			
Remarks			
D. Acquisition Strategy N/A			
E. Performance Metrics <ul style="list-style-type: none"> • Number of tools developed which enable the specification of interface formalisms, the definition of component interfaces, and the checking of correct composition. • Demonstrable reduction in the number of vulnerabilities and errors detected in software code of large software systems. • Number of transitions of promising systems and software engineering technologies to the DoD and DIB, and successful adoption of technologies by early adopter partners. • Observed improvements in cost, schedule, and performance via advances in the producibility of software for complex DoD systems and the productivity of software developers. • Number of multiple, active collaborations achieved between Software Producibility performers and the broader software engineering research community. • Number of coordinated and Joint activities across research efforts. 			

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE							
0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>					PE 0603826D8Z: <i>Quick Reactions Special Projects (QRSP)</i>							
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013[#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
Total Program Element	-	63.029	107.002	78.532	-	78.532	80.583	94.383	103.338	91.225	Continuing	Continuing
P826: <i>Quick Reaction Fund</i>	-	15.044	37.902	26.728	-	26.728	28.189	29.400	32.496	28.396	Continuing	Continuing
P828: <i>Rapid Reaction Fund</i>	-	30.111	55.054	47.956	-	47.956	48.421	60.890	66.628	58.479	Continuing	Continuing
P830: <i>RDT&E Architecture and Integration</i>	-	16.164	10.316	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
P831: <i>Joint Rapid Acquisition Cell Support</i>	-	1.710	1.760	1.819	-	1.819	1.873	1.930	1.987	2.047	Continuing	Continuing
P833: <i>Strategic Multi-Layered Assessment (SMA) Support</i>	-	0.000	1.970	2.029	-	2.029	2.100	2.163	2.227	2.303	Continuing	Continuing

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

The Quick Reactions Special Projects (QRSP) Program supports five separate projects that provide rapid funding to expedite development and transition of new technologies to the warfighter. These projects are: 1) Quick Reaction Fund (QRF); 2) Rapid Reaction Fund (RRF); 3) Research, Development, Test, and Evaluation (RDT&E) Architecture and Integration (RAI) program; 4) Joint Rapid Acquisition Cell (JRAC) support; and 5) Strategic Multi-Layered Assessment (SMA) support. QRSP provides the flexibility to respond to emergent Department of Defense (DoD) issues and address technology surprises and needs within the years of execution outside the two year budget cycle.

The QRF Program objectives are to respond to emergent conventional warfare needs during the execution years that take advantage of breakthroughs in rapidly evolving technologies. The QRF is executed by the Rapid Reaction Technology Office. Examples of the types of projects that are envisioned include: force protection projects to enhance anti-access and area denial capabilities, undersea offensive capabilities and broad electronic warfare capabilities. The QRF focuses on maturing technologies critically needed for the Combatant Commands. QRF projects are typically 12 months in duration and produce prototypes with new capabilities for demonstration and evaluation.

The RRF objectives are to leverage the DoD science and technology (S&T) base and those of the other federal departments, and to provide feedback to the S&T community to guide long term developmental strategies. The RRF is executed by the Rapid Reaction Technology Office (RRTO). RRTO works to anticipate adversaries' exploitation of new technologies and advanced capabilities and develop counters to those capabilities. Additionally, RRTO works to leverage technology developed outside of the DoD in the commercial sector, academia, international arenas, and small, non-traditional businesses to expose them to specific DoD needs areas as identified by Combatant Commanders, Military Service organizations, other Defense agencies and interagency organizations. The typical length of an RRTO

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense	DATE: April 2013
-------------------------------------------------------------------------------------------------	-------------------------

APPROPRIATION/BUDGET ACTIVITY

0400: *Research, Development, Test & Evaluation, Defense-Wide*
 BA 3: *Advanced Technology Development (ATD)*

R-1 ITEM NOMENCLATURE

PE 0603826D8Z: *Quick Reactions Special Projects (QRSP)*

program falls within a 6 to 12 month range in order to more effectively aid the warfighter. The RRF consistently exceeds the transition objective of 30 percent for demonstration programs (DoD Strategic Objective 4-3).

The RDT&E Architecture and Integration (RAI) program objectives are to enhance and expand rapid technology architecture and assessment capabilities in general; and, to enhance the Joint Experimentation Range Complex (JERC), Stiletto maritime test platform and the Thunderstorm ISR exercise series. The JERC provides a venue to evaluate a wide range of new technologies in a desert environment. The requested funding will also support Stiletto, a maritime test vessel that routinely hosts numerous new technologies for evaluation in a maritime environment. Thunderstorm, an ongoing Intelligence, Surveillance, and Reconnaissance (ISR) exercise series, is also supported by this budget line. Thunderstorm brings emerging ISR technologies together in a common architecture for exercise and operational demonstration.

The JRAC Program objectives focus on responding to Joint Urgent Operational Needs (JUONS) that have been submitted by Combatant Commanders and validated by the Joint Staff. In addition, the JRAC's objectives are to manage the delivery of capabilities as requested by the Combatant Command (COCOM) in a time frame acceptable to the COCOM. Efforts, in most instances, are conducted outside of the processes described in the Defense Acquisition System in DoD Directive 5000.1 and utilize contingency and other rapid acquisition authorities.

The SMA cell program objective is to support all Combatant Commands (COCOMs), Joint Force Commanders, and other government agencies by assessing complex operational/technical challenges which require multi-agency and multi-disciplinary approaches. With input from across the United States Government, academia, and the private sector, the SMA cell develops solution options to COCOM generated challenging problems and informs the command's senior leadership. Each SMA cell effort is initiated at the request of COCOM senior leadership. Priorities for SMA Cell programs are set by the Joint Staff Deputy for Operations. Products are typically produced within six months and directly contribute to the decision-making process of the COCOM's senior leaders.

B. Program Change Summary (\$ in Millions)	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total
Previous President's Budget	58.970	107.002	88.155	-	88.155
Current President's Budget	63.029	107.002	78.532	-	78.532
Total Adjustments	4.059	0.000	-9.623	-	-9.623
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	4.077	-			
• SBIR/STTR Transfer	-	-			
• Baseline Adjustments	-	-	-9.623	-	-9.623
• Other Adjustments	-0.018	-	-	-	-

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 3: Advanced Technology Development (ATD)	R-1 ITEM NOMENCLATURE PE 0603826D8Z: Quick Reactions Special Projects (QRSP)	
Change Summary Explanation FY 2012: Increase of \$4.059 million is due to a reprogramming of \$5.900 million to support Cloudbreak command and control architecture efforts, and net adjustments of -\$1.841 million from SBIR/STTR and other reprogrammings and adjustments to support OSD efforts. FY 2014: Decrease of \$9.623 million is a baseline adjustment reflective of DoD priorities and requirements.		

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 3: Advanced Technology Development (ATD)					R-1 ITEM NOMENCLATURE PE 0603826D8Z: Quick Reactions Special Projects (QRSP)				PROJECT P826: Quick Reaction Fund			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
P826: Quick Reaction Fund	-	15.044	37.902	26.728	-	26.728	28.189	29.400	32.496	28.396	Continuing	Continuing

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

The Quick Reaction Special Projects (QSRP) Program supports five separate projects that provide rapid funding to expedite development and transition of new technologies to the warfighter. The QSRP Program provides the flexibility to respond to emergent DoD issues and addresses technology surprises and needs that may arise outside the two year budget cycle.

The Quick Reaction Fund (QRF) Program provides the Services, Components, Combatant Commands (COCOMs), and force providers opportunities to capitalize on technologies that are at a relatively high Technology Readiness Level (TRL) and to rapidly field-test promising new operational prototypes that can have immediate impact on military operations. QRF initiatives are limited to those that will deliver a military operational prototype application within twelve months of being funded.

The QRF Program also focuses on projects that have the potential to address conventional, disruptive, catastrophic, and irregular threats. More specifically, initiatives that address the following interest areas: Anti-Access and Area Denial; Base Protection; Electromagnetic Bandwidth and Spectrum Enhancement; Persistent Intelligence, Surveillance, and Reconnaissance (ISR); Newly Emerging National Threats; Directed Energy Capabilities; Low-Cost Precision Engagement Capabilities; Operational Field Demonstrations; Unmanned and Robotics Systems; Over the Horizon-Radar Technologies; and Counter-Electronic Warfare Technologies.

In FY 2013 and FY 2014, the QRF Program will continue to identify and fund new projects that respond to critical operational needs and new technology opportunities. Current and future efforts that show significant effectiveness can be leveraged by additional investments in order to accelerate transition to operational forces.

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2012	FY 2013	FY 2014
Title: Matsu	4.229	0.000	0.000
Description: Project Matsu was an open source software project that uses data mining frameworks and related applications for processing very large amounts of hyper-spectral data, and other large Intelligence, Surveillance and Reconnaissance (ISR) data sets. Matsu utilized unique analytics to discover changes and other significant features in cubes of hyper-spectral data. Quick detection of changes in hyper-spectral data improves situational awareness, which can protect the warfighter. A typical architecture for processing hyper-spectral data today uses a file system to store the data, a relational database to store the metadata, and custom code to process the data. The Matsu system is based upon open source software architecture that can efficiently process very large amounts of data.			
FY 2012 Accomplishments:			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603826D8Z: <i>Quick Reactions Special Projects (QRSP)</i>	PROJECT P826: <i>Quick Reaction Fund</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
Matsu resulted in the development of an open source system that can process and analyze very large cubes of hyper-spectral data as well as other large ISR data sets efficiently. This enabled remote data processing, which in turn reduces the forward deployed logistics and manpower footprint. Matsu worked with the National Security Agency (NSA) Cyber Pilot to transition the technology to the Services.			
Title: Home on Global Positioning System (GPS) Jammer Study Description: This effort supported the development of GPS Jammer homing munitions. The effort investigated currently inventoried weapon systems to identify those most acceptable for modification into a Home on GPS Jammer capable system. Key factors used to determine weapon feasibility included integration complexity/cost, weapon cost, weapon employment concept, weapon delivery platforms and capability delivered to the warfighter. Follow-on work identified the mechanical and electrical interface integration requirements for the selected platform(s). FY 2012 Accomplishments: The Home on GPS Jammer project identified the most appropriate candidate weapons from within current weapons systems inventory suitable for modification to achieve a Home on GPS Jammer capability, identified the interface and modifications required to enable direct attack of GPS jammers and provided an engineering prototype to facilitate follow-on development.		1.529	0.000
Title: CAESAR Description: The CAESAR project developed and demonstrated a new collection system for a specific class of electronic signals. Current collection of these signals was lacking and CAESAR provided a cost-effective, scalable solution. The data provided by CAESAR is structured to support DoD customers through system characterization and near real-time notification. The details of this project are classified. FY 2012 Accomplishments: CAESAR achieved its project objectives on schedule and capabilities developed during this project were delivered and accepted by operational users. Details are classified.		3.444	0.000
Title: Small Boat Radar Description: The Small Boat Radar project developed algorithms that were incorporated in a commercial radar system. The resulting capability will fill a COCOM's need. Details are classified. FY 2012 Accomplishments: The project launched in late FY 2012. FY 2013 Plans:		2.730	0.000

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603826D8Z: <i>Quick Reactions Special Projects (QRSP)</i>	PROJECT P826: <i>Quick Reaction Fund</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
The prototype system will be fielded for an operational evaluation. The project will be completed later in FY 2013.				
Title: Positioning, Navigating, and Timing (PNT) Demonstration in Triple Canopy Description: The Positioning, Navigating, and Timing (PNT) Demonstration in Triple Canopy project executed a demonstration of iGPS in triple canopy and contested environments. FY 2012 Accomplishments: The PNT Demo executed field testing and utility evaluations of High Integrity Global Positioning System (iGPS) prototype Core Modules in operational-like testing with the Marines. The project will continue into FY2013. FY 2013 Plans: Tests along with pre-acquisition risk reduction activities planned will enable transition of the iGPS program to an ACAT III Program of Record. FY 2014 Plans: ACAT III Program of Record will begin.		3.112	0.000	0.000
Title: Over the Horizon Radar (OTHR) Scan Description: The Over the Horizon Radar (OTHR) Scan project developed a robust electronic attack approach to deny/interrupt the wide area sensing capability of adversary detection, tracking and targeting sensors that jeopardize the free movement of US Naval forces. A self-contained small deployable prototype was used to verify system level capability. FY 2013 Plans: OTHR Scan will be tested in a laboratory and limited operational settings. Data collection will focus on the protection of small air and maritime targets. This effort will be completed later this year.		0.000	3.751	0.000
Title: Anti-Access/Area Denial Description: In FY 2013 and FY 2014, the focus areas will be in projects that concentrate on developing capabilities in anticipation of emerging needs to mitigate losses due to the effect of Electronic Warfare (EW) in the air-to-air engagement. The Rapid Reaction Technology Office (RRTO) will ensure the QRF efforts are not duplicative with other electromagnetic bandwidth and spectrum enhancement efforts and will seek to leverage other such efforts. FY 2013 Plans: Anti-Access/Area Denial investment decisions during the budget year will respond to Combatant Command (COCOM), Service and other government organization requirements and as new threats emerge or new opportunities are presented. Research and coordination with organizations throughout DoD, Federally Funded Research and Development Centers (FFRDCs), other		0.000	3.750	5.183

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603826D8Z: <i>Quick Reactions Special Projects (QRSP)</i>	PROJECT P826: <i>Quick Reaction Fund</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
government agencies, industry and academia will help identify areas critical to developing future anti-access/area denial technological enhancement efforts. Anticipate funding seven projects. FY 2014 Plans: As emerging requirements and threats within the Anti-Access/Area Denial focal area surface, programmatic and investment decisions will be resourced to respond to COCOM, Services and other government organizations' requirements. Anticipate funding nine projects.				
Title: Electromagnetic Bandwidth and Spectrum Enhancement Description: In anticipation of emerging needs, the focus areas for FY 2013 and FY 2014 include: technologies to reduce prime power, weight and space of radio frequency (RF) components, and increase level of integration of related components. In addition, projects will include novel bandwidth compression techniques with emphasis on on-board data processing and size reduction technologies. The Rapid Reaction Technology Office (RRTO) will ensure the QRF efforts are not duplicative with other Electromagnetic Bandwidth and Spectrum Enhancement efforts and will seek to leverage other such efforts. FY 2013 Plans: Electromagnetic Bandwidth and Spectrum Enhancement investment decisions during the budget year will respond to COCOM, Service and other government organization requirements and as new threats emerge or new opportunities are presented. Research and coordination with organizations throughout DoD, FFRDCs, other government agencies, industry and academia will help identify areas critical to developing future Electromagnetic Bandwidth and Spectrum Enhancement efforts. Anticipate the funding of six projects. FY 2014 Plans: As threats and opportunities within the Electromagnetic and Spectrum Enhancement focal areas emerge, programmatic and investment decisions will be resourced to respond to COCOM, Services, and other government organization requirements. Anticipate the funding of three projects.		0.000	11.798	5.182
Title: Undersea Offensive Capabilities Description: In anticipation of emerging needs, the focus areas for FY 2013 and FY 2014 include: undersea weapons or sensor delivery systems to meet critical operation requirements identified by COCOM. The Rapid Reaction Technology Office (RTTO) will ensure the QRF efforts are not duplicative with other Undersea Offensive capability efforts and will seek to leverage other such efforts. FY 2013 Plans: Undersea Offensive Capabilities investment decisions during the budget year will respond to COCOM, Service and other government organization requirements and as new threats emerge or new opportunities are presented. Research and		0.000	9.798	5.181

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603826D8Z: <i>Quick Reactions Special Projects (QRSP)</i>	PROJECT P826: <i>Quick Reaction Fund</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
coordination with organizations throughout DoD, FFRDCs, other government agencies, industry and academia will help identify areas critical to developing future Undersea Offensive Capability efforts. Anticipate the funding of five projects. FY 2014 Plans: As threats and opportunities within Undersea Offensive Capability focal areas emerge, programmatic and investment decisions will be resourced to respond to COCOM, Services, and other government organizations requirements. Anticipate the funding of three projects.			
Title: Operational Field Demonstrations Description: In anticipation of emerging needs, the focus areas for FY 2013 and FY 2014 include: operational prototyping, field demonstrations of technologies, and fully integrated systems in direct response to critical operational needs. Emphasis will be on demonstration of conventional technologies with transition within a period of no more than one year. The Rapid Reaction Technology Office (RTTO) will ensure the QRF efforts are not duplicative with other Operational Field Demonstration efforts and will seek to leverage other such efforts. FY 2013 Plans: Operational Field Demonstrations investment decisions during the budget year will respond to COCOM, Service and other government organization requirements and as new threats emerge or new opportunities are presented. Research and coordination with organizations throughout DoD, FFRDCs, other government agencies, industry and academia will help identify areas critical to Operational Field Demonstrations efforts. Anticipate the funding of three projects. FY 2014 Plans: As emerging requirements, threats and opportunities within the Operational Field Demonstrations focal area surface, programmatic and investment decisions will be resourced to respond to COCOM, Services and other government organizations. Anticipate the funding of three projects.		0.000	8.805
Title: Program Protection of Critical Missions Description: The Department of Defense (DoD) has developed a Trusted Systems strategy which integrates Protection Planning for the development of capabilities, the use of proven mitigation techniques and tools, the ongoing refinement of risk management processes, and creation of needed technology. Current program protection and supply chain risk management efforts primarily target individual Major Defense Acquisition Programs of Record (POR). However, this approach currently lacks a strategic or operational mission focus to identify and assure critical DoD missions, which are comprised of acquisition programs, as well as legacy systems and infrastructure.		0.000	6.000

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>		R-1 ITEM NOMENCLATURE PE 0603826D8Z: <i>Quick Reactions Special Projects (QRSP)</i>	PROJECT P826: <i>Quick Reaction Fund</i>
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
<p>Globalization of Information and Communications Technology (ICT) markets creates unprecedented opportunities for sophisticated adversaries to defeat not only individual systems, but DoD capabilities through supply chain exploits or other malicious tampering. Defense Planning Guidance, Defense Science Board Reports, and recent deliberations on Nuclear Command, Control and Communications have all acknowledged the problem, and identified the requirement to protect critical missions from cyber and supply chain vulnerabilities.</p> <p>This Quick Reaction Fund effort provides funding for the Department to pilot initial activities to develop methodologies to assess critical mission vulnerability to cyber or supply chain exploit, and assess the utility of available tools, processes and models in conducting such a cross cutting vulnerability assessment. This project will seek to demonstrate the application or expansion of current program protection and supply chain methodologies to a mission-level assessment, focusing on selected exemplar missions. This project will result in an identified mission vulnerability assessment method and available tools, as well as critical gaps in tools in order to inform future development and application of this type of assessment as a standard practice.</p> <p><i>FY 2014 Plans:</i> This effort will provide support to Program Protection Planning of Critical Missions through analysis of critical missions to determine critical system dependencies, analysis of critical systems and their linkages to determine vulnerabilities that lead to mission degradation, identification of techniques and toolsets to assess and mitigate vulnerabilities, and identification of gaps where techniques and tools are needed.</p>			
Accomplishments/Planned Programs Subtotals		15.044	37.902
C. Other Program Funding Summary (\$ in Millions) N/A			
Remarks			
D. Acquisition Strategy N/A			
E. Performance Metrics In FY 2014, generic performance metrics applicable to the Quick Reaction Fund (QRF) includes attainment of DoD Strategic Objective 3.5.2D. The title of this objective is "Maintain a strong technical foundation within the Department's Science and Technology (S&T) program" and the metric for this objective is to transition 40 percent of completing demonstrations per year. Each project has a period of performance of approximately 12 months. All QRF projects are monitored for schedule deviation, transition outcome, reporting requirements and deliverables such as test reports, studies, components, and equipment. For projects that were completed in FY 2012, the QRF achieved a transition rate of approximately 88 percent.			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE				PROJECT			
0400: Research, Development, Test & Evaluation, Defense-Wide BA 3: Advanced Technology Development (ATD)					PE 0603826D8Z: Quick Reactions Special Projects (QRSP)				P828: Rapid Reaction Fund			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
P828: Rapid Reaction Fund	-	30.111	55.054	47.956	-	47.956	48.421	60.890	66.628	58.479	Continuing	Continuing

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

The Quick Reaction Special Projects (QSRP) Program supports five separate projects that provide rapid funding to expedite development and transition of new technologies to the warfighter. The QSRP Program provides the flexibility to respond to emergent DoD issues and addresses technology surprises and needs that may arise outside the two-year budget cycle.

The Rapid Reaction Fund (RRF) is fully executed through the Rapid Reaction Technology Office (RRTO). The RRTO was established to provide rapid response to enhance operations in Iraq, Afghanistan and other theaters; and, to accelerate the transition of high-potential science and technology (S&T) projects into operationally useful products in the execution years. The RRTO leverages the Department of Defense (DoD) S&T base and those of the other Federal Departments; stimulates interagency coordination and cooperation; accelerates the fielding of capabilities and concepts to counter emerging threats; and, provides feedback to the S&T community to guide long term developmental strategies. With projects supporting each Combatant Command and with a global perspective, the RRTO anticipates adversaries' exploitation of technology, including available and advanced commercial capabilities.

In prior years, RRTO has explored methods and approaches of persistent surveillance stimulation for counter-insurgency; developed alternate power sources for sensors and systems; expanded human, social and cultural knowledge; increased small unit situational awareness; advanced the interface between law enforcement and military operations; developed biometrics and forensics capabilities; supported denied area operations; strategic multi-layer assessments; and, established an innovation outreach cell that is facilitating better interactions with small companies with emerging technologies that do not normally do business with the DoD.

In FY 2013 and FY 2014, RRTO will continue to explore new and emerging capabilities to support irregular warfare operations while working to support the Under Secretary of Defense (Acquisition Technology & Logistics) (USD (AT&L)), the Assistant Secretary of Defense (Research and Engineering) (ASD(R&E)) and the Deputy Assistant Secretary of Defense, Rapid Fielding (DASD RF) goals. With project selection occurring during the execution year, the RRTO's potential focus areas for FY 2013 and FY 2014 Rapid Reaction Technology Office projects include: Forward Operating Base (FOB) protection; persistent Intelligence, Surveillance, and Reconnaissance (ISR) architecture; ISR sensors; interface of law enforcement and military operations; biometrics and forensics S&T; autonomous operations; data processing, exploitation and dissemination (PED); cyber security; exploitation of new and emerging cell phone technologies; support to border patrol initiatives; counter proliferation initiatives; capabilities to exploit denied areas; strategic communications and multi-layer assessments; and, non-traditional approaches to leverage innovative businesses.

The typical length of a RRTO project falls within a 6 to 12 month range in order to more effectively respond to the Warfighter.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603826D8Z: <i>Quick Reactions Special Projects (QRSP)</i>	PROJECT P828: <i>Rapid Reaction Fund</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
Title: Multiple Projects Less Than One Million Dollars Each		26.413	0.000
<p>Description: The Rapid Reaction Fund completed and transitioned multiple minor resource projects in the areas of Unmanned Autonomous Vehicles, Detection of Explosives and Weapons of Mass Destruction, Deterrence of Violent Extremism, Exploitation of Off-the-Shelf Technology, Exploitation of Communications Technologies, Small Footprint Operations, and other emerging technology areas. These projects delivered prototypes for evaluation or assessment to warfighters and interagency users. FY 2013 minor resource projects include: Three-dimensional (3D) Thermal FOPEN Imaging, Perseus (non-traditional unmanned underwater vehicle development), Exploiting Space-Based Assets, Aluminum Combustion, Motion Imagery Synthetic Aperture Radar (MISAR), SATCOM High Data Rate Demonstration, Accedo (Doppler-based geolocation), Arms Verification and Control Unmanned Aerial Vehicle (UAV) Testbed, Humanitarian Data Mining, Mobility Applications, Railgun Study, TIDES (exploitation of vehicle tire pressure monitoring systems), Anvil (exploitation of cell phone technology), XCapture (knowledge capture and management system), Enhanced Tactical High Frequency Exploitation (ETHEX), Self-contained Underwater Dispersant Delivery System (SCUDDS), Just Doesn't Look Right (documentation of expertise and first-hand experience in identification of suicide bombers), Language Exploitation and Analysis from Dynamic Sources, Undersea Technologies Course, Assessment and Visualization of Nuclear Proliferation, Heterogeneous Cooperative Unmanned Vehicles, CellRad (radiation detection by cell phones), RealVision Eye Display (high-definition, three-dimensional display compatible with night vision cameras), SHARC Byte (exfiltration of data from unmanned underwater vehicle), CyPhy (tethered unmanned aerial vehicle), FMV-On-Target, Dynamic Photoacoustic Spectroscopy, HARE (detection of trace explosives in human hair), Tire Ball (low-weight multi-cell tire inflation system to enable operational vehicles to run with multiple punctures), Interactive Causal Decision Aid, Instant Eye (low-cost micro-UAV), Tertiary Proliferation Signatures, Anti-Swimmer (a distributed underwater harbor detection system), Iris on Android (biometric iris identification on android smartphones), High Temperature Carbon Nanotube Composite, Solar Hydrogen Subsystem, Technology Solutions for Manufacturing Advanced Products, TriBand SlimSAR (tri-band single aperture radar capable of being flown on a medium-sized UAV), Technology Assessments for Innovative Solutions, Nadir-Looking SAR, Multi-Sensor Airborne Intelligence, Reconnaissance, and Surveillance, and Human-Propelled Mini-Submarine.</p> <p>FY 2012 Accomplishments: The following projects were completed and transitioned to operational users: 3D Thermal FOPEN Imaging, Perseus, Exploiting Space-Based Assets, Aluminum Combustion, MISAR, ACCEDO, Arms Verification and Control UAV Testbed, Humanitarian Data Mining, Mobility Applications, Railgun Study, TIDES, XCapture, ETHEX, SCUDDS, Just Doesn't Look Right, Language Exploitation and Analysis from Dynamic Sources, Undersea Technologies Course, Assessment and Visualization of Nuclear Proliferation, Heterogeneous Cooperative Unmanned Vehicles, CellRad, RealVision Eye Display, SHARC Byte, IBEAM, CyPhy, FMV-On-Target, Dynamic Photoacoustic Spectroscopy, HARE, Tire Ball, Instant Eye, Tertiary Proliferation Signatures, Anti-Swimmer, Iris on Android, High Temperature Carbon Nanotube Composite, Solar Hydrogen Subsystem, Technology Solutions for</p>			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603826D8Z: <i>Quick Reactions Special Projects (QRSP)</i>	PROJECT P828: <i>Rapid Reaction Fund</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
Manufacturing Advanced Products, TriBand SlimSAR, Multi-Sensor Airborne Intelligence, Reconnaissance, and Surveillance, and Human-Propelled Mini-Submarine.				
Title: Tech Assessments Description: The Joint Experimental Range Complex (JERC) is a remote test site located at the Yuma Proving Grounds (YPG) that is designed to rapidly evaluate prototype technologies. These limited proof-of-concept evaluations allow for integration and development of Intelligence, Surveillance, and Reconnaissance (ISR) training and Concept of Operation (CONOPS) development. Since its establishment in late FY 2003, the Rapid Reaction Technology Office (RRTO) has sponsored evaluation of more than 275 systems at the JERC. This funding is utilized to provide assessments of technology and contribute to emergent upgrades to capabilities to the site. FY 2012 Accomplishments: Executed six two-weeks evaluation periods for interested industry and government representatives to test emerging capabilities in a realistic desert environment. Use of the results of these evaluations has informed the development/procurement process for future enhanced capabilities and informed operational users of capabilities in development. FY 2013 Plans: Conduct two two-weeks evaluation periods for interested industry and government representatives to test emerging capabilities in a realistic desert environment. Use the results of these evaluations to inform the development/procurement process for future enhanced capabilities and to inform operational users of capabilities in development. FY 2014 Plans: Conduct six two-weeks evaluation periods for interested industry and government representatives to test emerging capabilities in a realistic desert environment. Use the results of these evaluations to inform the development/procurement process for future enhanced capabilities and to inform operational users of capabilities in development.		1.395	0.250	1.750
Title: South Asia (SA) Geo-Political Stability Description: In FY 2012, SMA conducted an assessment on South Asia (SA) Geo-Political Stability. This effort was an assessment of regional stability in SA, and included identifying both direct drivers of interstate conflict, as well as, sources of internal instability that allow safe haven for violent extremist organizations and exacerbate interstate tensions. This assessment directly assisted in decision making, as well as, crisis planning, involving either India, Pakistan or both. FY 2012 Accomplishments: The SA Stability effort's sub-elements produced a Regional Risk Assessment which integrated the results of several Director of National Intelligence/National Intelligence Council strategic gaming efforts with George Mason University Strategic Modeling into a conflict escalation/de-escalation assessment. The effort also provided a Sub-regional Risk Assessment comprised of U. S.		2.303	2.000	2.100

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603826D8Z: <i>Quick Reactions Special Projects (QRSP)</i>	PROJECT P828: <i>Rapid Reaction Fund</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
<p>Army Training and Doctrine Command and Private Industry, modeling efforts of crisis scenarios as well producing a background report of the confluence of Violent Extremist Organizations (VEO) and criminal networks all of which fed into the Department of Energy National labs' vulnerability and risk assessments. Finally the effort converged on developing approaches to countering instability. The reports have helped inform the U.S. Central Command, U.S. Pacific Command, and U.S. Strategic Command decision making processes.</p> <p>FY 2013 Plans: U.S. CENTCOM has requested a follow-on effort to the South Asia Assessment. This follow on effort will examine the assessment of regional stability in SA and will identify both direct drivers of interstate conflict as well as sources of internal instability. Internal instability which allows for VEO safe havens that may spill-over into, and exacerbate interstate tensions. The stability and instability factors in the assessment include: (1) Ethnic divisions, recent anti-regime opposition movements, and other sources of internal social, economic and governing instability that may lead to state failures of various kinds; (2) The domestic and external factors driving regional actors – both state and non-state, (3) The contagion dynamics – including social media and shared narratives -- that transfer instability within and across state borders. This effort will assist Combatant Command (COCOM) planners in assessing strategic long-term and short-term regional stability. It will also assist the planners in assessing sub-regional stability through various short-term excursions, a threat scenario, and a conflagration scenario. This effort will also examine long-term decline and will propose a multi-generational Security Strategy Concept designed to avoid conflagration. The payoff to the warfighter will be a detailed, classified multi-method assessment of regional conditions combined with unclassified (e.g., academic, Subject Matter Expert, etc.) input not generally found in U.S. Government work.</p> <p>FY 2014 Plans: Continue to actively work with the COCOMs and the Joint Staff to identify challenging problems that are not within the traditional areas of DoD expertise. These problems will be in direct support of the COCOMs and may include areas such as: counter terrorism; counter weapons of mass destruction (state and non-state); counter global or regional social and cultural assessments; and, individual state or national level deterrence studies.</p>				
<p>Title: Biometrics and Forensics Science and Technology Focus Area (FY 2013 and FY2014 New Start Focal Area Plans)</p> <p>Description: Focal area for FY 2013 and FY 2014 Biometrics and Forensics Science and Technology projects will address the technology gaps that limit our ability to quickly and accurately identify anonymous individuals who threaten our physical and virtual assets either overseas or in the Homeland. Additionally, the biometrics and forensics projects will collaborate with interagency partners to attribute enemy activity to a specific individual; and, will operationally evaluate and test biometrics and forensics systems and technologies. Biometrics and Forensics projects will develop emerging technologies that support evolving identity operations and forensic capabilities required by commanders and warfighters in ongoing and future military activities.</p> <p>FY 2013 Plans:</p>		0.000	5.000	5.000

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603826D8Z: <i>Quick Reactions Special Projects (QRSP)</i>	PROJECT P828: <i>Rapid Reaction Fund</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
<p>The biometric portfolio will support gaps identified by commanders in the areas of increasing standoff distance for collection, exploration of the use of emerging biometric modalities and collection of biometric data from non-cooperative subjects. The forensic portfolio will support gaps identified by commanders in the areas of reducing time to collect forensic data, improving accuracy of analysis of data, increasing the types of forensics data collected and increasing the amount of analysis that can be done in a field environment vice a laboratory environment. Projects will be selected after coordination throughout DoD and across other U.S. Government Departments and Agencies to maximize collaborative investment and prevent redundant research.</p> <p>FY 2014 Plans:</p> <p>The biometric portfolio will support gaps identified by commanders in the areas of increasing standoff distance for collection, exploration of the use of emerging biometric modalities and collection of biometric data from non-cooperative subjects. The forensic portfolio will support gaps identified by commanders in the areas of reducing time to collect forensic data, improving accuracy of analysis of data, increasing the types of forensics data collected and increasing the amount of analysis that can be done in a field environment vice a laboratory environment. Projects will be selected after coordination throughout DoD and across other U.S. Government Departments and Agencies to maximize collaborative investment and prevent redundant research.</p>				
<p>Title: Commercial Product Vulnerabilities and Applications (FY 2013 and FY 2014 New Start Focal Area Plans)</p> <p>Description: Focal area for FY 2013 and FY 2014 Commercial Product Vulnerabilities and Applications projects will explore the use of commercial-off-the-shelf products to address immediate operational needs. This focus area identifies and exploits technological advances made by commercial industry which may have immediate military utility. These projects also explore the vulnerabilities of readily available technology used by adversaries.</p> <p>FY 2013 Plans:</p> <p>RRF investment decisions are made during the execution years in response to COCOMs, Service and other government organizations' requirements and as new threats emerge or new opportunities are presented. Research and coordination with organizations throughout DoD and other government agencies will help identify areas critical to developing future capabilities to identify commercial product vulnerabilities and applications. Anticipate supporting six to eight projects.</p> <p>FY 2014 Plans:</p> <p>RRF investment decisions are made during the execution years in response to COCOMs, Service and other government organizations' requirements and as new threats emerge or new opportunities are presented. Research and coordination with organizations throughout DoD and other government agencies will help identify areas critical to developing future capabilities to identify commercial product vulnerabilities and applications. Anticipate supporting five to six projects.</p>		0.000	6.439	5.307
Title: Red Teaming in Support of Rapid Fielding (FY 2013 and FY 2014 New Start Focal Area Plans)		0.000	6.669	5.510

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603826D8Z: <i>Quick Reactions Special Projects (QRSP)</i>	PROJECT P828: <i>Rapid Reaction Fund</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
<p>Description: Focal area for FY 2013 and FY 2014 Red Teaming projects will assess the susceptibility of rapidly fielded capabilities to be defeated by parties not intimately familiar with the technology. RRTO will leverage the innovative capabilities of Federally Funded Research and Development Centers, academia, and industry to develop a construct that current or future systems can be gamed against in a distributed table top environment against traditional and non-traditional players. Deliverables will inform enhancement decisions and Concept of Operations development.</p> <p>FY 2013 Plans: RRF investment decisions are made during the execution years in response to COCOMs, Service and other government organizations' requirements and as new threats emerge or new opportunities are presented. Research and coordination with organizations throughout DoD and other government agencies will help identify key technologies and systems to be assessed by red teams. Deliverables will include recommendations on system operational employment, potential vulnerabilities, likely countermeasures taken by the threat, and potential counter-countermeasures to increase functionality or operational effectiveness of the system. Anticipate supporting five to six projects.</p> <p>FY 2014 Plans: RRF investment decisions are made during the execution years in response to COCOMs, Service and other government organizations' requirements and as new threats emerge or new opportunities are presented. Research and coordination with organizations throughout DoD and other government agencies will help identify key technologies and systems to be assessed by red teams. Deliverables will include recommendations on system operational employment, potential vulnerabilities, likely countermeasures taken by the threat, and potential counter-countermeasures to increase functionality or operational effectiveness of the system. Anticipate supporting four to five projects.</p>			
<p>Title: Open Source Data Analysis and Applications (FY 2013 and FY 2014 New Start Focal Area Plans)</p> <p>Description: Focal area for FY 2013 and FY 2014 Open Source Data Analysis and Applications projects include the development of capabilities, software, and tools to analyze open source information. The data can be structured or unstructured and will include inputs from a broad spectrum of sources.</p> <p>FY 2013 Plans: RRF investment decisions are made during the execution years in response to COCOMs, Service and other government organizations' requirements and as new threats emerge or new opportunities are presented. RRF will support development of open source data analysis tools and applications. Anticipate supporting four to five projects. Deliverables will include capabilities and tools to exploit open source information and to reduce manpower required to analyze open source documents.</p> <p>FY 2014 Plans:</p>		0.000	4.851

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603826D8Z: <i>Quick Reactions Special Projects (QRSP)</i>	PROJECT P828: <i>Rapid Reaction Fund</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
RRF investment decisions are made during the execution years in response to COCOMs, Service and other government organizations' requirements and as new threats emerge or new opportunities are presented. RRF will support development of open source data analysis tools and applications. Anticipate supporting three to four projects. Deliverables will include capabilities and tools to exploit open source information and to reduce manpower required to analyze open source documents.				
Title: Countering Violent Extremism and Planning Support (FY 2013 and FY 2014 New Start Focal Area Plans) Description: Focal area for FY 2013 and FY 2014 Countering Violent Extremism and Planning Support projects include studies of violent groups, collection of best-practices from a variety of federal organizations, deterrence, social network analysis, effective communication techniques in tribal environments, science and technical capabilities in support of strategic communications, social analysis to support counter-insurgency efforts and development of multi-disciplinary multi-agency approaches to complex operational challenges. These studies will inform decision makers and facilitate development of capabilities to counter violent extremism. FY 2013 Plans: RRF investment decisions are made during the execution years in response to COCOMs, Service and other government organizations' requirements and as new threats emerge or new opportunities are presented. Research and coordination with organizations throughout DoD and other government agencies will help identify areas critical to developing future capabilities to counter the spread of violent extremism. Anticipate supporting seven to eight projects. Deliverables will include strategies and pilot programs to counter violent extremism in theater, analysis of social networks and of the use of social media to proliferate violent extremism, and tools to support communications in theaters of operation. FY 2014 Plans: RRF investment decisions are made during the execution years in response to COCOMs, Service and other government organizations' requirements and as new threats emerge or new opportunities are presented. Research and coordination with organizations throughout DoD and other government agencies will help identify areas critical to developing future capabilities to counter the spread of violent extremism. Anticipate supporting six to seven projects. Deliverables will include strategies and pilot programs to counter violent extremism in theater, analysis of social networks and of the use of social media to proliferate violent extremism, and tools to support communications in theaters of operation.		0.000	5.828	4.766
Title: Innovation Outreach Focus Area (FY 2013 and FY 2014 New Start Focal Area Plans) Description: Innovation Outreach will support the Department of Defense Better Buying Power objectives by leveraging technology and emerging products developed by small, innovative businesses in the commercial sector. Solutions will be sought to meet needs identified by Combatant Commanders, Military Service organizations, other Defense agencies and interagency organizations. The Innovation Outreach Focus Area will support the Department's objectives of promoting effective competition and fielding affordable capabilities by developing new sources of innovation		0.000	1.500	2.782

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603826D8Z: <i>Quick Reactions Special Projects (QRSP)</i>	PROJECT P828: <i>Rapid Reaction Fund</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
from commercial R&D investments. The Innovation Outreach Focus Area will include support of emerging capabilities in Communications, Data and Data Analysis, Alternative Energy, Imagery, Sensors, Social Networking and other areas identified during the execution year.				
FY 2013 Plans: RRF investment decisions are made during the execution years in response to COCOMs, Service and other government organizations' requirements and as new threats emerge or new opportunities are presented. Innovation outreach will plan three engagements with DoD users to areas discussed above.				
FY 2014 Plans: RRF investment decisions are made during the execution years in response to COCOMs, Service and other government organizations' requirements and as new threats emerge or new opportunities are presented. Innovation outreach will plan five engagements with DoD users to areas discussed above.				
Title: Autonomous Systems and Behaviors (FY 2013 and FY 2014 New Start Focal Area Plans)		0.000	6.090	3.877
Description: Focal area for FY 2013 and FY 2014 Autonomous Systems and Behaviors projects include improvements to power systems to facilitate increased performance of unmanned systems, enhanced capabilities for multiple autonomous systems to cooperatively interact, development of sensors for integration aboard unmanned platforms, improvements to data ex-filtration from unmanned sensors and "red teaming" to counter emerging unmanned threats from potential adversaries. These projects will also examine the establishment of common software platforms to reduce development cost, increase collaboration among disparate unmanned vehicles and support rapid customization of autonomous systems' architectures.				
FY 2013 Plans: RRF investment decisions are made during the execution years in response to COCOMs, Service and other government organizations' requirements and as new threats emerge or new opportunities are presented. RRF will support development of unmanned autonomous aerial, surface and subsurface systems. Anticipate supporting five to six projects.				
FY 2014 Plans: RRF investment decisions are made during the execution years in response to Combatant Command (COCOM), Service and other government organizations' requirements and as new threats emerge or new opportunities are presented. RRF will support development of unmanned autonomous aerial, surface and subsurface systems. Anticipate supporting four to five projects.				
Title: Interface of Military Operations with Law Enforcement and Border Patrol (FY 2013 and FY 2014 New Start Focal Area Plans)		0.000	4.912	3.806
Description: Focal area for FY 2013 and FY 2014 Interface of Military Operations with Law Enforcement and Border Patrol new start projects include collaboration and exercises with law enforcement organizations to identify overlap and synergies between				

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603826D8Z: <i>Quick Reactions Special Projects (QRSP)</i>	PROJECT P828: <i>Rapid Reaction Fund</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
military and law enforcement operations, exploitation of law enforcement data for use in an irregular warfare environment, development of improved border protection capabilities that can be used in military base protection and expanding the capabilities of biometrics and forensics tools.				
FY 2013 Plans: RRF investment decisions are made during the execution years in response to COCOMs, Service and other government organizations' requirements and as new threats emerge or new opportunities are presented. Research and coordination with organizations throughout DoD and other government agencies will help identify areas critical to developing future capabilities of interest to multiple federal organizations. Anticipate supporting six to seven projects. Deliverables will include prototype sensors and knowledge management systems, as well as a demonstration of DoD developed technologies that may fulfill Law Enforcement and Border Patrol requirements.				
FY 2014 Plans: RRF investment decisions are made during the execution years in response to COCOMs, Service and other government organizations' requirements and as new threats emerge or new opportunities are presented. Research and coordination with organizations throughout DoD and other government agencies will help identify areas critical to developing future capabilities of interest to multiple federal organizations. Anticipate supporting five to six projects.				
Title: Intelligence, Surveillance, and Reconnaissance (ISR) (FY 2013 and FY 2014 New Start Focal Area Plans) Description: Focal area for FY 2013 and FY 2014 ISR new start projects include improved surveillance sensors, tools to facilitate analysis of large data sets, methods to harvest meaningful intelligence from open and classified sources and establishment of more effective processing, exploitation, and dissemination capabilities to facilitate integration of new and existing systems. Projects in this area generally involve high risk and have high potential reward, and are not being addressed by other organizations. Projects will also explore technologies to improve ISR in denied areas. ISR projects will also evaluate methods of increasing the effectiveness of ISR architectures to maximize the capability delivered to the user and to reduce the amount of human analyst manpower required to produce actionable intelligence.		0.000	5.542	4.601
FY 2013 Plans: RRF investment decisions are made during the execution years in response to COCOM, Service and other government organizations' requirements and as new threats emerge or new opportunities are presented. Research and coordination with organizations throughout DoD and other government agencies will help identify areas critical to developing future ISR capabilities. Anticipate supporting four to five projects. Deliverables will include prototype systems and software for a variety of platforms, as well as analytical capabilities developed to reduce the manpower burden needed to process large sets of ISR data.				
FY 2014 Plans:				

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603826D8Z: <i>Quick Reactions Special Projects (QRSP)</i>	PROJECT P828: <i>Rapid Reaction Fund</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
RRF investment decisions are made during the execution years in response to COCOMs, Service and other government organizations' requirements and as new threats emerge or new opportunities are presented. Research and coordination with organizations throughout DoD and other government agencies will help identify areas critical to developing future ISR capabilities. Anticipate supporting three to four projects. Deliverables will include prototype systems and software for a variety of platforms, as well as analytical capabilities developed to reduce the manpower burden needed to process large sets of ISR data.				
Title: Urban Characterization Focus Areas (FY 2013 and FY 2014 New Start Focal Area Plans) Description: Focal area for FY 2013 and FY 2014 Urban Characterization projects will identify, analyze, and describe typical urban areas for modeling, simulation and planning purposes. These efforts will inform and enable development of intelligence, surveillance and reconnaissance (ISR), electronic warfare, kinetic/non-kinetic and other capabilities needed for future military operations in a wide range of urban areas. FY 2013 Plans: RRF investment decisions are made during the execution years in response to COCOMs, Service and other government organizations' requirements and as new threats emerge or new opportunities are presented. RRF will support development of open source data analysis tools and applications. Anticipate supporting five to six projects. Deliverables will include modeling and simulations systems to support planning efforts. FY 2014 Plans: RRF investment decisions are made during the execution years in response to COCOMs, Service and other government organizations' requirements and as new threats emerge or new opportunities are presented. RRF will support development of open source data analysis tools and applications. Anticipate supporting three to four projects. Deliverables will include modeling and simulations systems to support planning efforts.		0.000	4.812	3.606
Accomplishments/Planned Programs Subtotals		30.111	55.054	47.956
C. Other Program Funding Summary (\$ in Millions) N/A				
Remarks				
D. Acquisition Strategy N/A				

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603826D8Z: <i>Quick Reactions Special Projects (QRSP)</i>	PROJECT P828: <i>Rapid Reaction Fund</i>
E. Performance Metrics <p>In FY 2014, generic performance metrics applicable to the Rapid Reaction Fund (RRF) includes attainment of DoD Strategic Objective 3.5.2D. The title of this objective is "Maintain a strong technical foundation within the Department's Science and Technology (S&T) program" and the metric for this objective is to transition 40 percent of completing project demonstrations per year. In addition, project performance metrics are specific to each effort and include measures identified in the specific project plans. Project completions and success are monitored against schedules and deliverables stated in the proposals and statements of work. The metrics include items such as target milestone dates, production measures, fielding dates, and demonstration goals and dates. For projects completed in FY 2012, the RRF achieved a transition rate of greater than 81 percent.</p>		

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE				PROJECT			
0400: Research, Development, Test & Evaluation, Defense-Wide BA 3: Advanced Technology Development (ATD)					PE 0603826D8Z: Quick Reactions Special Projects (QRSP)				P830: RDT&E Architecture and Integration			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
P830: RDT&E Architecture and Integration	-	16.164	10.316	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
# FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012												
## The FY 2014 OCO Request will be submitted at a later date												
A. Mission Description and Budget Item Justification												
The RDT&E Architecture and Integration (RAI) program objectives are to enhance and expand rapid technology architecture and assessment capabilities in general; and, to enhance the Joint Experimentation Range Complex (JERC), Stiletto maritime test platform and the Thunderstorm ISR exercise series. The JERC provides a venue to evaluate a wide range of new technologies in a dessert environment. The requested funding will also support Stiletto, a maritime test vessel that routinely hosts numerous new technologies for evaluation in a maritime environment. Thunderstorm, an ongoing Intelligence, Surveillance, and Reconnaissance (ISR) exercise series, is also supported by this budget line. Thunderstorm brings emerging ISR technologies together in a common architecture for exercise and operational demonstration.												
With the drawdown of operations in Afghanistan in FY2014, the requirements for many of the assessments supported by this budget line have been greatly reduced. The remaining assessment requirements will be addressed by other Program Elements.												
B. Accomplishments/Planned Programs (\$ in Millions)									FY 2012	FY 2013	FY 2014	
Title: Joint Experimentation Range Complex (JERC) Architecture and Infrastructure Improvement Program									5.731	2.200	0.000	
Description: This program expanded JERC capabilities by increasing radio frequency range when conducting hardware in the loop (HWIL) testing and networking of multiple test sites. This enhancement complemented the Assistant Secretary of Defense (Research and Engineering) (ASD R&E) and Joint Improvised Explosive Device Defeat Organization (JIEDDO) Science & Technology (S&T) investment and acquisition strategy.												
FY 2012 Accomplishments: Projects completed and transitioned included: increase in Radio Frequency Range for Hardware in the Loop (HWIL) testing; Long Term Evolution (LTE) Fourth Generation (4G) cell phone Network Hardware Integration; LTE 4G Network for Remote Sites; Extended Geodetic Reference Stations; and, Remote Base/Repeater Turn-Key System. These enhancements complement the Assistant Secretary of Defense (Research and Engineering) (ASD R&E) and Joint Improvised Explosive Device Defeat Organization (JIEDDO) Science & Technology (S&T) investment and acquisition strategy.												
FY 2013 Plans: Evaluate trends of the emerging threat to blue forces and continue improvements to the testing infrastructure to support evaluation of emerging technologies to counter the evolving threat. Potential future focus areas could include Fifth Generation (5G) cellular												

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603826D8Z: <i>Quick Reactions Special Projects (QRSP)</i>	PROJECT P830: <i>RDT&E Architecture and Integration</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
networks, novel enhanced explosives, comprehensive force protection capabilities, more robust Intelligence Surveillance and Reconnaissance (ISR) sensors and improvements to data handling. These investments will continue to support the ASD(R&E) and JIEDDO S&T investment and acquisition strategy. Anticipate the funding of three projects.			
Title: Cloudbreak Description: The CLOUDBREAK project focused on Command and Control (C2) among all Combatant Commands (COCOMs). CLOUDBREAK drove a common “plug and fight” architecture that provides services and consumes data based on the Defense Information Enterprise Architecture (DIEA) and the Defense Intelligence Information Enterprise (DI2E) frameworks. CLOUDBREAK demonstrated capabilities which can be provided as composable services on the Global Information Grid (GIG). Success was achieved when capabilities based on common standards were incorporated into multiple programs of record and other tools to be employed by multiple COCOMs. The CLOUDBREAK program demonstrated mature capabilities in Cyber, Operations/Intelligence, Situational Awareness and Regional Domain Awareness that meet COCOM priorities. Project details are classified. FY 2012 Accomplishments: Cloudbreak capabilities were incorporated into the DIEA and DI2E framework and are supporting multiple COCOM's. Further details are classified.		10.433	0.000
Title: Stiletto Description: Stiletto is a maritime demonstration platform designed to assist in the rapid transition of emerging technologies across the range of military operations to higher Technology Readiness Levels. The 88-foot long boat is an experimental, all carbon fiber craft that was purposefully designed to rapidly acquire, integrate, and employ new capabilities to explore the military utility of emerging technologies and concepts of operation for special and expeditionary forces. The Stiletto program, managed in partnership with the Naval Surface Warfare Center's Combatant Craft Division and the Naval Air Warfare Center Aircraft Division's Warfare Innovation Cell, streamlines the experimentation process and helps facilitate the rapid demonstration, exploration, and risk reduction of emerging technologies and capabilities. Stiletto's simple application process for experimentation is intended to provide low cost access for industry, government, and academic organizations to install and prove their systems in a realistic maritime environment. The demonstration process also encourages system developers to engage directly with the warfighter in the maritime environment to rapidly adapt technologies around warfighter needs. The Stiletto vessel is home-ported in Norfolk, Virginia. FY 2013 Plans: Stiletto will conduct three Capability Demonstrations in FY 2013, including participation in Trident Warrior and Trident Spectre, in coordination with organizations that include Naval Expeditionary Combat Command, Naval Special Warfare Support Activity-2, US		0.000	3.162
			0.000

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 3: Advanced Technology Development (ATD)		R-1 ITEM NOMENCLATURE PE 0603826D8Z: Quick Reactions Special Projects (QRSP)		PROJECT P830: RDT&E Architecture and Integration
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
Army Watercraft Systems, and the United Kingdom Ministry of Defense. Stiletto will also offer Technology Demonstration periods throughout the year to expand the number of opportunities for non-traditional businesses that have not worked with DoD to utilize Stiletto as a low cost, accessible demonstration venue for maturing their systems in a maritime environment. Priority will be given to demonstrations that directly assist an acquisition program, with specific focus on technology transition.				
Title: Thunderstorm Description: Thunderstorm is an enduring multi-Intelligence technology demonstration for the Office of Secretary of Defense (OSD), interagency partners, Combatant Commanders, Services, academia, government laboratories, and commercial vendors. The demonstration provides an opportunity to evaluate and assess the capabilities of new, emerging and transformational Intelligence, Surveillance, and Reconnaissance technologies, and related information collection, processing, exploitation, and dissemination (PED) capabilities in mission-related, geographically, and operationally relevant environments prior to full-scale employment. Thunderstorm demonstration objectives, performance measures, lessons learned, post-demonstration assessments and data evaluation serve to inform future DoD Intelligence, Surveillance, and Reconnaissance concepts of operations and remote PED capabilities. FY 2013 Plans: Thunderstorm Spirals 13-1 and 13-2 planning began in early FY 2013. Both spirals will build on Spiral 5.0 lessons learned in the Rio Grand Valley Sector. Spiral 13-1's primary focus will be to further characterize and counter asymmetrical maritime threats and inform tactics, techniques, and procedures to detect and discriminate suspicious open water, littoral and maritime-to-land transition activity. Execution of the spring 2013 spiral will leverage partnerships with Customs Border Protection (CBP), Joint Interagency Task Force-South (JIATF-S), Joint Task Force-Northern Command (JTF-N B), the United States Coast Guard (USCG), National Geospatial-Intelligence Agency (NGA), National Reconnaissance Office (NRO), U.S. Southern Command (SOUTHCOM) and U.S. Northern Command (NORTHCOM). Emphasis will be placed on near real-time information dissemination and display. Spiral 13-2 will be executed in summer 2013. This spiral builds upon Spiral 13-1 and places emphasis on the maritime-to-land transition activity and the ability for suspicious actors to quickly dissolve themselves into an urban or rural population.		0.000	3.162	0.000
Title: Tech Assessments Description: The Joint Experimental Range Complex (JERC) is a remote test site located at the Yuma Proving Grounds (YPG) that is designed to rapidly evaluate prototype technologies. These limited proof-of-concept evaluations allow for integration and development of Intelligence, Surveillance, and Reconnaissance (ISR) training and Concept of Operations (CONOPS) development. Since its establishment in late FY 2003, the Rapid Reaction Technology Office (RRTO) has sponsored evaluation of more than 275 systems at the JERC. This funding is utilized to provide assessments of technology and contribute to emergent upgrades to capabilities to the site.		0.000	1.792	0.000

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>		R-1 ITEM NOMENCLATURE PE 0603826D8Z: <i>Quick Reactions Special Projects (QRSP)</i>	PROJECT P830: <i>RDT&E Architecture and Integration</i>
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
FY 2013 Plans: Execute six two-weeks evaluation periods for interested industry and government representatives to test emerging capabilities in a realistic desert environment.			
Accomplishments/Planned Programs Subtotals		16.164	10.316
C. Other Program Funding Summary (\$ in Millions) N/A			
Remarks			
D. Acquisition Strategy NA			
E. Performance Metrics In FY 2013, generic performance metrics applicable to the RDT&E Architecture and Integration initiative includes attainment of DoD Strategic Objective 3.5.2D. The title of this objective is "Maintain a strong technical foundation within the Department's Science and Technology (S&T) program" and the metric for this objective is to transition 30 percent of completing project demonstrations per year. Project performance metrics are specific to each effort and include schedules and deliverables stated in the proposals and statements of work, production measures, fielding dates, and demonstration goals and dates.			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 3: Advanced Technology Development (ATD)					R-1 ITEM NOMENCLATURE PE 0603826D8Z: Quick Reactions Special Projects (QRSP)				PROJECT P831: Joint Rapid Acquisition Cell Support			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
P831: Joint Rapid Acquisition Cell Support	-	1.710	1.760	1.819	-	1.819	1.873	1.930	1.987	2.047	Continuing	Continuing
# FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012												
## The FY 2014 OCO Request will be submitted at a later date												
A. Mission Description and Budget Item Justification												
This funding includes support for the Joint Rapid Acquisition Cell (JRAC) to enable management and tracking of Combatant Commander (COCOM) identified and Joint Staff validated immediate warfighter needs. FY 2012 was the first year for a dedicated funding line for this effort. The funding in this project is under the cognizance of the JRAC and is responsible to:												
(1) Coordinate review of validated Joint Urgent Operational Needs (JUON) and assign responsibility to appropriate DoD Components for timely funding and resolution.												
(2) Serve as the review and approval authority for the DoD Components' strategy to fund and mitigate the identified JUON capability gap.												
(3) Continually assess actions taken by the DoD Components to resolve JUONs and recommend to the Under Secretary of Defense for Acquisition, Technology, and Logistics (USD(AT&L)) any changes determined appropriate to improve their responsiveness to JUONs.												
(4) Provide periodic reports to the Secretary of Defense on new and outstanding JUONs.												
(5) In coordination with Under Secretary of Defense Comptroller (USD(C)), manage the Rapid Acquisition Fund (RAF) to allocate resources to priority unfunded JUONs.												
(6) In coordination with the Office of the Chairman of the Joint Chiefs of Staff and the USD(C), make programmatic, budget, and acquisition recommendations for JUONs and identify capability gaps to the Secretary of Defense.												
B. Accomplishments/Planned Programs (\$ in Millions)										FY 2012	FY 2013	FY 2014
Title: Joint Rapid Acquisition Cell (JRAC) Management Support										1.710	1.760	1.819
Description: This funding is utilized to support the staff manning of the JRAC to enable management and tracking of COCOM identified and Joint Staff validated immediate warfighter needs. This baseline was initiated in FY 2012 to preclude ad hoc and unstable historical programmatic and financial support to the JRAC staff.												
FY 2012 Accomplishments: Supported the JRAC to enable management and tracking of COCOM initiated and Joint Staff validated immediate warfighter needs.												
FY 2013 Plans:												

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603826D8Z: <i>Quick Reactions Special Projects (QRSP)</i>	PROJECT P831: <i>Joint Rapid Acquisition Cell Support</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
Support for the JRAC to enable management and tracking of COCOM initiated and Joint Staff validated immediate warfighter needs. FY 2014 Plans: Support for the JRAC to enable management and tracking of COCOM initiated and Joint Staff validated immediate warfighter needs.			
Accomplishments/Planned Programs Subtotals		1.710	1.760
C. Other Program Funding Summary (\$ in Millions) N/A			
Remarks			
D. Acquisition Strategy NA – Capabilities acquired to fulfill JUONs are provided by other DoD components.			
E. Performance Metrics JRAC performance metrics are specific to each JUON and include measures identified in the management approach for each JUON. In addition, JUON completions and successes are monitored against schedules and deliverables stated in the JUON management approach. The metrics to which JRAC support correlates is to the number of full time personnel identified in the JRAC support contract with associated pay rates and shall not exceed the specified amounts or hourly rates and/or firm fixed price.			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE				PROJECT			
0400: Research, Development, Test & Evaluation, Defense-Wide BA 3: Advanced Technology Development (ATD)					PE 0603826D8Z: Quick Reactions Special Projects (QRSP)				P833: Strategic Multi-Layered Assessment (SMA) Support			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
P833: Strategic Multi-Layered Assessment (SMA) Support	-	0.000	1.970	2.029	-	2.029	2.100	2.163	2.227	2.303	Continuing	Continuing
[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012												
^{##} The FY 2014 OCO Request will be submitted at a later date												
Note The Strategic Multi-Layered Assessment (SMA) project was added in FY 2013 as a result of a net zero functional transfer of resources and mission from United States Strategic Command (USSTRATCOM).												
A. Mission Description and Budget Item Justification The Strategic Multi-Layered Assessment Cell supports all Combatant Commands (COCOMs), Joint Force Commanders and other government agencies by assessing complex operational/technical challenges which require multi-agency and multi-disciplinary approaches. With input from across the United States Government, academia and the private sector, the SMA cell develops solution options to COCOM generated challenging problems and informs the command's senior leadership. Each SMA effort is initiated at the request of senior COCOM leadership. Priorities for SMA problems are set by the Joint Staff Deputy for Operations. Products are typically produced within six months and directly contribute to the decision making process of COCOM's senior leaders.												
B. Accomplishments/Planned Programs (\$ in Millions)									FY 2012	FY 2013	FY 2014	
Title: Strategic Multi-Layered Assessment (SMA)									0.000	1.970	2.029	
Description: The SMA cell develops solution options, not generally found in U.S. Government work, to COCOMs generated challenging problems and informs the command's senior leadership. Each SMA effort is initiated at the request of senior COCOM leadership. Priorities for SMA problems are set by the Joint Staff Deputy for Operations. Products are typically produced within six months and directly contribute to the decision making process of COCOM's senior leaders.												
FY 2013 Plans: At the request of U.S. Pacific Command the SMA cell will undertake a Megacities project. This project consists of three components. The first component is a research study into methods of conducting socio-cultural analysis including remote sensing techniques for collecting indicator variables of resilience and vulnerability within interrelated megacity and rural systems. The second component will be a case analysis of the drivers of and buffers to political, social, economic and environmental instability in the Dhaka, Bangladesh population center. The third component of the study will be an assessment and testing of novel ways to present and visualize megacity stability data. This will benefit COCOM planners with forecasting socio-cultural trends affecting state, regional, or community level stability. Also this effort will answer the need for quantitative stability assessment approaches												

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603826D8Z: <i>Quick Reactions Special Projects (QRSP)</i>	PROJECT P833: <i>Strategic Multi-Layered Assessment (SMA) Support</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
to address key national security considerations including the potential for or resurgence of violent extremism; humanitarian crisis; reinforcement of outlier state behavior and consideration of partner and ally relations.			
FY 2014 Plans: The SMA cell will continue to actively work with the COCOMs and the Joint Staff to identify challenging problems that are not within the traditional areas of DoD expertise. These problems will be in direct support of the Combatant Commanders and may include areas such as: counter terrorism; counter weapons of mass destruction (state and non-state); counter global or regional social and cultural assessments; and, individual state or national level deterrence studies.			
Accomplishments/Planned Programs Subtotals		0.000	1.970
C. Other Program Funding Summary (\$ in Millions)			
N/A			
Remarks			
D. Acquisition Strategy			
N/A			
E. Performance Metrics			
SMA performance metrics are specific to each effort and include measures identified in the specific project plans. In addition, project completions and successes are monitored against schedules and deliverables stated in the execution documents. Each project results are reviewed by a senior review group that is comprised with representatives from the Office of the Secretary of Defense, the Joint Staff, the COCOMs and outside subject matter experts. The ultimate measure of success is adaption and transition of SMA products by the COCOM and supporting entities.			

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY

0400: *Research, Development, Test & Evaluation, Defense-Wide*
BA 3: *Advanced Technology Development (ATD)*

R-1 ITEM NOMENCLATURE

PE 0603828D8Z: *Joint Experimentation*

COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
Total Program Element	-	28.160	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
P808: <i>Joint Experimentation</i>	-	28.160	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

Note

The Joint Experimentation Program Element 0603828D8Z will transfer from OUSD AT&L to The Joint Staff in FY13.

A. Mission Description and Budget Item Justification

The Joint Experimentation (JE) Program Element (PE) (0603828D8Z) provides funding for the Department's Joint Experimentation program—the Department's primary effort for exploring non-materiel solutions to cover joint capability gaps in lieu of materiel solutions requiring new acquisition programs. Consistent with strategic guidance, the JE program targets DoD's highest priority joint capability gaps.

The intent of the JE program is to enable trained, ready and adaptable joint forces, and improve capabilities of the current and future joint force. The JE program focuses on producing new conceptual approaches and proposed solutions to combatant command and Service defined problems through the development of actionable joint force improvement recommendations in the critical considerations of joint doctrine, organization, training, materiel, leadership and education, personnel, facilities, and policy (DOTMLPF-P).

The JE program primarily benefits combatant commanders and Services, and provides collateral benefits to DoD Agencies and the Office of the Secretary of Defense (OSD). JE routinely provides indirect benefit to interagency and multinational partners and international organizations with whom the US participates during coalition operations.

The JE Program is carried out by the JCD&E community, comprised of all combatant commands, the Services, the National Guard Bureau, the Joint Staff, OSD, and several DoD agencies. The Joint Staff leads the JCD&E community. Other participants in JE activities include a broad range of interagency partners as well as multinational, academic, and private sector agencies. The Assistant Secretary of Defense, Research & Engineering (ASD(R&E)) within OSD helps provides oversight to ensure alignment with strategic guidance.

Flexibility is maintained in the JE Program to address emergent requirements identified by DoD leadership. Joint experimentation is complementary to Service experimentation. Where possible, the JCD&E community leverages Service experimentation to address joint challenges. Joint/Service experimentation is coordinated within the JCD&E community to cover gaps and pursue efficiency, and the results are shared throughout the community.

projects are categorized by functional joint capability areas (JCAs) which help enable already-established functional capability boards to rigorously vet JE recommendations among subject matter matters throughout the joint community before those recommendations are approved by the Joint Requirements Oversight Council (JROC). For FY12, these categories include Battlespace Awareness, Logistics, Building Partnerships, Command and Control, Force Application, Net-Centric and Protection.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense				DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY		R-1 ITEM NOMENCLATURE			
0400: Research, Development, Test & Evaluation, Defense-Wide		PE 0603828D8Z: Joint Experimentation			
BA 3: Advanced Technology Development (ATD)					
B. Program Change Summary (\$ in Millions)	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total
Previous President's Budget	28.160	0.000	0.000	-	0.000
Current President's Budget	28.160	0.000	0.000	-	0.000
Total Adjustments	0.000	0.000	0.000	-	0.000
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
Change Summary Explanation					
N/A					

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 3: Advanced Technology Development (ATD)					R-1 ITEM NOMENCLATURE PE 0603828D8Z: Joint Experimentation				PROJECT P808: Joint Experimentation			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
P808: Joint Experimentation	-	28.160	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

Note

The Joint Experimentation Program Element 0603828D8Z will transfer from OUSD AT&L to The Joint Staff in FY13.

A. Mission Description and Budget Item Justification

General Description: The FY 2012 (FY12) JCD&E program of work in addresses key mission areas identified in the 2010 Quadrennial Defense Review and highlighted in the Defense Planning Guidance. Each Joint Capability Area had unique areas of focus:

Battlespace Awareness (BA): The FY12 campaign Included capabilities and concepts required to succeed in preventing proliferation and countering weapons of mass destruction. The scope of the work also includes experimentation to identify and evaluate enabling technologies that lengthen detection ranges and strengthen ISR and communications ties between special and general purpose forces.

Logistics (LOG): Joint Force Commanders require responsive, agile logistics support to project force, sustain operations and ensure freedom of action wherever the force engages and in whatever form the engagement takes. The FY12 JCD&E program of work in LOG addresses existing and projected mission critical capabilities and conceptual gaps required to project, sustain, and employ the joint force in all operations. The scope of work includes experimentation to identify and evaluate enabling technologies and non-materiel solutions that create mechanisms to facilitate more rapid transfer of critical materiel.

Building Partnerships (BP): The FY12 campaign addresses projected mission critical capabilities and concepts required to build security capacity of partner states. The scope of the work includes security and engagement activities per the Capstone Concept for Joint Operations (CCJO) and experimentation to identify and evaluate enabling technologies to enhance US capability to increase the security capacity of partner states. Specific focus areas for FY12 include:

- Strengthen and institutionalize General Purpose Force capabilities in conducting security force assistance missions
- Increase socio-cultural/ human terrain awareness of the force
- Increase information sharing capacity between US and partner states and within partner states
- Develop collaborative planning and assessment tools to support of security force operations
- Improve effective and efficient methods to provision logistical support to partner states

Command and Control (C2): The FY 2012 (FY12) JCD&E program of work in C2 includes projected mission critical capabilities and concepts required to effectively command and control the joint force. Specific focus areas for FY12 include experiments on secure, robust and reliable networks to provide responsive command and control in complex chaotic and degraded information environments to integrate and share information with a full range of partners

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>		R-1 ITEM NOMENCLATURE PE 0603828D8Z: <i>Joint Experimentation</i>	PROJECT P808: <i>Joint Experimentation</i>
<p>Force Application (FA): Joint Force Commanders (JFCs) require improved kinetic or non-kinetic capabilities to maneuver and engage adversaries from political, strategic, operational, and tactical perspectives. The FY 2012 JCD&E program of work in FA addresses projected mission critical capabilities and concepts required to deter and defeat aggression in anti-access/area denial (A2/AD) environments. The scope of work includes experimentation to identify and evaluate enabling technologies that focus on electronic warfare, long range strike, and undersea superiority.</p> <p>Net-Centric: Joint Force Commanders require a framework for full human and technical connectivity and interoperability that allows all DOD users and mission partners to understand and act on information with confidence, and protects information from those who should not have it. The FY 2012 JCD&E program of work in the Net-Centric JCA addresses projected mission critical capabilities and concepts required to deter and defeat aggression in anti-access and area denial (A2/AD) environments. The scope includes experimentation to identify and evaluate enabling technologies that focus assuring access to space and use of space-based assets.</p> <p>Protection (PR): The FY 2012 JCD&E Program of Work (PoW) in PR addresses key capabilities and concepts related to force protection in all domains.</p>			
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
<p>Title: Battlespace Awareness</p> <p>Description: Joint Experimentation in 2012 had significant impact on joint force development under the Battlespace Awareness JCA. The Capstone Concept for Joint Operations-Joint Force 2020 will be tempo setting. It will underlie joint development campaign plans going forward into FY13 and beyond. The Joint Concept for Cyberspace is DoD's first document that links an increasing number of strategy documents on cyber operations to how the future joint force will need to operate in the cyberspace domain. JE initiatives in FY12 led to measurable improvements in surveillance management procedures and also produced a more functional perspective in addressing the assessment of persistent surveillance.</p> <p>FY 2012 Accomplishments: Capstone Concept for Joint Operations – Joint Force 2020</p> <p>Concept Intent: Articulates Chairman's vision of future joint operations in order to guide joint force development towards Joint Force 2020. It also provides a foundation for Chairman's Cross-Functional team focused on development Joint Force 2020.</p> <p>Accomplished in FY12: "CCJO – Joint Force 2020" published, providing a bridge from the new strategy to subordinate operating concepts and doctrine</p> <p>Impact: TBD</p> <p>Joint Integrated Persistent Surveillance (JIPS)</p>		28.160	0.000
			0.000

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>		R-1 ITEM NOMENCLATURE PE 0603828D8Z: <i>Joint Experimentation</i>	PROJECT P808: <i>Joint Experimentation</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
<p>Issue: The Joint Force Commander requires adequate capability to rapidly integrate and focus national to tactical collection assets to achieve persistent surveillance of a designated geographic area or a specific mission set</p> <p>Accomplished in FY12:</p> <ul style="list-style-type: none"> -Updated definition of persistent surveillance in JP 1-02 -Created online course on Integrated Persistent Surveillance via Joint Knowledge Online -Provided substantial input to complementary Commander's Handbook for ISR Operations (J2-led) -Directly informed ISR management tool development (J2-led) -Refined joint accreditation criteria for Service training via JNTC <p>Impact:</p> <ul style="list-style-type: none"> -Timing of persistent surveillance-derived decision support provided to commanders is improved by 22% -Arrival-on-station timing of collection assets is improved by 15% -Initial asset utilization is improved by 5% -Established best practices for surveillance management that now integrate rather than deconflict multi-echelon planning and direction, thereby reducing redundancy and latency in both requirements and collection management -Changed the focus of assessment of persistent surveillance to being effectiveness-centric (i.e. satisfaction of decision support requirements) from being performance-centric (i.e. hours flown) -Over time, platform/sensor/analytical/bandwidth requirements will be reduced (fewer needing to be deployed, operated, serviced/fueled/maintained, and protected) to fulfill a given information requirement set <p>Assessing Deterrence Operations Experiment (ADOE)</p> <p>Issue: The employment of Joint Operational Command Centers to conduct ballistic missile defense (BMD) contingency and crisis action planning requires improvement to reduce intra- and inter-theater capability gaps</p> <p>Accomplished in FY12:</p> <ul style="list-style-type: none"> -Developed a framework for ADO documenting gaps of "what is done" and "what should be done" -Published a Joint Force Guide for ADO <p>Impact: TBD</p> <p>Joint Concept for Cyberspace</p>				

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>		R-1 ITEM NOMENCLATURE PE 0603828D8Z: <i>Joint Experimentation</i>	PROJECT P808: <i>Joint Experimentation</i>
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
<p>Issue: DoD is unable to achieve and sustain cyberspace superiority essential to support and enhance the current and future demands of joint operations at the time and place of the warfighter's choosing, in order to assure mission accomplishment</p> <p>Accomplished in FY12: -Published the Joint Concept for Cyberspace V1.0 -Established a list of required capabilities with a road map for cross-agency acquisition/development strategies -Proposed a concept of operations that can be exercised in select future exercises such as Valiant Shield, Trident Warrior and Northern Edge</p> <p>Impact: Published the bridge between DoD strategy and doctrine that determined future capabilities required for cyberspace superiority.</p> <p>Mobile Maritime Domain Awareness (MDA) Modular Sensor System (MSS) (MDA-MSS)</p> <p>Issue: NORAD and USNORTHCOM, in coordination with US Southern Command and Joint Interagency Task Force South (JIATF-S), seeks to perform an experiment to demonstrate capabilities and emerging technologies to tackle current surveillance gaps and improve maritime awareness in the Caribbean.</p> <p>Accomplished in FY12: -Project initiated to produce baseline analysis of existing systems and operational methods, as well as new innovative technologies.</p> <p>Impact: TBD, but it is expected that an enhanced and integrated surveillance capability, to include a collective surface coastal radar network in the Caribbean AOR, will provide wide-area surveillance tracking of potential maritime threats, in order to protect U.S. and allied equities and citizens in the region.</p>			
Accomplishments/Planned Programs Subtotals		28.160	0.000
C. Other Program Funding Summary (\$ in Millions)			
N/A			
Remarks			
D. Acquisition Strategy			
N/A			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603828D8Z: <i>Joint Experimentation</i>	PROJECT P808: <i>Joint Experimentation</i>

E. Performance Metrics

Performance of Joint Experimentation efforts is measured by successful development of:

- (1) objective assessment and validation of enhanced capabilities enabling the joint force commander to perform joint missions.
- (2) delivery of relevant, intellectually rigorous joint concepts to enhance or change Joint Doctrine.
- (3) confirmed transition of capability/products from experimentation to force implementation through the DOTMLPF-P Change Recommendations (DCR) process.
- (4) identification of innovative integrated solutions and joint interoperability standards for Service and Agency capability developers to pursue through demonstration, acquisition and/or employment.
- (5) resolution of specific joint concept and capability shortfalls delineated through the JCD&E experimentation campaign plan development process.

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE							
0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>					PE 0603832D8Z: <i>DoD Modeling and Simulation Management Office</i>							
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
Total Program Element	-	29.860	47.433	41.370	-	41.370	45.890	48.770	50.052	51.025	Continuing	Continuing
P476: <i>DoD Modeling and Simulation Management Office</i>	-	29.860	36.433	30.370	-	30.370	34.890	37.770	39.052	40.025	Continuing	Continuing
P477: <i>Effects Chain Analyses Cell</i>	-	0.000	11.000	11.000	-	11.000	11.000	11.000	11.000	11.000	Continuing	Continuing

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

Modeling and Simulation (M&S) supports the full range and scope of Department of Defense (DoD) operations. M&S is a key enabler of capabilities supporting real-world applications that underpin innovative solutions meeting national security challenges, act as force multipliers, save resources, and save lives. The DoD Modeling and Simulation Management Office (MSMO), designated by the Under Secretary of Defense for Acquisition, Technology, and Logistics (USD(AT&L)) to be the focal point for DoD M&S, enhances the DoD M&S Enterprise by (1) enabling cooperation and collaboration in identifying, developing and sustaining M&S solutions; and (2) promoting common architectures, standards, and services that improve interoperability, reuse, and cost effectiveness of DoD M&S.

This Program supports the goals of DoD's M&S Strategic Vision, which are:

Goal 1. Standards, architectures, networks and environments that:

- Promote the sharing of tools, data, and information across the Enterprise.
- Foster common formats.
- Are readily accessible and can be reliably applied by users.

Goal 2. Policies at the enterprise level that:

- Promote interoperability and the use of common M&S capabilities.
- Minimize duplication and encourage reuse of M&S capabilities.
- Encourage research and development to respond to emerging challenges.
- Limit the use of models and data encumbered by proprietary restrictions.
- Leverage M&S capabilities across DoD, other government agencies, International partners, industry, and academia.

Goal 3. Management processes for models, simulations, and data that:

- Enable M&S users and developers to easily discover and share M&S capabilities and provide incentives for their use.
- Facilitate the cost-effective and efficient development and use of M&S systems and capabilities.
- Include practical validation, verification, and accreditation guidelines that vary by application area.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense	DATE: April 2013
-------------------------------------------------------------------------------------------------	-------------------------

APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603832D8Z: <i>DoD Modeling and Simulation Management Office</i>
-----------------------------------------------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------

Goal 4. Tools in the form of models, simulations, and authoritative data that:

- Support the full range of DoD interests.
- Provide timely and credible results.
- Make capabilities, limitations, and assumptions easily visible.
- Are useable across communities.

Goal 5. People that:

- Are well-trained.
- Employ existing models, simulation, and data to support departmental objectives.
- Advance M&S to support emerging departmental challenges.

B. Program Change Summary (\$ in Millions)	<u>FY 2012</u>	<u>FY 2013</u>	<u>FY 2014 Base</u>	<u>FY 2014 OCO</u>	<u>FY 2014 Total</u>
Previous President's Budget	29.977	47.433	48.158	-	48.158
Current President's Budget	29.860	47.433	41.370	-	41.370
Total Adjustments	-0.117	0.000	-6.788	-	-6.788
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-0.108	-			
• SBIR/STTR Transfer	-	-			
• Baseline Adjustments	-	-	-6.788	-	-6.788
• Other Adjustments	-0.009	-	-	-	-

Change Summary Explanation

Baseline adjustments are reflective of DoD priorities and requirements.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE				PROJECT			
0400: Research, Development, Test & Evaluation, Defense-Wide BA 3: Advanced Technology Development (ATD)					PE 0603832D8Z: DoD Modeling and Simulation Management Office				P476: DoD Modeling and Simulation Management Office			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
P476: DoD Modeling and Simulation Management Office	-	29.860	36.433	30.370	-	30.370	34.890	37.770	39.052	40.025	Continuing	Continuing

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

Modeling and Simulation (M&S) supports the full range and scope of Department of Defense (DoD) operations. M&S is a key enabler of capabilities supporting real-world applications that underpin innovative solutions meeting national security challenges, act as force multipliers, save resources, and save lives. The DoD Modeling and Simulation Management Office (MSMO), designated by the Under Secretary of Defense for Acquisition, Technology, and Logistics (USD(AT&L)) to be the focal point for DoD M&S, enhances the DoD M&S Enterprise by (1) enabling cooperation and collaboration in identifying, developing and sustaining modeling and simulation solutions; and (2) promoting common M&S architectures standards, and services that improve interoperability, reuse, and cost effectiveness of DoD M&S. The USD(AT&L), under the authority of DoD Directive 5134.1, provides the oversight for this Program Element (PE) with advice and assistance from a flag-officer level M&S Steering Committee. The PE is executed by MSMO in accordance with DoD Directive 5000.59, "Management of Modeling and Simulation;" DoD Instruction 5000.70, "Management of DoD Modeling and Simulation (M&S) Activities;" DoD 4120.24-M, "DoD Standardization Program (DSP) Policies and Procedures;" and DoD Instruction 3200.14, "Principles and Operational Parameters of the DoD Scientific and Technical Information Program."

MSMO is responsible for:

- Executing DoD's M&S Strategic vision.
- Bringing together M&S stakeholders to advise and assist on finding solutions for removing the barriers to interoperability, reuse, commonality, efficiency, and effectiveness.
- Developing and coordinating, with advice and assistance from the M&S Steering Committee, policy/guidance, technology, standards, best practices, and strategic planning processes that promote interoperability and reuse.
- Managing funds to support DoD M&S Enterprise activities.

MSMO also serves as DoD's:

- Lead Standardization Activity (LSA) for managing M&S standards and methodologies.
- Focal point for coordinating DoD M&S outreach activities and interactions within DoD, with other U.S. Government Departments and Agencies, International Allies, industry and academia.

This program supports the goals of DoD's M&S Strategic Vision, which are:

Goal 1. Standards, architectures, networks and environments that:

- Promote the sharing of tools, data, and information across the Enterprise.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>		R-1 ITEM NOMENCLATURE PE 0603832D8Z: <i>DoD Modeling and Simulation Management Office</i>	PROJECT P476: <i>DoD Modeling and Simulation Management Office</i>
<ul style="list-style-type: none"> • Foster common formats. • Are readily accessible and can be reliably applied by users. <p>Goal 2. Policies at the enterprise level that:</p> <ul style="list-style-type: none"> • Promote interoperability and the use of common M&S capabilities. • Minimize duplication and encourage reuse of M&S capabilities. • Encourage research and development to respond to emerging challenges. • Limit the use of models and data encumbered by proprietary restrictions. • Leverage M&S capabilities across DoD, other government agencies, International partners, industry, and academia. <p>Goal 3. Management processes for models, simulations, and data that:</p> <ul style="list-style-type: none"> • Enable M&S users and developers to easily discover and share M&S capabilities and provide incentives for their use. • Facilitate the cost-effective and efficient development and use of M&S systems and capabilities. • Include practical validation, verification, and accreditation guidelines that vary by application area. <p>Goal 4. Tools in the form of models, simulations, and authoritative data that:</p> <ul style="list-style-type: none"> • Support the full range of DoD interests. • Provide timely and credible results. • Make capabilities, limitations, and assumptions easily visible. • Are useable across communities. <p>Goal 5. People that:</p> <ul style="list-style-type: none"> • Are well-trained. • Employ existing models, simulation, and data to support departmental objectives. • Advance M&S to support emerging departmental challenges. 			
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
Title: DoD Modeling and Simulation Management Office		29.860	36.433
Description: Modeling and Simulation (M&S) supports the full range and scope of Department of Defense (DoD) operations. M&S is a key enabler of capabilities supporting real-world applications that underpin innovative solutions meeting national security challenges, act as force multipliers, save resources, and save lives.			
FY 2012 Accomplishments: The focus for FY 2012 was on developing new enterprise strategies; refining data standards and common architectures; populating repositories supporting reuse; rationalizing the use of proprietary tools (consistent with the FAR); improving tools to			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603832D8Z: <i>DoD Modeling and Simulation Management Office</i>	PROJECT P476: <i>DoD Modeling and Simulation Management Office</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
<p>model irregular warfare; enhancing interactions with our international partners; removing barriers to collaboration with industry, academia, interagency partners; and providing M&S education to the workforce.</p> <p>As recognition for some of its efforts, the Modeling and Simulation Coordination Office received the "M&S Standards Guideline" award from The Technical Cooperation Program (TTCP).</p> <p>The tasks executed in FY 2012 divided into three classes: development activities, sustainment activities, and management/coordination activities.</p> <p>Specific tasks for FY 2012 included:</p> <p>Development Activities:</p> <ul style="list-style-type: none"> • Executed DoD M&S Enterprise high level tasks endorsed by the M&S SC: <ul style="list-style-type: none"> --Rapid Data Generation (RDG) and the Environmental Data Cube Support System (EDCSS) for enhanced environmental methodology and tools. --Irregular Warfare (IW) Modeling & Simulation for enhanced analytical capabilities and continued coordination of the development and dissemination of M&S IW tools. --Cyber Operations Research and Network Analysis (CORONA) for new cyber-warfare tools. --LVC-AR Implementation & Net-Centric Environment Implications for integration of disparate M&S architectures. --Integrated Threat Systems Modeling & Simulation for improved representation and implementation of intelligence data. --DoD Enterprise M&S Catalog for improved visibility into DoD M&S assets supporting enhanced interoperability and reuse. • Continued developing Enterprise System Engineering M&S Data requirements, architecture, and standards for M&S Data. • Continued development of the Common Data Production Environment (CDPE) and finalized incremental technical capabilities for the DoD Global Force Management Data initiative. • Initiated new M&S Core enterprise capabilities activities. • Continued revising the Defense Acquisition University (DAU) M&S course content and curriculum to support well-trained M&S workforce. • Developed M&S data enterprise business plan guide, identified and documented M&S data technical, acquisition and sustainment/transition business models for the DoD M&S data enterprise. • Developed Enterprise System Engineering M&S Data requirements, architecture, and standards for M&S Data by initiating development of enhanced and correlated geospatial data discovery using the DoD M&S Discovery Metadata Specification standard and by beginning developmental planning activities for M&S logistics data. • Developed the Planning Community M&S strategic plan in support of overall M&S strategic Planning. 			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense			DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>		R-1 ITEM NOMENCLATURE PE 0603832D8Z: <i>DoD Modeling and Simulation Management Office</i>		PROJECT P476: <i>DoD Modeling and Simulation Management Office</i>	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2012	FY 2013	FY 2014
<ul style="list-style-type: none"> • Produced the M&S Standards Guideline for TTCP. • Led the DoD M&S Enabling Cyber Workshop. • Participated in the inaugural National Modeling and Simulation Coalition conference. • Produced a new M&S Community of Interest (COI) Discovery Metadata Specification (MSC-DMS) version 1.5 for M&S data. • Coordinated the application of EDCSS in a Fleet Synthetic Training (FST) exercise. • Supported the development of new approaches to using M&S in acquisition. <p>Sustainment Activities:</p> <ul style="list-style-type: none"> • Continued managing existing M&S standards. • Continued testing compliance to HLA standard for simulations supporting joint warfighting. • Continued refining and populating the DoD Enterprise M&S catalog making authoritative tools and data more widely accessible and useable. • Maintained and synchronized the MSMO strategic calendar with DoD and international M&S activities. • Sustained the MSMO support agreements and contracts. • Coordinated M&S support contracts reviews. • Coordinated with DHS and DOE for presentation at the 2011 Interservice/Industry Training, Simulation, and Education Conference (I/ITSEC). • Published the M&S Journal. • Maintained the M&S Coordination office website. <p>Management / Coordination Activities:</p> <ul style="list-style-type: none"> • Continued as the DoD Lead Standardization Activity (LSA) for managing M&S standards and methodologies to improve the interoperability and reuse of M&S within the DoD, other U.S. government agencies, and international M&S communities. • Continued serving as the DoD M&S focal point for M&S activities and for collaboration within the DoD. • Planned, prepared, coordinated, and managed the meetings of the flag-officer level DoD M&S Steering Committee (SC) for providing advice and assistance to the USD(AT&L) on M&S. • Planned, prepared, coordinated, and managed the meetings of the DoD M&S Integrated Process Team (IPT) for providing advice and assistance to the M&S Steering Committee. • Published the M&S Instruction (DoDI 5000.70) providing additional direction and guidance for DoD M&S policy and governance. • Continued managing the development of a core technology program to maintain and sustain M&S tools, data, and services vital to the long term success of the DoD M&S Enterprise. • Provided functional oversight and technical direction to DTIC's Modeling and Simulation Information Analysis Center (MSIAC). 					

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense			DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>		R-1 ITEM NOMENCLATURE PE 0603832D8Z: <i>DoD Modeling and Simulation Management Office</i>		PROJECT P476: <i>DoD Modeling and Simulation Management Office</i>	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2012	FY 2013	FY 2014
<ul style="list-style-type: none"> Continued the implementation of metrics for improving the execution of High Level Tasks (HLTs) sponsored by this PE. Coordinated and reviewed four quarterly program management reviews for the High Level Tasks sponsored by this PE. Supported the development and planning of the National Modeling and Simulation Coalition industry technology initiatives. Continued coordination with the Simulation Interoperability Standards Organization (SISO) for governance and development/ voting of M&S standards supporting interoperability. Continued working actively with other standard organizations for the development and promulgation of standards relating to M&S. Served as the DoD M&S focal point for M&S activities and collaboration with non-DoD, federal agencies including the Department of Homeland Security (DHS), the Department of Energy (DOE), the Department of Justice (DOJ), and the National Aeronautics and Space Administration (NASA). Served as the DoD M&S focal point for M&S activities and collaboration with International agencies including NATO, Partnership for Peace (PfP) nations, The Technical Cooperation Program (TTCP), United States Force Korea, Republic of Korea (USFK, ROK) and other Allies. Continued engaging Modeling & Simulation Community of Interest (M&S COI) activities for integrating M&S Enterprise Data requirements into the DoD Wide Net Centric Data Strategy. Managed, supported, and participated in the Data Management Working Group (DMWG) activities to address M&S data specific technical challenges for the HLTs and the DoD M&S data enterprise. Assisted OSD AT&L / STEM Office in development of Science, Technology, Engineering, and Mathematics (STEM) management tool. <p>These tasks continued developing, producing, and applying enterprise-wide planning and best business practices to encourage commonality, interoperability, reuse, and cost savings across the Services, Combatant Commands, and OSD-level activities.</p> <p>FY 2013 Plans: DoD M&S management will sustain and advance the efforts implementing its “Strategic Vision for DoD Modeling and Simulation.”</p> <p>The focus for FY 2013 will be on providing technical expertise and support to smartly develop new common capabilities in an enterprise fashion and manage the proliferation of individual M&S tools by encouraging reuse and interoperability.</p> <p>Development Activities:</p> <ul style="list-style-type: none"> Continue executing DoD M&S Enterprise high level tasks endorsed by the M&S SC. --Rapid Data Generation (RDG). 					

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603832D8Z: <i>DoD Modeling and Simulation Management Office</i>	PROJECT P476: <i>DoD Modeling and Simulation Management Office</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
<p>--Irregular Warfare (IW) Modeling & Simulation for enhanced analytical capabilities and continued coordination of the development and dissemination of M&S IW tools.</p> <p>--Cyber Operations Research and Network Analysis (CORONA) for enhanced cyber-warfare tools.</p> <p>--LVC-AR Implementation & Net-Centric Environment Implications for integration of disparate M&S architectures.</p> <p>--Integrated Threat Systems Modeling & Simulation for improved representation and implementation of intelligence data.</p> <p>--DoD Enterprise M&S Catalog for improved visibility into DoD M&S assets supporting enhanced interoperability and reuse.</p> <ul style="list-style-type: none"> • Continue developing Enterprise System Engineering M&S Data requirements, architecture, and standards for M&S Data. • Continue development of the Common Data Production Environment (CDPE) by finalizing development of enhanced and correlated geospatial data discovery using the DoD M&S Discovery Metadata Specification standard, by continuing incremental developmental of M&S logistics data, and by beginning developmental planning activities for M&S Command & Control data. • Initiate new M&S Core technical enterprise - activities. • Continue revising Defense Acquisition University (DAU) M&S course content and curriculum to support well-trained M&S workforce. • Continue leading the DoD M&S Enabling Cyber Workshops. • Continue updating the MSC-DMS metadata specification for M&S data. • Continue coordinating the use of EDCSS in DoD exercises. • Continue supporting the development of new approaches to using M&S in acquisition. <p>Sustainment Activities:</p> <ul style="list-style-type: none"> • Continue managing existing M&S standards. • Continue testing compliance to HLA standard for simulations supporting joint warfighting. • Continue refining and populating the DoD Enterprise M&S catalog making authoritative tools and data more widely accessible and useable. • Upgrade and maintain the online DoD M&S Glossary for standardization of terminology and increased collaboration across the DoD M&S Enterprise. • Continue maintaining the Modeling and Simulation Coordination office website. <p>Management/Coordination Activities:</p> <ul style="list-style-type: none"> • Continue as the DoD Lead Standardization Activity (LSA) for managing M&S standards and methodologies to improve the interoperability and reuse of M&S within the DoD, other U.S. government agencies, and international M&S communities. • Continue serving as the DoD modeling and simulation focal point for M&S activities and for collaboration within the DoD. • Update DOD M&S policy, currently five years old. 			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense			DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>		R-1 ITEM NOMENCLATURE PE 0603832D8Z: <i>DoD Modeling and Simulation Management Office</i>		PROJECT P476: <i>DoD Modeling and Simulation Management Office</i>	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2012	FY 2013	FY 2014
<ul style="list-style-type: none"> • Continue advising and assisting the USD(AT&L) on M&S. • Continue working groups for providing technical advice and assistance to the M&S Senior Steering Committee. • Work Implementation Plans in coordination with stakeholders for M&S SC Priority Objectives (FY 2014-2018) based on the Strategic Vision for DoD Modeling and Simulation, and initiate actions to begin FY 2014. • Continue managing the development of a core technology program to maintain and sustain M&S tools, data, and services vital to the long term success of the DoD M&S Enterprise. • Transition capabilities formerly assigned to DTIC's Modeling and Simulation Information Analysis Center (MSIAC). • Provide functional oversight and technical direction to M&S portion of DTIC's Cyber Security and Information Systems Information Analysis Center (CSIAC). • Continue coordinating quarterly program management reviews for tasks sponsored by this PE. • Continue coordination with the Simulation Interoperability Standards Organization (SISO) for governance and development/voting of M&S standards supporting interoperability. • Continue serving as the DoD modeling and simulation focal point for M&S activities and collaboration with non-DoD, federal agencies including the Department of Homeland Security (DHS), the Department of Energy (DOE), the Department of Justice (DOJ), and the National Aeronautics and Space Administration (NASA). • Continue serving as the DoD modeling and simulation focal point for M&S activities and collaboration with International agencies including NATO, Partnership for Peace (PfP) nations, The Technical Cooperation Program (TTCP), and other Allies. • Continue to engage Modeling & Simulation Community of Interest (M&S COI) activities for integrating M&S Enterprise Data requirements into the DoD Wide Net Centric Data Strategy. • Continue managing the Data Management Working Group (DMWG) activities to address M&S data technical challenges. <p>FY 2014 Plans: M&S management will sustain and advance the efforts implementing its "Strategic Vision for DoD Modeling and Simulation."</p> <p>The focus for FY 2014 will be on ensuring technical expertise and support capability to enhance the effectiveness of our M&S expenditures through smart development of new common capabilities in an enterprise fashion and by managing the proliferation of individual M&S tools through encouraging reuse and interoperability.</p> <p>Development Activities:</p> <ul style="list-style-type: none"> • Begin implementation of M&S SC Priority Objectives (FY 2014–2018) actions based on the Strategic Vision for DoD Modeling and Simulation. • Continue developing Enterprise System Engineering M&S Data requirements, architecture, and standards for M&S Data. 					

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603832D8Z: <i>DoD Modeling and Simulation Management Office</i>	PROJECT P476: <i>DoD Modeling and Simulation Management Office</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
<ul style="list-style-type: none"> • Continue development of the Common Data Production Environment (CDPE) by finalizing development of enhanced and correlated geospatial data discovery using the DoD M&S Discovery Metadata Specification standard, by continuing incremental developmental of M&S logistics data, and by beginning developmental planning activities for M&S Command & Control data. • Continue revising M&S course content and curriculum to support well-trained M&S workforce. • Continue leading the DoD M&S Enabling Cyber Workshops. • Continue updating the MSC-DMS metadata specification for M&S data. • Continue coordinating the use of EDCSS in DoD exercises. • Continue supporting the development of new approaches to using M&S in acquisition. <p>Sustainment Activities:</p> <ul style="list-style-type: none"> • Continue managing existing M&S standards. • Continue testing compliance to HLA standard for simulations supporting joint warfighting. • Continue refining and populating the DoD Enterprise M&S catalog making authoritative tools and data more widely accessible and useable. • Maintain and synchronize the MSMO strategic calendar with DoD and international M&S activities. • Maintain the online DoD M&S Glossary for standardization of terminology and increased collaboration across the DoD M&S Enterprise. • Continue maintaining the Modeling and Simulation Coordination office website. <p>Management/Coordination Activities:</p> <ul style="list-style-type: none"> • Continue as the DoD Lead Standardization Activity (LSA) for managing M&S standards and methodologies to improve the interoperability and reuse of M&S within the DoD, other U.S. government agencies, and international M&S communities. • Continue serving as the DoD modeling and simulation focal point for M&S activities and for collaboration within the DoD. • Continue advising and assisting the USD AT&L on M&S. • Continue coordinating working groups for providing technical advice and assistance to the DoD M&S Senior Steering Committee. • Continue managing the development of a technical core program to maintain and sustain M&S tools, data, and services vital to the long term success of the DoD M&S Enterprise. • Provide M&S functional oversight and M&S technical direction to DTIC's Cyber Security and Information Systems Information Analysis Center (CSIAC). • Continue coordinating quarterly program management reviews for tasks sponsored by this PE. • Continue coordination with the Simulation Interoperability Standards Organization (SISO) for governance and development/ voting of M&S standards supporting interoperability. 			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603832D8Z: <i>DoD Modeling and Simulation Management Office</i>	PROJECT P476: <i>DoD Modeling and Simulation Management Office</i>		
B. Accomplishments/Planned Programs (\$ in Millions) <ul style="list-style-type: none"> • Continue collaboration with non-DoD, federal agencies including the Department of Homeland Security (DHS), the Department of Energy (DOE), the Department of Justice (DOJ), and the National Aeronautics and Space Administration (NASA). • Continue serving as the DoD modeling and simulation focal point for M&S activities and collaboration with International agencies including NATO, Partnership for Peace (PfP) nations, The Technical Cooperation Program (TTCP), and other Allies. • Continue to coordinate the Modeling & Simulation Community of Interest (M&S COI) activities. • Continue managing the Data Management Working Group (DMWG) activities to address M&S data technical challenges. 		FY 2012	FY 2013	FY 2014
Accomplishments/Planned Programs Subtotals		29.860	36.433	30.370
C. Other Program Funding Summary (\$ in Millions) N/A Remarks				
D. Acquisition Strategy N/A				
E. Performance Metrics Performance in this program is monitored in the following ways: <ol style="list-style-type: none"> 1. Number of instances where M&S standards, technical best practices, or tools have been adopted or employed. (Goal 1) 2. Number of M&S standards registered or updated in the authoritative DoD and international standards repositories, to include the Information Technology Standards and Defense Standardization Programs. (Goal 1) 3. Number of collaborative technology events held or agreements made within DoD, with other U.S. Government Departments and Agencies, coalition partners including NATO and Partnership for Peace (PfP) nations, The Technical Cooperation Program (TTCP), international Allies, industry and academia. (Goal 2) 4. Number of M&S policies or plans issued, re-issued, revised, or deleted. (Goal 2) 5. Number of Community/Service business plans or strategies issued, re-issued, revised, or deleted. (Goal 2) 6. Number of simulation federates and infrastructure capabilities which participate in DoD standards verification and compliance activities. (Goal 2) 7. Number of M&S technology gaps identified in the enterprise planning process and addressed by PE funding. (Goal 3) 8. Number of M&S resources (tools, data, and services) made visible or updated in the DoD M&S Enterprise Catalog for reuse and the completeness of each record according to DoD discovery metadata standards. (Goal 4) 9. Number of M&S repositories linked to the DoD M&S Enterprise Catalog. (Goal 4) 10. Number of users that register for and employ common tools promoted by the M&S Core enterprise capabilities program. (Goal 4) 11. Number of users accessing and completing DoD sponsored training venues for educating the M&S workforce. (Goal 5) 				

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE				PROJECT			
0400: Research, Development, Test & Evaluation, Defense-Wide BA 3: Advanced Technology Development (ATD)					PE 0603832D8Z: DoD Modeling and Simulation Management Office				P477: Effects Chain Analyses Cell			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
P477: Effects Chain Analyses Cell	-	0.000	11.000	11.000	-	11.000	11.000	11.000	11.000	11.000	Continuing	Continuing
[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012												
^{##} The FY 2014 OCO Request will be submitted at a later date												
A. Mission Description and Budget Item Justification												
The Anti-access/Area-denial (A2/AD) threat requires detailed modeling and simulation based analysis to support weapon system and operational capability development. This effort will focus on generating operational scenario and system analyses, identifying specific analytic limitations, developing the technical analysis plan, and implementing the plan. These analyses will be acquisition-centered net analyses of the end-to-end blue (US and Allies) capabilities compared to specific red (potential adversary) capabilities focused on identifying the most promising technologies for application to A2/AD problems. The analyses will address acquisition specific questions such as: can a system be accelerated and/or can a group of capabilities be combined in different ways to improve the overall effectiveness of US systems? This office is expected to work closely with the Joint Staff and the Military Departments and in particular with the Air Sea Battle Office.												
B. Accomplishments/Planned Programs (\$ in Millions)										FY 2012	FY 2013	FY 2014
Title: Effects Chain Analyses Cell										0.000	11.000	11.000
Description: The A2/AD effects chain analysis effort is a new effort to develop and strengthen the specific analysis data, tools, and actual technical analyses supporting decisions on weapon system and operational capability development. The analyses will initially focus on PACOM and CENTCOM Areas of responsibilities. Projects undertaken will be approved by the Under Secretary of Defense (AT&L).												
FY 2013 Plans:												
- Initiate alternative concepts focused on near-term systems employment in coordination with PACOM, develop analytical approaches to assess capability improvements.												
- Identify promising concepts for detailed analysis of effects.												
- Analyze sensor options and cost effective architectures for land based defense.												
FY 2014 Plans:												
- Continue concept analysis of near-term systems in alternate employment scenarios.												
- Perform detailed performance and effects analysis of promising concepts.												
Accomplishments/Planned Programs Subtotals										0.000	11.000	11.000

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603832D8Z: <i>DoD Modeling and Simulation Management Office</i>	PROJECT P477: <i>Effects Chain Analyses Cell</i>
C. Other Program Funding Summary (\$ in Millions) N/A		
Remarks		
D. Acquisition Strategy N/A		
E. Performance Metrics N/A		

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE							
0400: Research, Development, Test & Evaluation, Defense-Wide BA 3: Advanced Technology Development (ATD)					PE 0603941D8Z: Test and Evaluation/Science and Technology							
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
Total Program Element	-	96.622	92.602	92.508	-	92.508	94.264	97.003	98.585	100.499	Continuing	Continuing
1: High Speed Systems Test	-	23.016	18.177	25.716	-	25.716	20.050	17.664	16.689	17.038	Continuing	Continuing
2: Spectrum Efficient Technology	-	9.742	8.696	8.783	-	8.783	7.313	8.705	9.991	10.197	Continuing	Continuing
3: Electronic Warfare Test	-	19.127	20.596	14.076	-	14.076	12.553	15.026	14.938	15.212	Continuing	Continuing
4: Advanced Instrumentation Systems Technology	-	10.025	9.177	8.989	-	8.989	11.205	12.627	12.630	12.877	Continuing	Continuing
5: Directed Energy Test	-	11.235	8.867	6.268	-	6.268	6.492	6.543	5.197	5.307	Continuing	Continuing
6: Netcentric Systems Test	-	20.072	18.090	16.063	-	16.063	14.960	10.679	10.922	11.167	Continuing	Continuing
7: Unmanned and Autonomous System Test	-	3.159	5.711	6.716	-	6.716	11.479	12.843	14.072	14.312	Continuing	Continuing
8: Cyberspace Test	-	0.246	3.288	5.897	-	5.897	10.212	12.916	14.146	14.389	Continuing	Continuing

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

The Test and Evaluation/Science and Technology (T&E/S&T) Program seeks out and develops test technologies to stay in pace with evolving weapons technologies. This program is critical to ensure that the Department of Defense (DoD) has the ability to adequately test the advanced systems that will be fielded in the future. To meet this objective, the T&E/S&T Program performs the following activities:

- Exploits new technologies and processes to meet important test and evaluation (T&E) requirements.
- Expedites the transition of new technologies from the laboratory environment to the T&E community.
- Leverages industry advances in equipment, modeling and simulation, and networking to support T&E.

Additionally, the T&E/S&T Program examines emerging T&E requirements resulting from Joint Service initiatives to identify T&E technology needs and to develop a long-range roadmap for technology insertion. The program leverages and employs applicable applied research efforts from the highly developed technology base in DoD laboratories and test centers, other government agencies, industry, and academia to accelerate development of new test capabilities. This program provides travel funds for T&E/S&T program oversight, special studies, analyses, and strategic planning related to test capabilities and infrastructure.

The DoD established seven strategic science and technology (S&T) investment priorities: 1) Data to Decisions, 2) Engineered Resilient Systems, 3) Cyber Science and Technology, 4) Electronic Warfare/ Electronic Protection, 5) Counter Weapons of Mass Destruction, 6) Autonomy, and 7) Human Systems. The T&E/S&T Program has been aligned and prioritized to prepare the T&E community to test warfighting capabilities that emerge from these S&T priority investments.

The T&E/S&T Program is funded within the Advanced Technology Development Budget Activity because it develops and demonstrates high payoff technologies for current and future DoD test capabilities.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense	DATE: April 2013
-------------------------------------------------------------------------------------------------	-------------------------

APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603941D8Z: <i>Test and Evaluation/Science and Technology</i>
-----------------------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------

B. Program Change Summary (\$ in Millions)	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total
Previous President's Budget	96.622	92.602	94.041	-	94.041
Current President's Budget	96.622	92.602	92.508	-	92.508
Total Adjustments	0.000	0.000	-1.533	-	-1.533
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Efficiency Savings: Realignment of Test Technology Development with Testing Requirements	-	-	-1.533	-	-1.533

Change Summary Explanation

- Efficiency Savings: Fiscal Guidance of baseline program adjusted to realign funds for higher priorities within DOD.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 3: Advanced Technology Development (ATD)					R-1 ITEM NOMENCLATURE PE 0603941D8Z: Test and Evaluation/ Science and Technology				PROJECT 1: High Speed Systems Test			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
1: High Speed Systems Test	-	23.016	18.177	25.716	-	25.716	20.050	17.664	16.689	17.038	Continuing	Continuing
[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012												
^{##} The FY 2014 OCO Request will be submitted at a later date												
A. Mission Description and Budget Item Justification												
High-speed/hypersonic weapons are being developed to ensure the continued military superiority and strike capability of the United States including freedom of movement and freedom of action in areas protected by anti-access/area denial defenses. Current weapon system demonstrations and technology development programs include high-speed and hypersonic air-breathing missiles, maneuvering reentry and boost-glide weapons, hypersonic gun-launched projectiles, and air-breathing space access vehicles. These systems require development of conventional and high-speed turbine, ramjet, scramjet, and combined cycle engines; high temperature materials; thermal protection systems (TPS); and thermal management systems. The High Speed Systems Test (HSST) project addresses test technology needs including propulsion, aerodynamic and aerothermal testing, so the test community has the technology to support the required test scenarios for concepts under development in the science and technology (S&T) community. The technology developments within the HSST project align with the Department of Defense (DoD) S&T priority investments. As such, the HSST project is developing, validating and transitioning advanced test and evaluation (T&E) technologies for ground test, open-air range flight test, and advanced computational tools, along with instrumentation and diagnostics systems for use in both ground tests and flight tests of high speed systems. The HSST project develops technologies to enable robust, accurate, and timely T&E of these future weapon systems. DoD acquisition regulations require weapon systems to undergo a thorough T&E process to detect deficiencies early and to ensure system suitability and survivability. However, the extreme environments in which these weapons operate preclude accurate determination of their performance and operability with today's T&E assets. Current national test capabilities have deficiencies in data accuracy, flight condition replication and simulation, test methods, productivity, modeling and simulation (M&S) fidelity, and range safety. The HSST mission is to address these national test capability gaps by providing test technology solutions that will enable high-speed and hypersonic weapon systems to be successfully developed through accurate, robust, and efficient T&E.												
B. Accomplishments/Planned Programs (\$ in Millions)									FY 2012	FY 2013	FY 2014	
Title: High Speed Systems Test									23.016	18.177	25.716	
FY 2012 Accomplishments: The HSST project made significant advancements in ground and flight test technologies, techniques and instrumentation for both air-breathing propulsion and boost/glide weapons, and developed innovative M&S tools. The two most significant technology shortfalls in current hypersonic aero propulsion ground test capabilities were clean air heat addition (i.e. non-vitiated air) and variable Mach number test capability. Current production ground test facilities could only create the high temperature inlet conditions necessary for scramjet engine tests by burning fuel in the airflow prior to entering the engine. As demonstrated by an HSST FY 2011 test, the resulting "vitiated air" had different gas properties than clean air and was not representative of what the vehicle would experience during flight. This significantly affected the engine's performance												

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013			
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>		R-1 ITEM NOMENCLATURE PE 0603941D8Z: <i>Test and Evaluation/</i> <i>Science and Technology</i>	PROJECT 1: <i>High Speed Systems Test</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014	
<p>and operability in the test environment resulting in erroneous flight performance predictions. Variable mach number capability was required to “fly the mission” and determine the critical transient operability effects throughout the flight envelope. Component technologies, previously developed by the T&E/S&T program, began incorporation into a small-scale, clean air, true enthalpy, variable Mach number 5-8 aero propulsion test facility. The completed facility would advance the component development to Technology Readiness Level (TRL) 6, provide an on-going test asset to the DoD, and provide risk reduction for construction of a full-scale facility. Significant progress was made this year in Phase I of the development including fabrication, installation, and integrated checkout of the advanced high-temperature refractory bricks, controls, and support systems for the Regenerative Storage Heater. Design efforts for subsequent phases were initiated. These efforts included critical design of the air delivery system and preliminary design of a variable Mach number nozzle.</p> <p>Innovative test techniques were developed to assess the viability of accurately testing large scramjet engines in existing size-limited national test facilities. One effort evaluated a means of truncating the long inlet section of an engine while still accurately replicating the performance of a larger baseline inlet. Another effort evaluated how to quantify and improve the accuracy of direct connect and semi-free jet test techniques by comparing them to a benchmark free jet test configuration. Engine operability and performance test results for each of the test facility configurations were quantified and compared to establish the first known database of engine/test facility configuration scale effects on engine operation. The aforementioned technology developments aimed to permit weapons system developers to maximize the use of existing infrastructure and better understand test results, thereby reducing flight test and acquisition risks.</p> <p>Scramjet engine tests were completed to determine the facility effects of test duration, test media, and freejet versus direct-connect test methodology upon scramjet engine performance and operability. Testing utilized scramjet engine flowpaths of the same design tested in impulse and blowdown ground test facilities. This study culminates in the most extensive examination of hypersonic aero propulsion test methods yet accomplished and will enable significant improvements in the quality of data provided to weapon system developers and computational fluid dynamics tool developers.</p> <p>Accurately predicting the ablation characteristics of a TPS was critical for developing maneuvering reentry and boost-glide vehicles. A major aerothermal T&E capability gap existed in the mid-altitude/mid-pressure flight regime which was representative of the flight corridor for these hypersonic vehicles. Improved arc heater electrodes were developed and tested this year which allowed for longer duration, higher enthalpy testing, and more realistic environments for hypersonic TPS testing.</p> <p>Key flight test technologies were developed for flight termination and flight maneuver optimization. Hardware-in-the-loop testing and final design of a flight rated, autonomous flight termination system were completed. An autonomous flight safety system was designed to assure destruction of an errant hypersonic vehicle under test if it leaves its designated safety corridor, thereby maximizing safety while reducing flight test costs. The current phase of this effort was to complete maturation and transition of autonomous flight safety technology to TRL 6 and pave the way for a direct transition to operational use. Prototype units were being designed and built for use by the Operationally Responsive Space office. Transition coordination was also underway to include other developmental hypersonic vehicle systems. Advanced parameter identification maneuvers were developed and</p>					

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense			DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>		R-1 ITEM NOMENCLATURE PE 0603941D8Z: <i>Test and Evaluation/ Science and Technology</i>		PROJECT 1: <i>High Speed Systems Test</i>	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2012	FY 2013	FY 2014
<p>programmed into the flight computer of the third X-51 flight. These optimized test maneuvers were designed to collect far more stability and control data per flight than possible using traditional methods, thus reducing the number of flight tests and costs. Progress was also made in advanced high speed systems test instrumentation. A flight-weight, laser-based, non-intrusive measurement system was flown on a Hypersonic International Flight Research Experimentation (HIFiRE) flight test, resulting in the first-ever in-flight scramjet combustion efficiency measurement. An advanced system utilizing lasers operating in the mid-infrared spectrum and which significantly lowers gas property measurement uncertainty was transitioned to a DoD ground test center and a DoD research laboratory. A miniaturized, temperature-compensated wind tunnel balance for supersonic store separation testing was constructed. Design, fabrication and demonstration of non-intrusive laser hygrometer and optical mass flow measurement systems were completed. Testing of a fiber optic heat flux gauge and a high temperature shear stress sensor were also successfully completed.</p> <p>Advances were achieved in the development of a state-of-the-art validated computational fluid dynamics tool. Improved M&S tools were transitioned to the hypersonic community. These tools could simulate the complex flows within scramjet engines and include physical modeling for turbulence, fuel-air combustion, and heat transfer. The code was successfully used to model combustion phenomenon in a scramjet engine.</p> <p>A technology demonstration was performed to evaluate a technique for testing propulsion systems beyond Mach 8 using magnetohydrodynamics to accelerate flow ionized by electron beams.</p> <p>FY 2013 Plans:</p> <p>New test technology efforts will be initiated addressing: test technologies, techniques, and methodologies to determine full-scale propulsion system performance and operability from subscale tests; technology for improved TPS ablation and weather effects characterization; further development of M&S codes for accurate prediction of flow fields, boundary layer transition, and heat transfer in high-speed flow; new and more accurate instrumentation systems; and application of advanced test technologies to other needs such as gas turbine engines, and electromagnetic rail guns.</p> <p>Activities for the clean-air, variable Mach number demonstration facility will continue to develop and demonstrate air delivery system technology to deliver uniform flow with variable pressure and temperature from multiple air sources through a fixed nozzle up to Mach 8 conditions.</p> <p>Scramjet ground tests in semi-free jet, and direct connect test modes will be concluded and compared to free-jet test results to quantify their respective accuracies and identify optimal test methods for larger, next generation scramjet engines. Vitiation effects data will be collected to increase the high speed systems community's knowledge base.</p> <p>Sub-scale ceramic morphing components for high speed ground test facilities will be designed and fabricated to maintain well-conditioned flow while continuously varying the flight Mach number and reducing cooling requirements.</p> <p>Testing of improved arc jet facility electrodes will be completed enabling improved T&E of maneuvering reentry and boost/glide vehicles.</p>					

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>		R-1 ITEM NOMENCLATURE PE 0603941D8Z: <i>Test and Evaluation/ Science and Technology</i>	PROJECT 1: <i>High Speed Systems Test</i>
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
<p>Verification and improvement of computational fluid dynamics codes will continue, making use of the unique data sets obtained from the HSST scramjet engines tests described above. A boundary layer transition prediction tool for 2-dimensional and axisymmetric bodies will be enhanced allowing for application to complex, 3-dimensional boost-glide vehicle geometries.</p> <p>FY 2014 Plans: FY 2014 will see continued efforts to improve hypersonic ground and flight test capabilities to levels required for acquisition programs. Efforts will include demonstration of new flight test techniques, improvements in instrumentation, and continued validation and improvement of computational fluid dynamics codes. Progress will continue toward final integration and operation of the clean-air, variable Mach number aeropropulsion facility, including completion of the variable Mach number nozzle design and preparations to demonstrate the capability to simultaneously vary stagnation pressure, temperature and Mach number from 5-8. Design, manufacture, and delivery of a full scale ceramic morphing device for use in a DoD high speed ground test facility will be completed.</p>			
Accomplishments/Planned Programs Subtotals		23.016	18.177
C. Other Program Funding Summary (\$ in Millions)			
N/A			
Remarks			
D. Acquisition Strategy			
N/A			
E. Performance Metrics			
Percentage of T&E/S&T projects progressing satisfactorily toward technical, financial, schedule, and risk mitigation goals.			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 3: Advanced Technology Development (ATD)					R-1 ITEM NOMENCLATURE PE 0603941D8Z: Test and Evaluation/ Science and Technology				PROJECT 2: Spectrum Efficient Technology			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
2: Spectrum Efficient Technology	-	9.742	8.696	8.783	-	8.783	7.313	8.705	9.991	10.197	Continuing	Continuing

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

Weapon systems have become increasingly complex in recent years, resulting in the need for significantly more data to be passed among these systems, and between the systems and our test infrastructure. A vast amount of data must be collected, transmitted, and analyzed, which requires a large amount of radio frequency (RF) spectrum resources. However, the amount of RF spectrum designated to support test and evaluation (T&E) is decreasing, most notably due to reallocation of spectrum for commercial use. The combination of decreasing RF spectrum and increasing data requirements results in an urgent need to create test technologies that maximize the use of spectrum resources for Department of Defense (DoD) T&E operations.

The L and S frequency bands are the traditional spectrum allotted for military use. The explosive need for spectrum in the commercial sector has resulted in reallocation of portions of these bands to industry. To compensate, DoD is now authorized to use the C-Band spectrum which offers numerous benefits, including a three-fold increase in available bandwidth, but C-Band comes with technical challenges. Most notably, our current test infrastructure for telemetry is not designed to accommodate C-Band. Technologies are required to implement innovative techniques that efficiently facilitate our use of C-Band without a major overhaul to our national test infrastructure. For instance, commercial telemetry transmitters operate in C-Band but do not have the form factor (size and weight) or rugged packaging to survive airborne test applications.

Traditional telemetry applications employ streaming telemetry where data is moved one-way from the instrumented system under test to our test infrastructure. Modern network based telemetry capabilities, like those being developed by the Central Test and Evaluation Investment Program (CTEIP) integrated Network Enhanced Telemetry (iNET) effort, enable more robust, efficient bidirectional transfer of data. DoD's strategy is to create technologies for streaming telemetry capability in C-Band while opening up legacy L- and S-Bands for networked telemetry.

The Spectrum Efficient Technology (SET) project is developing test technologies that enable more efficient use of legacy telemetry bands and expansion into non-traditional areas of the RF and optical spectra at DoD test ranges. The technology development efforts within the SET project have been prioritized to align with Department of Defense guidance on science and technology priority investments. As such, the SET project is focusing on growing data requirements of warfighting systems and the limited availability of spectrum for testing. The SET project is structured to develop test technologies to advance range communications, networked telemetry capabilities, and enhanced management of spectrum at DoD test ranges.

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2012	FY 2013	FY 2014
Title: Spectrum Efficient Technology	9.742	8.696	8.783
FY 2012 Accomplishments:			
The SET project developed technologies to meet networked telemetry requirements and performed risk reduction for CTEIP. Technology enabling the dynamic reconfiguration of transmitted test data over a telemetry network was further matured. The SET project continued development of a networked data recorder to provide risk reduction in support of the CTEIP iNET development.			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603941D8Z: <i>Test and Evaluation/ Science and Technology</i>	PROJECT 2: <i>Spectrum Efficient Technology</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
<p>The research and development of advanced data protocols for test data transmission across the iNET network continued. A networked telemetry transceiver using an advanced waveform was developed and tested as a risk reduction effort for iNET development. The SET project matured and demonstrated radio network technology to rapidly change operating frequencies in the presence of non-cooperative interference, thus maintaining connectivity with no perceivable impact on telemetry network performance. Spectrum and network management technology development continued, with a focus on capabilities that allowed for dynamic distribution of spectrum resources among test participants. Technologies matured by SET provided risk reduction in support of spectrum management which was challenged by spectrum sell-off activities. Development continued on advanced technologies to increase RF bandwidth efficiency. A wideband power amplifier capable of efficiently operating with advanced waveforms within the traditional telemetry bands was matured and demonstrated. The prototype amplifier increased overall efficiency in spectrum utilization. Research continued to determine the ideal coding scheme for advanced waveforms such as Shaped Offset Quadrature Phase Shift Keying, a more spectrally efficient data transmission scheme for aeronautical telemetry. Forward error correction schemes for use in aeronautical telemetry to increase data reliability in dynamic test environments were completed and demonstrated. These forward error correction schemes were adopted by the Range Commanders Council Telemetry Group for inclusion in Inter-Range Instrumentation Group telemetry standards.</p> <p>The SET project continued the development of a three dimensional channel model tool for modeling and simulation of telemetry channels in various environments. This tool provided higher fidelity simulations for use in researching the effects of terrain and other factors on telemetry channels. The SET project investigated techniques to expand telemetry operations into non-traditional spectrum bands by characterizing multipath effects in multiple range environments. Additionally, SET compared the data link performance of legacy RF spectrum allocations to the recently allocated C-Band spectrum. The results of this investigation were published and transitioned to the DoD test ranges. SET continued efforts to develop airborne phased array antenna technology that would enable flexible scheduling of the T&E spectrum by incorporating both the traditional L/S bands and recently permitted C-Band frequencies. Some of these technologies would reduce the technical risk associated with beam steering in the C-Band frequencies, reduce the amount of infrastructure modifications needed to implement a C-Band telemetry capability, and provide over-the-horizon data connectivity to test large-footprint weapons, such as long range missiles.</p> <p>FY 2013 Plans:</p> <p>The SET project will further advance development of technologies required for network telemetry. Efforts to develop policy-based network management tools will be completed, demonstrated, and transitioned to support CTEIP developments. Spectrum and network management systems, including a suite of network protocols, will be demonstrated and transitioned to the test ranges. Technologies to develop advanced waveforms designed to increase bandwidth efficiency will be matured. The development of advanced waveforms will enable the telemetry network to support multiple high data rate test assets and increase efficiency in spectrum utilization. Development of a networked data recorder in support of iNET will be completed, demonstrated, and transitioned to support the deployment of a networked telemetry system. Technologies to develop a three dimensional channel model tool used in modeling and simulation of telemetry channels in various environments will be matured.</p>			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603941D8Z: <i>Test and Evaluation/ Science and Technology</i>	PROJECT 2: <i>Spectrum Efficient Technology</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
<p>Phased array antenna technology utilizing both the traditional and C-Band frequencies will continue to be matured to enable flexible spectrum scheduling and alleviate technical risk associated with tracking and beam steering in the C-Band. The SET project will initiate efforts to develop an airborne multiband transceiver to support networked telemetry, increase spectrum scheduling efficiency, improve efficiency in ground telemetry and antenna systems, and support data transmission in both traditional L/S and C-bands.</p> <p><i>FY 2014 Plans:</i></p> <p>The SET project will initiate development of radio technology that can utilize alternate spectrum in the upper frequency bands. These efforts will determine the feasibility of some of the upper bands for use in telemetry. Additional efforts on alternate data link technologies in the optical realm will be investigated. If efforts in this area are successful, these technologies can provide augmentation to the RF telemetry bands. The SET project will continue efforts to mature phased array technology for use on the ground as well as in airborne applications. The high directionality of phased array antenna technologies on aircraft will enable the ability to leverage spectrum spatial reuse techniques for more effective spectrum scheduling. The SET project will begin investigation of technologies that will provide autonomous self-forming telemetry networks to provide connectivity in flight line and other areas that currently suffer from limitations in communications coverage caused by buildings and terrain. Efforts will complete in the development of a three dimensional channel model tool used in modeling and simulation of telemetry channels in various environments.</p> <p>Additionally, the SET project will complete work to mature technologies in optimization and management of the telemetry networks through spectrum management tools designed to optimize spectrum utilization.</p>			
Accomplishments/Planned Programs Subtotals		9.742	8.696
C. Other Program Funding Summary (\$ in Millions)			
N/A			
Remarks			
D. Acquisition Strategy			
N/A			
E. Performance Metrics			
Percentage of T&E/S&T projects progressing satisfactorily toward technical, financial, schedule, and risk mitigation goals.			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 3: Advanced Technology Development (ATD)					R-1 ITEM NOMENCLATURE PE 0603941D8Z: Test and Evaluation/ Science and Technology				PROJECT 3: Electronic Warfare Test			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
3: Electronic Warfare Test	-	19.127	20.596	14.076	-	14.076	12.553	15.026	14.938	15.212	Continuing	Continuing

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

Readily available, infrared (IR) seeking, man-portable air defense systems (MANPADS) are difficult to detect and pose an imminent and lethal threat to military aircraft of all types. Our ability to counter such threats is essential to owning the airspace in theater. Therefore, the ability to test missile warning systems (MWS), hostile fire indicators, IR countermeasures (IRCM), and advanced threat sensors is critical to our national defense. Additionally, a new generation of enemy radio frequency (RF) missile seekers is both currently fielded and in further development, requiring a correspondingly new generation of test technologies to test the latest countermeasures. The test and evaluation (T&E) community is required to test IRCM and RF countermeasure systems in a repeatable manner with ground-truth data before and after integration into warfighting systems. Without new test technologies, the Department of Defense (DoD) will be unable to perform adequate T&E of advanced warning and countermeasure systems.

The technology development efforts within the EWT project have been prioritized to align with DoD guidance on science and technology priority investments. As such, the EWT project is focusing on the test needs in both the electro-optic (EO), including IR, and the RF threat domains. Additionally, development of core test technologies in this area can be leveraged to meet other EO and RF test requirements, such as in fire control systems, reconnaissance sensors, and missile seeker subsystems.

The EWT project develops test technologies to stimulate IRCM and RF system sensors through the high-fidelity simulation of scenes viewed by the sensors.

Stimulation can be as simple as testing to see if a system under test responds to an image or as complex as simulating complex battle space phenomena to measure the response of a system under test in a more relevant, cluttered scenario. Simulations and stimulations are used at open air ranges and in installed system test facilities (ISTF), and in hardware-in-the-loop (HWIL) test beds.

B. Accomplishments/Planned Programs (\$ in Millions)

Title: Electronic Warfare Test	FY 2012	FY 2013	FY 2014
	19.127	20.596	14.076
FY 2012 Accomplishments:			
The EWT project continued developing the technology for the high-temperature scene emitter for the Central Test and Evaluation Investment Program (CTEIP) Joint Distributed IRCM Ground-Test System (JDIGS) development, which was improving DoD test capabilities for directional IR countermeasures (DIRCM) systems. The EWT risk reduction effort for JDIGS entered the final stages of testing a new superlattice light-emitting diode source that could provide two-color, high-temperature scenes with a frame rate fast enough to test new IRCM and MWS.			
The EWT project completed development of read-in integrated circuit technology, which supplies electrical energy to emitters that generate images in ISTF and HWIL test facilities. This technology completed final testing and was integrated with scene			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603941D8Z: <i>Test and Evaluation/</i> <i>Science and Technology</i>	PROJECT 3: <i>Electronic Warfare Test</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
<p>projection cameras. The EWT project made significant progress in the development of a hyperspectral imaging projector, which allowed characterization and testing of hyperspectral imaging cameras used for intelligence, surveillance and reconnaissance. The EWT project initiated an effort to develop a breadboard technology to produce high-fidelity electronic counter-countermeasures (ECCM) radar signal processing techniques that employ sophisticated waveforms with algorithms, such as adaptive filtering. This test technology development was to address a need, identified by the Navy-led, CTEIP-sponsored Tri-Service Electronic Warfare Test Capabilities Study, to improve testing against modern surface-to-air missile threats.</p> <p>FY 2013 Plans: Risk reduction activities for CTEIP in testing MWS in integrated ISTF and HWIL will continue. The EWT project will concentrate on addressing new test technology needs identified in the update to the IRCM Test Resource Requirements Roadmap. Furthermore, EWT technology developments will focus on stimulating synthetic aperture radars with RF injection, including realistic background clutter. Research will be conducted for testing wide area emitters. Efforts to develop surrogate missiles for testing of MWS and IRCM systems will continue.</p> <p>To address the testing of systems operating in the mid-wave IR band, the EWT project will develop technologies to enable the full testing of mid-wave IR sensor/seekers by adding clutter models and scene generators to real-time stimulation technologies. Furthermore, efforts to develop technology to test against ECCM techniques of modern surface-to-air missiles will continue.</p> <p>FY 2014 Plans: The EWT project will invest in new technologies related to improving the electronic warfare T&E infrastructure. These new technologies will be identified by the Tri-Service EWT Working Group formed in FY 2011, and further address test needs identified in the IRCM Test Resource Requirements Roadmap and the Tri-Service Electronic Warfare Test Capabilities Study.</p>				
Accomplishments/Planned Programs Subtotals		19.127	20.596	14.076
C. Other Program Funding Summary (\$ in Millions)				
N/A				
Remarks				
D. Acquisition Strategy				
N/A				
E. Performance Metrics				
Percentage of T&E/S&T projects progressing satisfactorily toward technical, financial, schedule, and risk mitigation goals.				

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 3: Advanced Technology Development (ATD)					R-1 ITEM NOMENCLATURE PE 0603941D8Z: Test and Evaluation/ Science and Technology				PROJECT 4: Advanced Instrumentation Systems Technology			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
4: Advanced Instrumentation Systems Technology	-	10.025	9.177	8.989	-	8.989	11.205	12.627	12.630	12.877	Continuing	Continuing
[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012												
^{##} The FY 2014 OCO Request will be submitted at a later date												
A. Mission Description and Budget Item Justification												
<p>The Advanced Instrumentation Systems Technology (AIST) project addresses the test technology gaps resulting from emerging weapon systems that need to be tested at Department of Defense (DoD) open air ranges, undersea ranges, installed systems test facilities, hardware-in-the-loop laboratories, and measurement test facilities. Instrumentation requirements for systems under test are increasing exponentially for new weapons systems. Vehicle on-board and warfighter wearable instrumentation packages are required. This instrumentation is for sensing and collecting critical performance data; determining accurate time, space, position information (TSPI)and attitude information; interfacing with command and control data links; monitoring and reporting system-wide communications; recording human operator performance; and storing and transmitting data.</p> <p>The technology development efforts within the AIST project have been prioritized to align with DoD guidance on science and technology (S&T) priority investments, particularly in support of human systems, engineered resilient systems, and counter weapons of mass destruction. The AIST project is focused on supporting technology developments for advanced TSPI instrumentation (especially with limited or no use of the Global Positioning System (GPS)), advanced sensors, advanced energy and power systems for instrumentation, non-intrusive instrumentation, mitigating range encroachment issues, and measuring warfighter cognitive performance. The AIST project addresses requirements for miniaturized, non-intrusive instrumentation suites with increased survivability in harsh environments. Such instrumentation is an urgent need because minimal space is available to add instrumentation to new or existing weapon systems subsequent to their development; furthermore, additional weight and power draw for instrumentation can adversely affect weapon system signature and performance. Instrumentation for humans-in-the-loop, such as dismounted soldiers, must not adversely affect soldier performance, induce artificiality in the test environment, nor create operational burden. New technologies can be exploited to integrate small, non-intrusive instrumentation into emerging platforms during design and development, and, in some cases, into existing platforms. This class of instrumentation will provide critical system performance data during test and continuous assessment throughout a system's lifecycle. Technology developed under AIST can also benefit training and combat missions by enabling a continual feedback loop between the developer, training staff, operators and commanders.</p>												
B. Accomplishments/Planned Programs (\$ in Millions)										FY 2012	FY 2013	FY 2014
Title: Advanced Instrumentation Systems Technology										10.025	9.177	8.989
FY 2012 Accomplishments:												
The warfighter must conduct military operations in a diverse array of locations, to include urban, mountainous, and densely forested environments. Consequently, a continued major thrust for FY 2012 included the development of test technologies to support collection of TSPI for soldier systems (manned or unmanned), particularly in GPS-denied or degraded environments, such as in urban areas and tunnels. Efforts to test systems that operate in a GPS-denied environment included technology												

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense			DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>		R-1 ITEM NOMENCLATURE PE 0603941D8Z: <i>Test and Evaluation/ Science and Technology</i>		PROJECT 4: <i>Advanced Instrumentation Systems Technology</i>	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2012	FY 2013	FY 2014
<p>that enabled networking of GPS-enabled components within the test environment, and then using the network to integrate GPS and other positional information across the connected nodes. The nodes shared raw observables from GPS and inter-node ranges to locate each network node with high reliability. Final testing resulted in sub-meter position accuracy in environments that may be encountered in urban operations. A related technological approach employed a layered system of sensors leveraging collaborative navigation, existing radio frequency ranging technology, and a Doppler velocimeter to achieve more precise TSPI under GPS-impaired conditions. System components had integrated and planning was underway for preliminary testing in a realistic environment. Also, progress was made on a warfighter inertial tracking system for dismounted warfighters. This technology employed boot-mounted sensors to provide sub-meter geolocation over GPS-denied durations of greater than 2 hours; system performance and system component requirements were verified.</p> <p>To support testing of high-speed, high-acceleration systems, an ultra-high dynamics GPS receiver was developed. The receiver performed significantly better than existing test instrumentation. Position solutions were obtained at velocities up to 10 kilometers/second with time-to-first-fix under 0.5 seconds, which was important for testing air-to-air missile systems launched from under the wing or from a weapons bay, and for range safety. Requirements were being gathered for future test and evaluation GPS TSPI activities and to guide the architecture for next generation solutions.</p> <p>A holographic optical memory system was designed for on-board test data recording and retrieval, extending the data storage capacity of current state-of-the-art holographic memory up to 16 terabytes. Laboratory testing had demonstrated that an increased capacity beyond 16 terabytes was possible. Attachment technology development continued with investigation of new adhesive formulations that employed an electrically releasing foil patch. This technology allowed attachment of sensors to non-conductive, painted exterior surfaces of aircraft and other combat vehicles, significantly reducing the time to restore the system under test to its operational configuration. Investigations in this area continued with the aim of producing a stable adhesive formulation with an extended shelf life. To improve testing at DoD undersea range complexes, algorithms and methodologies were investigated to automate detection and classification of marine mammal vocalizations from ocean floor range sensors (e.g., hydrophones) with testing planned at the Atlantic Undersea Test and Evaluation Center. This test technology allowed the Navy to conduct critical test and evaluation (T&E) events without adversely impacting marine mammal populations. Efforts continued to assess and leverage microsystems technology under development at universities, the Defense Advanced Research Projects Agency, and government laboratories. These efforts were applicable to T&E of modern war fighting systems; a final report was produced.</p> <p>FY 2013 Plans:</p> <p>Numerous warfighting systems are brought to theater by rapid acquisitions. These systems involve operations in extreme conditions, over long distances, for long durations, and often with very small physical footprints (i.e. microsystems). Furnishing adequate energy and power to instrument such systems for testing is a significant technological challenge. Major thrusts for FY 2013 include continuing ongoing efforts in advanced sensors, TSPI instrumentation, and advanced data acquisition and transformation that require little power along with the development of advanced power sources for test instrumentation.</p>					

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603941D8Z: <i>Test and Evaluation/Science and Technology</i>	PROJECT 4: <i>Advanced Instrumentation Systems Technology</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
<p>Additionally, AIST will pursue test technologies to assess warfighter cognition under various workloads. The AIST project will complete its assessment of emerging microsystems technology and develop a roadmap for potentially leveraging microsystems technologies in instrumentation at DoD ranges.</p> <p>The AIST project will complete: the development and testing of classifiers to identify specific sea mammals (e.g., dolphins and whales) found at undersea ranges; the development and testing of magnetic field sensors for the harsh environment of electromagnetic rail gun firings; an attachment technology that is environmentally resistant (e.g., shelf life) and does not require any solvents to restore test articles to operational condition; efforts for collecting TSPI on dismounted soldiers and related soldier systems in GPS-denied or degraded environments such as those found in urban and subterranean operations.</p> <p>The AIST project will also complete application specific integrated circuit architectures with high dynamic, multi-frequency, anti-jamming capability to provide TSPI in GPS-denied and GPS-jammed environments.</p> <p>FY 2014 Plans:</p> <p>The AIST project will initiate efforts to develop advanced TSPI technologies for non-intrusive applications using wireless systems and optical, infrared, and/or acoustic techniques. TSPI technologies will be further developed to support: data collection in GPS-denied environments, TSPI on high dynamic systems such as missiles and projectiles, TSPI on swimmers and divers, and TSPI on non-cooperative undersea weapon systems.</p> <p>Advanced sensor initiatives for non-intrusive applications will include multimodal transducers, and self-registering/self-calibrating sensors. Sensing applications will include weapon system orientation, body armor blunt trauma evaluation, warfighter body posture and orientation, stores separation, and angle of incidence.</p> <p>Advanced power/energy initiatives will develop technologies for non-intrusive application, particularly energy harvesting devices and load management devices. This will include fuel cells for warfighter wearable instrumentation, military vehicle instrumentation, and embedded sensors for weapon systems.</p> <p>Advanced data transformation initiatives will develop technologies for adaptive computing, self-configuration, and self-calibration of instrumentation. Additional goals include technologies for: virtual/synthetic instrumentation, data compression, wireless on-board data transport and improved data storage density. Other areas of investigation will include data management techniques; decreased size, weight, and power (SWaP); and micro-miniaturization of electronic components for non-intrusive applications. Lastly, AIST will investigate technologies for reducing or eliminating range environmental encroachment issues and warfighter cognitive performance measurement and assessment.</p>			
Accomplishments/Planned Programs Subtotals		10.025	9.177
C. Other Program Funding Summary (\$ in Millions)			
N/A			
Remarks			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603941D8Z: <i>Test and Evaluation/ Science and Technology</i>	PROJECT 4: <i>Advanced Instrumentation Systems Technology</i>
<u>D. Acquisition Strategy</u> N/A		
<u>E. Performance Metrics</u> Percentage of T&E/S&T projects progressing satisfactorily toward technical, financial, schedule, and risk mitigation goals.		

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 3: Advanced Technology Development (ATD)					R-1 ITEM NOMENCLATURE PE 0603941D8Z: Test and Evaluation/ Science and Technology				PROJECT 5: Directed Energy Test			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
5: Directed Energy Test	-	11.235	8.867	6.268	-	6.268	6.492	6.543	5.197	5.307	Continuing	Continuing

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

The Department of Defense (DoD) is exploring the military utility, safety, and suitability of directed energy weapons. A robust test capability to assess directed energy weapons is essential to understanding their effectiveness and limitations, including determining their effectiveness in performing counter improvised explosive device (C-IED) operations. Such assessments will depend upon knowledge acquired through the test and evaluation (T&E) of directed energy technologies and testing of operational concepts. Directed energy weapon technologies, primarily consisting of high energy lasers (HEL) and high powered microwaves (HPM), are outpacing available test capabilities. Traditional test techniques for evaluating conventional munitions (with flight times ranging from seconds to minutes) are not sufficient for the T&E of directed energy weapons that place energy on target instantaneously. Consequently, new test technology solutions are needed to ensure that adequate developmental, live-fire, and operational test capabilities are available when directed energy programs are ready to test.

Directed energy system and component testing requires three principal assessments: (1) energy or power on target; (2) the effects on the target; and (3) the propagation of the directed energy to the target through the atmosphere. In addition, the vulnerabilities of DoD systems to directed energy threats are required to be characterized in accordance with Military Standard (MIL-STD)-464C. Equally as important, current test capabilities do not provide the detailed data required to understand U.S. directed energy system performance and effects.

The technology development efforts within the Directed Energy Test (DET) project have been prioritized to align with DoD guidance on science and technology priority investments. As such, the DET project is developing the technologies necessary for quantitative assessment of United States HEL and HPM performance, as well as the vulnerability of DoD weapon systems to enemy directed energy threats.

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2012	FY 2013	FY 2014
Title: Directed Energy Test	11.235	8.867	6.268
FY 2012 Accomplishments:			
To assess HEL energy on target, sensor array designs were developed to directly measure irradiance across laser spots on target materials. Additional developments produced alternative sensor array designs to measure the temperature profiles on the back surface of a HEL-irradiated target so that inverse heat conduction algorithms could be applied to estimate the temperature on the front (HEL-heated) surface. In this same HEL T&E area, fabrication began on a hyperspectral sensor technology to remotely measure radiance from an HEL spot on the target.			
In the area of HEL effects on target, an adaptive optics system was designed and fabrication of a prototype was started. The test technology allowed improved remote imaging of an HEL spot on a remote target. This test technology was designed to be readily adaptable to telescopes at various test facilities. Regarding HEL atmospheric propagation, a multi-light detection and ranging system to measure important atmospheric profiles along a slant path adjacent to the HEL beam propagation path began			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603941D8Z: <i>Test and Evaluation/ Science and Technology</i>	PROJECT 5: <i>Directed Energy Test</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
<p>development. This technology simultaneously measured profiles for three parameters: optical turbulence, water vapor content, and aerosol attenuation.</p> <p>A test technology supporting both HPM energy on target and effects on target was transitioned to the testing community within Air Force Research Laboratory. This technology measured the electric field arriving at eight locations on the target and the temperature rise resulting from those fields. It was used for testing the Counter-electronics High Power Microwave Advanced Munitions Project Joint Concept Technology Demonstration. Also, a family of HPM sensor technologies demonstrated measurement of energy inside large targets during HPM engagements. The sensor technologies could be used singly or in combination to non-intrusively measure electric and magnetic field vectors at the same location within a target system.</p> <p>Early testing of electric field sensors in support of electromagnetic rail gun T&E identified a prime source for indicating rail wear, a key issue for rail gun systems. To better support C-IED testing, the test technology development to measure soil electrical properties built a brass board sensor with three interchangeable heads to cover the required frequencies. The brass board had been used in proving the concept to measure the soil electrical properties for portions of the test site within minutes versus days associated with legacy systems. Results produced measurements similar to those of legacy technologies. This soil properties measurement technology was transitioned to the testing community.</p> <p>The technology to characterize terahertz beam quality in support of testing the proliferating number of Terahertz sensors and detectors, which were used for force protection and characterizing explosives or biological threats, was transitioned to the test community.</p> <p>FY 2013 Plans:</p> <p>Within the HEL area, efforts will focus on completing the technology developments for measuring energy on target and characterizing effects on target using onboard sensing. The performance of these matured technologies will direct the focus of future investments to optimize HEL measurement capabilities on test ranges. New efforts will be initiated to address identified test technology shortfalls, including HEL test safety and HEL collateral effects. This includes efforts to improve the understanding of HEL reflection hazards so that testing of HEL systems can be done safely without risk to observers and sensors. In addition, test technologies will focus on the characterization of solid state laser effects on targets in support of weapons systems in development and demonstration by the Army, Navy, and Air Force. Test technologies to support the measurement of laser lethality on rockets, artillery, mortars, and unmanned air vehicle targets will remain a key area of investment. Furthermore, efforts to characterize beam propagation through the atmosphere will center on the maritime environment in support of emerging needs of the Navy. Investment will be placed in laser safety software and hardware to allow testing at multiple test ranges without affecting aircraft and space-based sensors.</p> <p>Initiatives to achieve very small, non-intrusive current and voltage sensors to measure HPM effects inside a target will be completed. These technologies will be transitioned to at least two locations to demonstrate the flexibility of these approaches. A small, minimally intrusive data acquisition device with a wide bandwidth to match that of the non-intrusive electric and magnetic field sensors will be investigated.</p>			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>		R-1 ITEM NOMENCLATURE PE 0603941D8Z: <i>Test and Evaluation/</i> <i>Science and Technology</i>	PROJECT 5: <i>Directed Energy Test</i>
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
<p>A HPM test risk reduction effort will be performed to determine the best approach to construct a more durable pressurized – radio frequency transmitting dome that does not leak over time for a test capability that emulates wideband threats. A new study will be initiated to investigate technologically-viable alternatives to provide the neutron radiation required for nuclear survivability testing.</p> <p><i>FY 2014 Plans:</i></p> <p>Investments in HEL test technologies will be initiated to assess the changes in HEL effects due to the shift of HELs to shorter wavelengths near 1 micron. Such HELs include solid state, fiber, and free electron laser systems. Tunable over a wide range, free electron lasers present unique testing challenges for open air testing, including measuring laser energy on target, as well as characterizing the beam propagation and thermal blooming effects. As development of electromagnetic rail guns and the free electron lasers advance, investments in test technologies supporting these weapon systems will be initiated.</p> <p>In the HPM area, measuring the actual cause of HPM effects on electronics will be addressed by measurement of electrical currents within the wires and chips of the electronic targets. To better support weapon research and design, a method will be sought to determine the time out of action for targets after an HPM attack. In survivability testing, these sensors will support assessment of susceptibility with different HPM source power levels. Additionally, the DET project will address technology for small, powerful HPM sources to allow testing of the susceptibility of U.S. equipment in a chamber environment.</p>			
Accomplishments/Planned Programs Subtotals		11.235	8.867
C. Other Program Funding Summary (\$ in Millions)			
N/A			
Remarks			
D. Acquisition Strategy			
N/A			
E. Performance Metrics			
Percentage of T&E/S&T projects progressing satisfactorily toward technical, financial, schedule, and risk mitigation goals.			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 3: Advanced Technology Development (ATD)					R-1 ITEM NOMENCLATURE PE 0603941D8Z: Test and Evaluation/ Science and Technology				PROJECT 6: Netcentric Systems Test			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
6: Netcentric Systems Test	-	20.072	18.090	16.063	-	16.063	14.960	10.679	10.922	11.167	Continuing	Continuing

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

The Net-Centric Systems Test (NST) project is pursuing test technologies to emulate multi-Service, Joint, and coalition net-centric operations in a system of systems test and evaluation (T&E) environment. Additionally, the NST project develops technologies to analyze and evaluate the increasingly massive amounts of structured and unstructured data generated by complex net-centric tests. The technology to conduct T&E on net-centric systems is challenged by sensor platforms, command and control systems and weapon platforms that support the kill chain in a Joint operation. These systems must be evaluated for their ability to provide an accurate, timely transfer of data (e.g., target tracks, weapons allocation, mission tasking and situational awareness), as the data passes among different systems of Service and coalition participants. The NST technologies advance test automation (test planning, test execution, test control, and analysis) that enable the virtual integration of Department of Defense (DoD) weapon laboratories and open air ranges. Using models and simulations along with hardware-in-the-loop laboratories, the effectiveness of Joint missions can be assessed in terms of system-of-systems interoperability and effectiveness in executing Joint mission operations, including testing of weapons and Command and Control systems accessing and providing information to the Global Information Grid. The technology development efforts within the NST project have been prioritized to align with DoD guidance on science and technology priority investments, particularly in measuring "Data to Decision" techniques and warfighting capabilities. Ultimately, the NST portfolio enables the T&E community to "test like we fight" by replicating net-enabled, Joint mission operations within a T&E environment.

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2012	FY 2013	FY 2014
Title: Netcentric Systems Test	20.072	18.090	16.063
FY 2012 Accomplishments: Efforts included technology development for planning a complex, multi-system, mission-level net-centric test in a distributed live-virtual-constructive (LVC) environment and controlling test execution through management of the mission scenario. The NST project developed test planning technologies to address test integration and interoperability issues. Ontologies were developed to formalize concepts pertaining to LVC test resources in a net-centric joint mission environment (JME). The NST project developed knowledge bases that captured subject matter expertise on setup and execution of a test event and characteristics of test resources. Machine reasoning capabilities were extended and integrated to automate test planning tasks. The NST project continued development of a planning and visualization technology to support joint mission thread testing to better correlate test data to the effectiveness of mission operations. The NST project advanced technologies to support the execution of distributed tests with active network control, enhanced the dynamic management of the test infrastructure, and improved the integration of Service laboratories and test ranges. These			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>		R-1 ITEM NOMENCLATURE PE 0603941D8Z: <i>Test and Evaluation/</i> <i>Science and Technology</i>	PROJECT 6: <i>Netcentric Systems Test</i>	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2012	FY 2013
<p>technologies were transitioned and integrated into the Test and Training Enabling Architecture (TENA) that was used by the Joint Mission Environment Test Capability (JMETC) and at test facilities and training ranges.</p> <p>The NST project continued investigating in technologies to test military systems that employed Service-Oriented Architectures (SOA), including test technologies to help the tester understand what was happening inside and between SOAs during test events. A SOA prototype test tool was developed and successfully demonstrated for the Joint Interoperability Test Command. These test technologies allowed the tester to understand the environment, including but not limited to network hardware and software. The NST project also developed technologies for the next generation of TENA middleware that supported a broad range of networks, including wireless networks, and provided native support for handheld and embedded computing platforms. This technology successfully demonstrated TENA connectivity through wireless networks to several commercially-available smartphone devices. Global Positioning System and accelerometer test data were successfully transmitted over commercial cellular carriers using an encrypted virtual private network.</p> <p>The NST project transitioned test technologies to the Central Test and Evaluation Investment Program (CTEIP) Interoperability Test and Evaluation Capability (InterTEC) to support a planning and visualization web service technology used during the InterTEC Cyber Event. This technology enabled testers to efficiently apply mission threads to test design. In addition, these test technologies also transitioned to the NAVAIR Integrated Warfighting Capability.</p> <p>FY 2013 Plans:</p> <p>The NST project will focus on efforts that enable TENA to utilize remote methods of authentication and privilege management to distributed users. This technology will support the DoD's remote authentication T&E needs and next generation Multi-Level Security T&E capabilities. Additionally, the NST project will continue the development of technologies to support the measurement and analysis of the net-centric test environment. The analysis of Joint mission threads in near real-time will be assisted by the development of a test technology that will allow effective replication and characterization of Joint mission threads. The testing of SOA will be emphasized through the research and development of instrumentation and analysis tools utilizing embedded agent-based technologies. Additional test technology development will be conducted in semantic interoperability and defining ontologies that formalize concepts pertaining to distributed test resources in a net-centric JME.</p> <p>The NST project will focus predictive smart dead-reckoning technology to address the challenge to adequately synchronize the distributed test environment. This effort will provide the necessary distributed intelligence to manage time space position information (TSPI) updates in the net-centric test battlespace with a distributed LVC architecture. The NST project will build upon previously developed NST technologies to solve the test challenges of producing accurate TSPI predictions under all network conditions, to include both unpredictable network latency and missing information. Since the predictive smart dead-reckoning technology will be built on top of the policy-enabled agent, it will be able to provide fast response under complex test event conditions.</p> <p>FY 2014 Plans:</p>				

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>		R-1 ITEM NOMENCLATURE PE 0603941D8Z: <i>Test and Evaluation/ Science and Technology</i>	PROJECT 6: <i>Netcentric Systems Test</i>
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
The NST project will continue developing technology that will automate the planning of test events based on advanced semantic web technology. Development will continue on technologies to support the use of TENA over a broad range of networks and to provide a common interoperability test architecture. Modeling and simulation technologies to support emulation and stimulation of networks for conducting T&E along with simulation fidelity assessments in the T&E context will also be investigated.			
Accomplishments/Planned Programs Subtotals		20.072	18.090
C. Other Program Funding Summary (\$ in Millions) N/A			
Remarks			
D. Acquisition Strategy N/A			
E. Performance Metrics Percentage of T&E/S&T projects progressing satisfactorily toward technical, financial, schedule, and risk mitigation goals.			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 3: Advanced Technology Development (ATD)					R-1 ITEM NOMENCLATURE PE 0603941D8Z: Test and Evaluation/ Science and Technology				PROJECT 7: Unmanned and Autonomous System Test			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
7: Unmanned and Autonomous System Test	-	3.159	5.711	6.716	-	6.716	11.479	12.843	14.072	14.312	Continuing	Continuing
[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012												
^{##} The FY 2014 OCO Request will be submitted at a later date												
A. Mission Description and Budget Item Justification												
Unmanned and Autonomous Systems (UAS) support every domain of warfare. They operate in space, in air, on land, on the sea surface, undersea and in subterranean conditions to support a vast variety of missions. The emergence of unmanned systems brings a host of revolutionary capabilities that will profoundly influence warfare. The Unmanned and Autonomous Systems Test (UAST) project addresses current and emerging challenges associated with the test and evaluation (T&E) of these critical warfighting capabilities. The technology development efforts within the UAST project have been prioritized to align with Department of Defense (DoD) guidance on science and technology priority investments, particularly in assessing autonomy. As such, the UAST project is developing test technologies to simulate, stimulate, instrument, measure, and assess autonomous systems' ability to perceive its environment, process information, adapt to dynamic conditions, make decisions, and effectively act on those decisions in the context of mission execution. The UAST project will provide the test technologies to effectively measure performance and characterize risk, thereby increasing warfighter trust in autonomous systems. Current DoD test capabilities and methodologies are insufficient to address the testing of increasingly autonomous units and teams of unmanned systems operating in unstructured, dynamic, battlespace environments. Furthermore, advancements are being made in developing collaborating system-of-autonomous-systems, working in concert as a swarm or pack and in close proximity with humans. New test technologies are needed to stress the collective set of autonomous systems under realistic conditions, predict emergent behavior of autonomous systems, emulate the complex environment, and assess mission performance of these highly coupled and intelligent systems.												
B. Accomplishments/Planned Programs (\$ in Millions)										FY 2012	FY 2013	FY 2014
Title: Unmanned and Autonomous System Test										3.159	5.711	6.716
FY 2012 Accomplishments: The UAST project focused on predicting and assessing the autonomy functions of unmanned and autonomous systems through the initiation of new technology developments. The complexity of operational unmanned and autonomous systems, with all possible interactions occurring between sensing, perception, reasoning, mapping, decision making and action, resulted in an almost infinite set of potential interactions and correspondingly, an almost infinite set of test conditions. An effort was initiated to employ evolutionary/genetic algorithms in a software-in-the-loop environment to accurately predict the fault conditions of a complex, long-duration autonomous system. Initially supporting testing of the Long Duration – Unmanned Underwater Vehicle, this test technology improved the ability to predict fault conditions and thereby enabled focused test strategies that dramatically improved the efficiency of testing.												

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 3: Advanced Technology Development (ATD)		R-1 ITEM NOMENCLATURE PE 0603941D8Z: Test and Evaluation/ Science and Technology		PROJECT 7: Unmanned and Autonomous System Test
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
<p>In the area of autonomous system performance assessment, a test technology was developed to enable automated stress testing of UAS software at the interfaces of the core components without requiring source code. The approach was agnostic to the specific component interface. This technology provided the tester with a perspective of system performance and a currently unavailable prediction of behavior. Recent stress-testing of a representative ground-based UAS system identified vulnerability issues at the command interface layer of the system. Additionally, in the area of autonomous system performance assessment, a virtual UAS test bed was designed that used environmental data from external sources (to include imagery from operational areas of interest) and injected that data into simulations of a given UAS to predict the behavior of the system in the operational environment. An initial demonstration of this test technology facilitated efficient testing in an operationally representative environment and allowed for safe operations at “edge of the envelope” performance parameters.</p> <p>FY 2013 Plans: Efforts will focus on test technology supporting the near term challenges identified in the 2011 – 2036 DoD Unmanned Systems Integrated Roadmap, such as, integrating DoD unmanned systems within the National Airspace and safely operating unmanned aerial systems within our national ranges. The UAST project will further explore test technologies to meet the challenges of testing autonomy by leveraging advances made in the standardization of UAS architectures, functional components, and interfaces.</p> <p>The test technology to adapt evolutionary algorithms to predict fault conditions will be expanded to address evaluation functions for multiple missions of a long duration UAS. The effort to stress test UAS software will explore technologies to integrate UAS models with software exception databases to allow for sharing of test data across multiple UAS platforms. The UAS virtual test bed effort will complete its architecture and terrain modeling, develop perceptual boosting algorithms based on vehicle sensors, and integrate all sensor and simulation modules into a complete virtual test bed. The complete prototype test bed will be verified through comparison of the outputs from the models inside the virtual proving ground with real data acquired during field tests. The UAST project will deliver a roadmap of potential test technology needs for testing autonomous systems at DoD ranges.</p> <p>FY 2014 Plans: The UAST project will deliver the technologies developed in the on-going efforts discussed above. Furthermore, the UAST project will continue to develop test technology that addresses mid-term UAS test challenges associated with autonomy and initiate efforts to explore the far term challenges of testing system intelligence. These efforts will include an examination of test technologies that measure the logical flow of sensing data, to perception, decisions, and action. Additionally, the UAST project will focus on enhancing the test environment to assess unmanned threat systems. The UAST project will develop instrumentation and analysis technologies to enable UAS testing that furnishes data to support the evaluation of overall mission performance in a Joint context. The UAST project will initiate efforts to enable dynamic construction, control, measurement of complex systems-of-autonomous-systems and tactically meaningful counter-unmanned systems analysis. Test requirements will expand to integrate multi-UAS test beds that support a simulation-based methodology to seamlessly integrate constructive simulation, UAS-in-the loop simulation, and live UAS tests. The UAST project will deliver complementary tools to predict UAS behavior by monitoring how</p>				

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>		R-1 ITEM NOMENCLATURE PE 0603941D8Z: <i>Test and Evaluation/ Science and Technology</i>	PROJECT 7: <i>Unmanned and Autonomous System Test</i>
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
autonomous systems process data in response to environmental changes. Simulated systems will replicate multiple platforms for the evaluation of multi-platform behaviors and detailed system/event logging. Modeling and simulation techniques will be expanded to provide high fidelity representations of appropriate environmental complexity in order to stress the UAS and establish confidence in the safety and capabilities of future systems.			
Accomplishments/Planned Programs Subtotals		3.159	5.711
C. Other Program Funding Summary (\$ in Millions) N/A			
Remarks			
D. Acquisition Strategy N/A			
E. Performance Metrics Percentage of T&E/S&T projects progressing satisfactorily toward technical, financial, schedule, and risk mitigation goals.			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 3: Advanced Technology Development (ATD)					R-1 ITEM NOMENCLATURE PE 0603941D8Z: Test and Evaluation/ Science and Technology				PROJECT 8: Cyberspace Test			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
8: Cyberspace Test	-	0.246	3.288	5.897	-	5.897	10.212	12.916	14.146	14.389	Continuing	Continuing

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

The Department of Defense (DoD) ability to use cyberspace for rapid communication and information sharing in support of operations is a critical enabler of DoD military missions. Advancements in utilizing cyberspace are outpacing the technologies needed for test and evaluation (T&E). The Cyberspace Test Technology (CTT) project will develop advanced technologies and methodologies to test and evaluate DoD capabilities and information networks to defend and conduct full-spectrum military operations across cyberspace. Current cyberspace T&E capabilities are insufficient to support the continual experimental, contractor, developmental, operational, and live-fire testing requirements of warfighter systems operating in cyberspace. Many of the test tools and infrastructure items required for systems in cyberspace will need advancement and maturation of various nascent test technologies. The CTT project has been aligned with DoD guidance on science and technology (S&T) priorities, specifically in the area of Cyber S&T. The CTT project will address test technology shortfalls in cyberspace testing, including planning cyberspace tests, creating representative cyberspace threats, and executing cyberspace tests.

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2012	FY 2013	FY 2014
Title: Cyberspace Test	0.246	3.288	5.897
FY 2012 Accomplishments: A CTT broad agency announcement (BAA) was issued to solicit CTT proposals from industry, academia, and government laboratories, seeking technology solutions in each of the three CTT domains for cyberspace testing: cyberspace test planning, cyberspace threats, and cyberspace test execution and analysis.			
FY 2013 Plans: The CTT project will focus on test technologies to address the need to provide automated CTT planning, set-up, and configuration. Additionally, the CTT efforts will prototype technologies to meet the need for real-time hardware-in-the-loop capabilities to simulate cyberspace threats. The CTT project will investigate using integrated cross-domain solutions and gateways to create realistic cyberspace tests at multiple levels of security classifications. The CTT project will also focus on threat cyberspace attack technologies required to assess information assurance vulnerabilities and to improve the agility of cyberspace test capabilities. A CTT roadmap, which synchronizes with overall Department cyberspace plans, will be developed.			
FY 2014 Plans:			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>		R-1 ITEM NOMENCLATURE PE 0603941D8Z: <i>Test and Evaluation/</i> <i>Science and Technology</i>	PROJECT 8: <i>Cyberspace Test</i>
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
The CTT project will continue to focus on technologies addressing the need to provide automated cyberspace T&E (design, planning, and configuration), particularly in support of defensive cyber operations testing. The CTT project will also develop test technologies to advance a distributed cyberspace test environment.			
Accomplishments/Planned Programs Subtotals		0.246	3.288
C. Other Program Funding Summary (\$ in Millions) N/A			
Remarks			
D. Acquisition Strategy N/A			
E. Performance Metrics Percentage of T&E/S&T projects progressing satisfactorily toward technical, financial, schedule, and risk mitigation goals.			

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense	DATE: April 2013
-------------------------------------------------------------------------------------------------	-------------------------

APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE							
0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>					PE 0604055D8Z: <i>Operational Energy Capability Improvement</i>							
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
Total Program Element	-	23.909	26.244	52.001	-	52.001	37.120	37.791	38.296	38.948	Continuing	Continuing
P455: <i>Operational Energy Capability Improvement</i>	-	20.659	26.244	35.501	-	35.501	37.120	37.791	38.296	38.948	Continuing	Continuing
P456: <i>Hybrid Energy Storage Module (HESM)</i>	-	3.250	0.000	16.500	-	16.500	0.000	0.000	0.000	0.000	Continuing	Continuing

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

This program element funds innovation that will improve the Department's operational effectiveness via targeted operational energy science and technology investments. It contains two projects this year.

P455 The Operational Energy Capability Improvement Fund (OECIF) incentivizes long term change in the science and technology portfolio of the Department to be more in line with the Department-wide Operational Energy Strategy and generally fosters innovation to improve operational energy performance. This mission has two key aspects. First, to develop and/or demonstrate and rapidly transition into the force operational energy technologies or practices that will improve the Department's military capabilities and/or reduce its costs. Second, to establish within the military Services sustainable institutional capacities that will continue to research, develop and adopt operational energy innovations. OECIF funds serve as "seed money" to consolidate or start promising operational energy programs or directions to be sustained by the Services; accordingly, OECIF generally emphasizes supporting or establishing programs, rather than one-off projects.

P456 The Hybrid Energy Storage Module (HESM) project explores advanced technology development of hybrid energy storage associated with providing the capability to enhance fuel efficiency, maximize performance and reliability, and enable future high power weapons and sensors systems on legacy and next generation Army and USMC battlefield generators and vehicles, Air Force and Navy aircraft and Navy ships. This project will demonstrate scalable energy storage systems with high power and energy densities, high rate capability that: reduce total logistics replenishment of fuel and material; increase platform and vehicle ability to sustain operations during engagement; and reduce maintenance and other events that interfere with mission capability. Post the demonstration completion, this technology will be further sustained by the Services.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense	DATE: April 2013
-------------------------------------------------------------------------------------------------	-------------------------

APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0604055D8Z: <i>Operational Energy Capability Improvement</i>
-----------------------------------------------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------

B. Program Change Summary (\$ in Millions)	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total
Previous President's Budget	23.909	26.244	32.653	-	32.653
Current President's Budget	23.909	26.244	52.001	-	52.001
Total Adjustments	0.000	0.000	19.348	-	19.348
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments	0.000	0.000	19.348	-	19.348

Change Summary Explanation

The change is a result of funding the Hybrid Energy Storage Module- HESM (\$16.5M) that explores the advanced technology development of hybrid storage enhanced fuel efficiency and enables future high power weapons and sensor systems be placed on generators, vehicles, aircraft and ships. Additionally, funding (\$2.8M) was realigned to accommodate other higher priority programs.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 3: Advanced Technology Development (ATD)					R-1 ITEM NOMENCLATURE PE 0604055D8Z: Operational Energy Capability Improvement				PROJECT P455: Operational Energy Capability Improvement			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
P455: Operational Energy Capability Improvement	-	20.659	26.244	35.501	-	35.501	37.120	37.791	38.296	38.948	Continuing	Continuing
[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012												
^{##} The FY 2014 OCO Request will be submitted at a later date												
A. Mission Description and Budget Item Justification Operational Energy Capability Improvement Fund (OECIF)												
B. Accomplishments/Planned Programs (\$ in Millions)									FY 2012	FY 2013	FY 2014	
Title: Operational Energy Capability Improvement									20.659	26.244	35.501	
Description: The Operational Energy Capability Improvement Fund (OECIF) incentivizes long term change in the science and technology portfolio of the Department to be more in line with the Department-wide Operational Energy Strategy and generally fosters innovation to improve operational energy performance. This mission has two keys aspects. First, to develop and/or demonstrate and rapidly transition into the force operational energy technologies or practices that will improve the Department’s military capabilities and/or reduce its costs. Second, to establish within the military Services sustainable institutional capacities that will continue to research, develop and adopt operational energy innovations. OECIF funds serve as “seed money” to consolidate or start promising operational energy programs or directions to be sustained by the Services; accordingly, OECIF generally emphasizes supporting or establishing programs, rather than one-off projects.												
FY 2012 Accomplishments: The primary emphasis in FY 2012 was the establishment of five programs devoted to reducing the energy loads of expeditionary outposts. Consistent with the mission of this funding, these programs are being executed by the Services and PACOM. An Army/Navy program to improve the efficiency of vapor compression cooling systems in forward areas began work on various component technologies and environmental data reduction and model development. A complementary Navy/ARPA-E program to pursue high risk, high reward deployable cooling technologies determined the needed capabilities and began a process to select ARPA-E technologies to leverage. An Army/Air Force program to develop energy efficient soft shelters/tents established technical baselines and thermal models of shelter systems, began to identify and mature technologies to reduce energy consumption and coordinated a variety of related technology, test and demonstration activities. A Navy program to improve the energy efficiency of containerized living units (CLUs) began testing component technologies and investigating new shelter configurations/ designs for a super-efficient CLU. A PACOM/DOE program to evaluate an array of technologies to reduce energy loads in tropical environments, partly through a deployable testbed, conducted some initial tests and set up its outreach network, which is designed to reach a variety of organizations that offer promising technologies.												

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense			DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>		R-1 ITEM NOMENCLATURE PE 0604055D8Z: <i>Operational Energy Capability Improvement</i>		PROJECT P455: <i>Operational Energy Capability Improvement</i>	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2012	FY 2013	FY 2014
<p>These five programs were complemented by several other efforts. One such effort involves establishing a quantitative basis for energy use of expeditionary outposts in Afghanistan; this program instrumented and began collecting data on various equipment in the field. Another is a joint program with the Strategic Environmental Research and Development program (SERDP) to develop practical, deployable waste to energy systems; that program awarded contracts to develop conceptual designs and test prototypes. Finally, there is a program to develop modeling and simulation technology to assess operational energy effects in ground operations.</p> <p>FY 2013 Plans: The energy load reduction, waste to energy programs and data collection programs begun in FY 2012 will be continued. The Army/Navy cooling technology program will continue its development/investigation of various component technologies and move into developing integrated cooling systems for demonstration and testing. The Navy/ARPA-E program will select and further develop innovative ARPA-E cooling technologies for expeditionary applications, such as energy efficient dehumidification and compact, low cost absorption heat pumps. The Army/Air Force soft shelters/tent program will conduct first generation technical testing in relevant locales to validate reductions in energy consumption compared to the baseline and continue improving energy efficiency through thermal modeling, further technology maturation, and optimizing second generation, system-level designs. The Navy CLU program will continue testing various component technologies as potential upgrades for existing CLUs and design and prototype a new super-efficient CLU. The PACOM/DOE program will test additional technologies during several exercises and continue to build-up and improve its outreach network. The data collection program in Afghanistan will finish collecting data and then analyze the results. The waste to energy program with SERDP will complete the design of waste-to-energy systems and construct prototype systems.</p> <p>The key new initiative in FY 2013 will be the start up of broad efforts to improve DoD's operational energy performance particularly by involving nontraditional innovators and small businesses in meeting DoD's operational energy challenges. These new programs will emphasize the use of innovative business methods, such as consortia, to establish standing forums for sustained interaction between DoD and a broad variety of non-government organizations. Possible topics for these consortia or similar organizations include dismounted power, power supply networks for expeditionary outposts, and tactics, techniques and procedures for energy efficient operations. These programs will be executed by the Services.</p> <p>FY 2014 Plans: For FY 2014, the load reduction, waste to energy and operational energy consortia established in FY 2012 and FY 2013 will be continued, provided individual programs are proceeding properly. The Army/Navy cooling program will complete its integrated cooling systems and demonstrate them at key Army evaluations designed to promote transition. The Navy/ARPA-E cooling program will complete the technology development programs under its sponsorship while pursuing transition opportunities. The Army/Air Force soft shelters/tent program will conduct second generation technical testing in relevant locales to validate a 50</p>					

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>		R-1 ITEM NOMENCLATURE PE 0604055D8Z: <i>Operational Energy Capability Improvement</i>	PROJECT P455: <i>Operational Energy Capability Improvement</i>
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
<p>percent reduction in energy consumption compared to the baseline and transition technologies to appropriate programs. The Navy CLU program will finalize the design and conduct a field test of the super-efficient CLU. The PACOM/DOE program will test and refine additional load reduction technologies for tropical environments, validate the data collected in previous assessments, and look for additional DoD partners with similar or related challenges. The waste to energy program with SERDP will evaluate the prototype systems using waste streams that simulate those encountered at expeditionary base camps.</p> <p>FY 2014 new starts will focus on filling one or more of the operational energy technology gaps identified in a technology gap assessment completed by ASD(R&E) at the end of FY 2012. Consistent with the mission of this funding, these new programs will aim to fill some of the identified gaps by funding the startup of sustainable S&T programs within the Services. The five top priority gaps are: High Efficiency Energy Conversion; Energy Integrated Design and Simulation; High Efficiency Propulsion; Environmental Control Units; Flexible and Adaptive Power Distribution.</p>			
Accomplishments/Planned Programs Subtotals		20.659	26.244
C. Other Program Funding Summary (\$ in Millions)			
N/A			
Remarks			
D. Acquisition Strategy			
N/A			
E. Performance Metrics			
None			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE				PROJECT			
0400: Research, Development, Test & Evaluation, Defense-Wide BA 3: Advanced Technology Development (ATD)					PE 0604055D8Z: Operational Energy Capability Improvement				P456: Hybrid Energy Storage Module (HESM)			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
P456: Hybrid Energy Storage Module (HESM)	-	3.250	0.000	16.500	-	16.500	0.000	0.000	0.000	0.000	Continuing	Continuing
[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012												
^{##} The FY 2014 OCO Request will be submitted at a later date												
A. Mission Description and Budget Item Justification												
This project explores advanced technology development of hybrid energy storage associated with providing the capability to enhance fuel efficiency, maximize performance and reliability, and enable future high power weapons and sensor systems on legacy and next generation Army and USMC battlefield generators and vehicles, Air Force and Navy aircraft, and Navy ships. This project will demonstrate scalable energy storage systems with high power and energy densities, high rate capability that: reduce total logistics replenishment of fuel and material; increase platform and vehicle ability to sustain operations during engagement; and reduce maintenance and other events that interfere with mission capability. Post the demonstration completion, this technology will be further sustained by the Services. This program is closely coordinated with the Advanced Management and Protection of Energy-storage Devices (AMPED) program of the Department of Energy's Advanced Research Projects Agency – Energy (ARPA-E). AMPED technology will be used to potentially extend the operational performance benefits and safety for these applications beyond the hybrid storage module baseline design configurations.												
B. Accomplishments/Planned Programs (\$ in Millions)										FY 2012	FY 2013	FY 2014
Title: Hybrid Energy Storage Module (HESM)										3.250	0.000	16.500
FY 2012 Accomplishments:												
The primary emphasis in FY 2012 was the establishment of efforts devoted to hybrid energy storage research of application oriented model development, establishment of test-beds and device limitation characterization at the service laboratories for military specific applications, design architecture for plug-and-play capabilities, definition of safety metrics, and validation & verification of advanced complex controls. Further efforts established system level metrics for HESM demonstrations and concept of operations in all demonstration areas. Efforts associated with Army and USMC battlefield generator and vehicle HESM demonstrator development was initiated. These efforts are executed by the Services.												
FY 2013 Plans:												
The HESM efforts begun in FY 2012 will be continued. The key new initiatives in FY 2013 will be the initiation of Air Force and Navy aircraft, and Navy ships HESM demonstrator development. Further energy storage technology demonstration effort associated with safe operation of energy storage impacting all three military application areas will be initiated. The goal of this effort is to develop and demonstrate a safe energy storage structure which is capable of not only buffering against life-reducing high operating temperatures due to aggressive cycling operations but also preventing or limiting thermal runaway conditions.												
FY 2014 Plans:												

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>		R-1 ITEM NOMENCLATURE PE 0604055D8Z: <i>Operational Energy Capability Improvement</i>	PROJECT P456: <i>Hybrid Energy Storage Module (HESM)</i>
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
For FY 2014, the HESM established in FY 2012 and 2013 will be continued, provided individual programs are proceeding properly. The Army and USMC battlefield generator and vehicle HESM unit will be demonstrated and transitioned to the Services. Based on results of development and demonstration, operational impact and definition of standards for varieties of energy storage devices and HESM modules for insertion into current and future military platforms will be assessed.			
Accomplishments/Planned Programs Subtotals		3.250	0.000
C. Other Program Funding Summary (\$ in Millions) N/A			
Remarks			
D. Acquisition Strategy N/A			
E. Performance Metrics None			

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense	DATE: April 2013
-------------------------------------------------------------------------------------------------	-------------------------

APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE							
0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>					PE 0303310D8Z: <i>Countering Weapons of Mass Destruction (CWMD) Systems</i>							
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
Total Program Element	-	4.117	53.946	52.053	-	52.053	53.760	49.609	51.744	46.897	Continuing	Continuing
P*004: <i>Countering Weapons of Mass Destruction Systems</i>	-	4.117	53.946	52.053	-	52.053	53.760	49.609	51.744	46.897	Continuing	Continuing

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

This program addresses developing an integrated and interconnected CWMD capabilities-based system that defines and enables a comprehensive, global awareness and readiness for CWMD steady-state and surge postures. The diverse and complex Countering Weapons of Mass Destruction (CWMD) – nuclear, biological and chemical threats – mission space requires an integrated approach towards capability development. Capability development must be based on a systems perspective that links strategic objectives with interrelated tasks and associated capabilities. The broad CWMD military strategic objectives and mission areas encompass many nontraditional capabilities for the Warfighter, and CWMD is not an isolated mission set unique to DoD – it is intertwined with counter-terrorism and homeland defense. Accordingly, developing an overall CWMD capability should and must leverage complementary capabilities through integration and synchronization. A global CWMD situational awareness capability will be established and deployed worldwide via current communications systems and common operating pictures in support of this mission. This program will incorporate portfolio management tools and comprehensive analyses to enable a balanced and integrated CWMD systems portfolio, an optimized CWMD force structure, and the integration with and utilization of existing military assets to fill intelligence, sensor and reconnaissance gaps in CWMD.

This program also responds to the strategic needs outlined in the President's initiative, stated in his April 2009 speech in Prague; the US Combatant Commands integrated priorities and requirements; the 2010 Quadrennial Defense Review; and the FY12-16 Defense Planning and Programming Guidance by providing improved timeliness and relevance through modernizing CWMD support to the Combatant Commands, Office of the Secretary of Defense, Joint Staff, Intelligence Community (IC), and other U.S. Government agencies as required. This program is designed to leverage existing DoD resources and proven approaches to achieve its goals and rapidly deliver a capability to the Warfighter. It will ensure sufficient funding is available for travel to support the requirements of this program element.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense	DATE: April 2013
-------------------------------------------------------------------------------------------------	-------------------------

APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0303310D8Z: <i>Countering Weapons of Mass Destruction (CWMD) Systems</i>
-----------------------------------------------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------

B. Program Change Summary (\$ in Millions)	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total
Previous President's Budget	4.117	53.946	60.804	-	60.804
Current President's Budget	4.117	53.946	52.053	-	52.053
Total Adjustments	0.000	0.000	-8.751	-	-8.751
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Program Transfer	0.000	0.000	-8.751	-	-8.751

Change Summary Explanation

Program transfer from PE 0303310D8Z to establish Budget Activity 7 Operational System Development (PE 0607310D8Z) and CWMD Systems O&M (PE 0902198D8Z)lines. This transfer provides funding for developmental efforts to upgrade systems (prototypes) that have been fielded and to establish long-term program oversight and sustainment capability for CWMD systems.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0303310D8Z: <i>Countering Weapons of Mass Destruction (CWMD) Systems</i>	PROJECT P*004: <i>Countering Weapons of Mass Destruction Systems</i>
-----------------------------------------------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------

COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
P*004: <i>Countering Weapons of Mass Destruction Systems</i>	-	4.117	53.946	52.053	-	52.053	53.760	49.609	51.744	46.897	Continuing	Continuing

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

This program addresses developing an integrated and interconnected CWMD capabilities-based system that defines and enables a comprehensive, global awareness and readiness for CWMD steady-state and surge postures. The diverse and complex Countering Weapons of Mass Destruction (CWMD) – nuclear, biological and chemical threats – mission space requires an integrated approach towards capability development. Capability development must be based on a systems perspective that links strategic objectives with interrelated tasks and associated capabilities. The broad CWMD military strategic objectives and mission areas encompass many nontraditional capabilities for the Warfighter, and CWMD is not an isolated mission set unique to DoD – it is intertwined with counter-terrorism and homeland defense. Accordingly, developing an overall CWMD capability should and must leverage complementary capabilities through integration and synchronization. A global CWMD situational awareness capability will be established and deployed worldwide via current communications systems and common operating pictures in support of this mission. This program will incorporate portfolio management tools and comprehensive analyses to enable a balanced and integrated CWMD systems portfolio, an optimized CWMD force structure, and the integration with and utilization of existing military assets to fill intelligence, sensor and reconnaissance gaps in CWMD.

This program also responds to the strategic needs outlined in the President's initiative, stated in his April 2009 speech in Prague; the US Combatant Commands integrated priorities and requirements; the 2010 Quadrennial Defense Review; and the FY12-16 Defense Planning and Programming Guidance by providing improved timeliness and relevance through modernizing CWMD support to the Combatant Commands, Office of the Secretary of Defense, Joint Staff, Intelligence Community (IC), and other U.S. Government agencies as required. This program is designed to leverage existing DoD resources and proven approaches to achieve its goals and rapidly deliver a capability to the Warfighter. It will ensure sufficient funding is available for travel to support the requirements of this program element.

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2012	FY 2013	FY 2014
Title: Countering Weapons of Mass Destruction (CWMD) Systems Description: • A global CWMD situational awareness system and concept of operation to enable a common operating picture and framework for CWMD that will integrate C4ISR, multi-modality intelligence, and other data to support simultaneous operations worldwide and address operational capability gaps. • A portfolio management capability based on an integrated system of systems architectural framework to evaluate potential CWMD investments. • Enhancements to major defense acquisition programs to address CWMD mission and systems' gaps. • A CWMD organizational capabilities review and update as required.	4.117	53.946	52.053

PE 0303310D8Z: *Countering Weapons of Mass Destruction (CWMD)*
 Syst...

Office of Secretary Of Defense

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense			DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>		R-1 ITEM NOMENCLATURE PE 0303310D8Z: <i>Countering Weapons of Mass Destruction (CWMD) Systems</i>		PROJECT P*004: <i>Countering Weapons of Mass Destruction Systems</i>	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2012	FY 2013	FY 2014
<p><i>FY 2012 Accomplishments:</i></p> <ul style="list-style-type: none"> • Initiated development of a CWMD common operating picture (COP), now known as Global CWMD Situational Awareness System (GCAS), to leverage and integrate domain awareness, WMD intelligence and other prevention/control data to support global/regional awareness and the command and control of forces for CWMD. • Assessed and developed steady state posture (DoD organizational capabilities) to provide more rapid, robust responses, develop CMWD concept of operations through USSTRATCOM's Doctrine Change Request (DCR) study. • Developed specific end-user information requirements and the initial Concept of Operations (CONOPS) for the use and integration of GCAS capabilities into day to day operations of Analysts and Decision Makers. Include a supporting non-material solution analysis to include organizational and structural infrastructure for the GCAS system through the DCR study. • Reviewed and evaluated the components of operational systems and organizations that contribute towards all mission areas in CWMD as part of an Analysis of Technologies (AoT) study. • Developed an initial systems architecture for GCAS integration approach. Derive the systems level requirements from the user requirements and system architecture. • Began technical and operational assessments of the tools for data integration and information processing, including data management and visualization alternatives. Analysis will include demonstrated commercial and government available and applicable towards the system requirements for GCAS. • Initiated development of GCAS methodology using WMD intelligence and other prevention/control data to support global/regional awareness and the command and control of forces for CWMD through an AoT and Warfighter Use Case analysis. • Demonstrated a proof of concept of the semantic fusion component of a GCAS capability for technical risk reduction using the existing Haystack system developed by USD(I) to fuse data from various CWMD and Counter-terrorism data sources and look for new indicators and warnings not previously discovered or demonstrate correlations faster and easier than existing capabilities. • Identified framework and options for portfolio management of CWMD systems and begin the development of a risk-based framework to prioritize and guide investment decisions that result in improved operational capabilities. Developed qualitative metrics of performance to drive prioritization and identify options for integrated management of capability development. • Began a structured assessment of DoD organizational capabilities to accomplish the integrated global CWMD mission set in order to support near-term activities and provide a framework for addressing longer-term capability, force-sizing, and force employment issues. In FY12, the assessment focused on the CWMD mission areas of WMD Interdiction, WMD Elimination, and Consequence Management. <p><i>FY 2013 Plans:</i></p> <p>The program will work towards developing a capability that will address all WMD threats – nuclear, chemical, and biological – from both state and non-state sources. It will involve information on a range of drivers of proliferation, including key actors, networks, sensitive materials, and extensive contextual information. It will assist DoD in both preventing the loss of sensitive materials and</p>					

PE 0303310D8Z: *Countering Weapons of Mass Destruction (CWMD)*
Syst...

Office of Secretary Of Defense

UNCLASSIFIED

Page 4 of 7

R-1 Line #71

Volume 3 - 406

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0303310D8Z: <i>Countering Weapons of Mass Destruction (CWMD) Systems</i>	PROJECT P*004: <i>Countering Weapons of Mass Destruction Systems</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
technologies (and the deliberate or natural spread of disease), and in responding to attacks and outbreaks when they do occur. It will integrate with information systems that the combatant commands and Services already use in their day-to-day operations.			
GCAS OPERATIONAL SUPPORT			
<ul style="list-style-type: none"> • Complete the GCAS Concept of Operations (CONOPS). • Complete the analysis of organizational and structural infrastructure options and requirements for GCAS. Focus on the personnel requirements for the centralized component of GCAS i.e. the home base for operations or analysis center. Select location for deployment of the Initial Operating Capability. • Continue the structured assessment of DoD organizational capabilities to accomplish the integrated global CWMD mission set. FY13 efforts will include Security Cooperation and Partner Activities, Threat Reduction Cooperation, and Passive Defense. 			
GCAS PROGRAM, SYSTEMS ENGINEERING and SYSTEMS INTEGRATION			
<ul style="list-style-type: none"> • Begin information model and information architecture development. Complete system functional and performance requirements, and specifications. • Complete technical and operational assessments for data integration and information processing, including data management and visualization alternatives. Analysis will include demonstrated commercial and government available and applicable towards the system requirements for GCAS. • Conduct limited evaluation and downselection of integration and information processing tools based on the candidates evaluated in FY12. Complete technology readiness evaluations as required. • Continue and expand the methodology for determining what Situational Awareness information should be generated to fulfill information needs to describe steady state and event tracking/crisis monitoring. Determine the need for additional data streams to support and their availability. • Transition GCAS demonstration capability to an operational prototype in FY13 with the intention for fielding an initial operating capability in FY14. • Develop GCAS prototype. Identify, leverage and integrate appropriate existing technologies, data and fusion methodologies to produce a GCAS capability with minimal new development efforts. Extend the Haystack data fusion demonstration system to include broader set of data streams and incorporate complementary and orthogonal analytic tools to facilitate the generation of the CWMD situational awareness actionable data. • Develop and implement interfaces to acquire biosurveillance and chemical data from national, international programs and sources. • Develop and implement interfaces to acquire nuclear threat data from nuclear security, nuclear treaty verification, nuclear monitoring, and radiation detection sources and programs. 			

PE 0303310D8Z: *Countering Weapons of Mass Destruction (CWMD)*
Syst...

Office of Secretary Of Defense

UNCLASSIFIED

Page 5 of 7

R-1 Line #71

Volume 3 - 407

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense			DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>		R-1 ITEM NOMENCLATURE PE 0303310D8Z: <i>Countering Weapons of Mass Destruction (CWMD) Systems</i>		PROJECT P*004: <i>Countering Weapons of Mass Destruction Systems</i>	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2012	FY 2013	FY 2014
<ul style="list-style-type: none"> Initiate experimentation of Warfighter prioritized real-world Use Cases using the operational prototyping. CWMD PORTFOLIO MANAGEMENT					
<ul style="list-style-type: none"> Refine the development of a CWMD systems architecture to enable comprehensive and systematic evaluation of needed capabilities as well as their relationship to each other. Refine qualitative metrics and assessment criteria and begin development of quantitative metrics for evaluation, where applicable. MAJOR DEFENSE ACQUISITION PROGRAM ENHANCEMENTS					
<ul style="list-style-type: none"> Integrate capability into lead COCOM's existing common operating picture and processes to improve and enhance CWMD situational awareness. FY 2014 Plans: <ul style="list-style-type: none"> Begin next spiral of situational awareness capability - Add new data sources, life patterns, and rule-sets/algorithms. Generate new methodology and supporting situational awareness feeds from new data and algorithms. Continue to build/upgrade/modify the required infrastructure for the GCAS operations home base to include hardware and software for computational and processing capabilities, training, and organizational support. Continue to integrate GCAS components into a service-oriented, web-based collaborative environment; register and publish service and data capabilities; enable authorized users to subscribe to information of interest; allow accredited data sources to be added. Where appropriate, allow integrated GCAS services and its associated updated CONOPS available to Combatant Commands (COCOMs) and military users. Scale GCAS hardware to support additional users; integrate and test analytical engine updates. Achieve network and system certifications and accreditations and identify initial capability for classified and unclassified security domains and data streams; identify additional Command and Control (C2) integration updates required. Continue technology and data stream gap analysis and supporting research and development to fulfill the requirements for achieving CWMD situational awareness. 					
Accomplishments/Planned Programs Subtotals			4.117	53.946	52.053
C. Other Program Funding Summary (\$ in Millions)					
N/A					
Remarks					

PE 0303310D8Z: *Countering Weapons of Mass Destruction (CWMD)*
Syst...
Office of Secretary Of Defense

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0303310D8Z: <i>Countering Weapons of Mass Destruction (CWMD) Systems</i>	PROJECT P*004: <i>Countering Weapons of Mass Destruction Systems</i>
<p>D. Acquisition Strategy</p> <p>Utilize a knowledge based approach to achieve an operational prototype in FY13 with capability packages that provided upgraded CWMD situational awareness and capabilities with deliveries every 12-18 months utilizing agile software development processes.</p> <p>E. Performance Metrics</p> <p>Success in this area is measured by compliance with various statutes and DoD directives that govern the conduct of the affairs within the Office of ASD/NCB. Maintain cost, schedule, and performance reporting, review, and adjudication. Maintain requirements traceability matrix.</p>		

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE							
0400: Research, Development, Test & Evaluation, Defense-Wide BA 4: Advanced Component Development & Prototypes (ACD&P)					PE 0603161D8Z: Nuclear and Conventional Physical Security/Countering Nuclear Threats							
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
Total Program Element	33.609	29.792	33.234	63.641	-	63.641	47.932	48.436	47.823	50.207	Continuing	Continuing
P162: Nuclear and Conventional Physical Security	33.609	29.792	33.234	34.443	-	34.443	33.360	34.221	34.823	36.707	Continuing	Continuing
P164: CNT Rad/Nuc Passive Defense	0.000	0.000	0.000	1.985	-	1.985	0.000	0.000	0.000	0.000	Continuing	Continuing
P165: National Technical Nuclear Forensics Systems	0.000	0.000	0.000	27.213	-	27.213	14.572	14.215	13.000	13.500	Continuing	Continuing

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

This Program Element (PE) addresses the need to defend and deter against weapons of mass destruction (WMD) threats and to safeguard personnel; prevent unauthorized access to equipment, installations, material, and documents; and to safeguard the foregoing against espionage, sabotage, damage, and theft. This program oversees advanced engineering development throughout DoD for an integrated and systemic RDT&E approach for countering nuclear threats and nuclear and conventional physical security technology and systems. The funding has been centralized in this Defense-wide PE since the early 1990s and represents a substantial portion of all DoD physical security RDT&E funding. Priorities for this PE RDT&E efforts are driven by inputs from Quadrennial Defense Review guidance, Combatant Command and Service requirements, analysis reports such as "Protecting the Force: Lessons from Fort Hood," January 2010, the Integrated Unit, Base, and Installation Protection Cost Benefits Analysis, Multi-national Work Plans established through the Nuclear Security Summit process, and DoD Directive 5210.41, Security Policy for Protecting Nuclear Weapons-directed requirements and associated security deviation reports.

Under this integrated approach, funds are used to provide advanced component development and prototypes for the Department in seven capability areas: (1) Detection and Assessment; (2) Access Controls; (3) Installation and Transport Security; (4) Storage and Safeguards; (5) Prevention; (6) Decision Support Systems; and (7) Analytical Support. This program will evaluate integrated technologies, representative modes or prototype systems in a high fidelity and realistic operating environment. The projects under the Program Element either (a) lead to Programs of Record which can transition to Program Element 0604161D8Z for systems development and demonstration (SDD); (b) become technology insertions into existing programs; or (c) advance to being a certified Commercial/Government off-the-shelf product. The PE initiatives are coordinated by the Physical Security Enterprise and Analysis Group. This group is responsible for avoiding duplication of effort and when applicable ensure systems integration and promote interoperability and sustainability.

This PE can fund travel to support the requirements of this program.

This appropriation will finance work, including manpower, performed by a government agency or by private individuals or organizations under a contractual or grant arrangement with the government who conduct research (systematic study directed toward fuller scientific knowledge or understanding of the subject studied),

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense	DATE: April 2013
-------------------------------------------------------------------------------------------------	-------------------------

APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>	R-1 ITEM NOMENCLATURE PE 0603161D8Z: <i>Nuclear and Conventional Physical Security/Countering Nuclear Threats</i>
---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------

development (systematic use of the knowledge and understanding gained from research, for the production of useful materials, devices, systems, or methods, including the design and development of prototypes and processes) and test and evaluation efforts.

B. Program Change Summary (\$ in Millions)	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total
Previous President's Budget	29.924	33.234	32.629	-	32.629
Current President's Budget	29.792	33.234	63.641	-	63.641
Total Adjustments	-0.132	0.000	31.012	-	31.012
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments	-0.132	0.000	31.012	-	31.012

Change Summary Explanation

FY12 reductions for SBIR adjustment (-0.123) and internal withhold (-0.009).

Internal realignment decisions added \$31.012M to the Program Element to develop Countering Nuclear Threats Radiological and Nuclear Passive Defense and National Technical Nuclear Forensics Systems. This program addresses Presidential mandate to counter Weapons of Mass Destruction and address Multi-national Work Plans established through the Nuclear Security Summit process.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE				PROJECT			
0400: Research, Development, Test & Evaluation, Defense-Wide BA 4: Advanced Component Development & Prototypes (ACD&P)					PE 0603161D8Z: Nuclear and Conventional Physical Security/Countering Nuclear Threats				P162: Nuclear and Conventional Physical Security			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
P162: Nuclear and Conventional Physical Security	33.609	29.792	33.234	34.443	-	34.443	33.360	34.221	34.823	36.707	Continuing	Continuing
Quantity of RDT&E Articles												
# FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012												
## The FY 2014 OCO Request will be submitted at a later date												
A. Mission Description and Budget Item Justification												
This Program Element (PE) addresses the need to defend and deter against weapons of mass destruction (WMD) threats and to safeguard personnel; prevent unauthorized access to equipment, installations, material, and documents; and to safeguard the foregoing against espionage, sabotage, damage, and theft. This program oversees advanced engineering development throughout DoD for an integrated and systemic RDT&E approach for countering nuclear threats and nuclear and conventional physical security equipment (PSE) technology and systems. The funding has been centralized in this Defense-wide PE since the early 1990s and represents a substantial portion of all DoD PSE RDT&E funding. Priorities for this PE RDT&E efforts are driven by inputs from Quadrennial Defense Review guidance, Combatant Command and Service requirements, analysis reports such as "Protecting the Force: Lessons from Fort Hood," January 2010, the Integrated Unit, Base, and Installation Protection Cost Benefits Analysis, Multi-national Work Plans established through the Nuclear Security Summit process, and DoD Directive 5210.41, Security Policy for Protecting Nuclear Weapons-directed requirements and associated security deviation reports.												
Under this integrated approach, funds are used to provide PSE advanced component development and prototypes for the Department in seven capability areas: (1) Detection and Assessment; (2) Access Controls; (3) Installation and Transport Security; (4) Storage and Safeguards; (5) Prevention; (6) Decision Support Systems; and (7) Analytical Support. The projects under the Program Element either (a) lead to Programs of Record – which can transition to Program Element 0604161D8Z for systems development and demonstration (SDD); (b) become technology insertions into existing programs; or (c) advance to being a certified Commercial/Government off-the-shelf product. The PE initiatives are coordinated by the Security Policy Verification Committee and the Physical Security Equipment Action Group. These groups work together to avoid duplication of effort and when applicable ensure systems integration and promote interoperability and sustainability.												
This PE can fund travel to support the requirements of this program.												
This appropriation will finance work, including manpower, performed by a government agency or by private individuals or organizations under a contractual or grant arrangement with the government who conduct research (systematic study directed toward fuller scientific knowledge or understanding of the subject studied), development (systematic use of the knowledge and understanding gained from research, for the production of useful materials, devices, systems, or methods, including the design and development of prototypes and processes) and test and evaluation efforts.												

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>		R-1 ITEM NOMENCLATURE PE 0603161D8Z: <i>Nuclear and Conventional Physical Security/Countering Nuclear Threats</i>	PROJECT P162: <i>Nuclear and Conventional Physical Security</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
Title: Detection and Assessment Description: The ability to detect an adversary and assess their intentions is a basic physical security tenant. This capability area will design equipment to identify and warn of unauthorized access to a specified area or installation as well as equipment related to the notification and identification of explosive threats or hazards. FY 2012 Accomplishments: <ul style="list-style-type: none"> • Successfully developed the technology to display and identify friend or foe information. • Tested advanced seismic sensors configured in arrays for detecting, identifying, and tracking targets of interest on land, sea and air. • Improved the performance of sonar technology by lowering its false alert rate on nuisance targets, increasing its probability of detection for manlike intruders and increasing its detection and classification capability against unmanned underwater vehicles. • Reduced nuisance and false alarm rates and improve automatic human swimmer / diver discrimination. • Long-range imaging sensor to operate with a sonar system to identify divers at significant ranges in the underwater environment. • Designed optimal active sonar functionality in ultra-shallow water environments. • Provided a shoreline, perimeter, enclave detection barrier. • Developed early warning and persistent surveillance/assessment utilizing video motion sensing, audio tracking and seismic detection capabilities. • Increased surveillance and assessment of activity at all hours and in locations that can be on the edge or outside of the facility perimeter. • Interrupted adversaries by analyzing activity in advance of a breach of a defined restricted area boundary. • Provided All-weather surveillance sensor and the ability to classify and identify targets. FY 2013 Plans: <ul style="list-style-type: none"> • Conduct Explosive Detection Equipment testing (Sensor Fusion: Raman and Infrared and Comparative Test & Evaluation of X-ray technology) • Develop wide-area, long-range, foliage, seismic and radiological detection capability (both fixed & mobile) • Develop waterside detection & tracking capability (underwater & land-water interface) • Conduct fence Sensors & Cold Weather Testing FY 2014 Plans: <ul style="list-style-type: none"> • Conduct Explosive Detection Equipment testing (Sensor Fusion: Raman and Infrared and Comparative Test & Evaluation of X-ray technology) • Develop wide-area, long-range, foliage, seismic and radiological detection capability (both fixed & mobile) 		5.898	5.756	5.559

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>		R-1 ITEM NOMENCLATURE PE 0603161D8Z: <i>Nuclear and Conventional Physical Security/Countering Nuclear Threats</i>	PROJECT P162: <i>Nuclear and Conventional Physical Security</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
<ul style="list-style-type: none"> • Develop waterside detection & tracking capability (underwater & land-water interface) • Conduct fence Sensors & Cold Weather Testing 				
Title: Access Controls Description: Controlling access to safeguard personnel and their families and to prevent unauthorized access to critical infrastructure and materials is paramount. This capability area will focus on programs and processes related to the validity and verification of individuals entering or already within a facility. FY 2012 Accomplishments: <ul style="list-style-type: none"> • Determined how technology and procedures can be integrated to minimize an insider threat to intentionally exceed or misuse an authorized level of access to nuclear materials or weapons. • Developed interruption methods to provide immediate, semi-lethal effect on the interior of structures containing nuclear resources without any additional specialized equipment. • Conducted Behavioral Analysis table top exercise. • Conducted Defense Installation Access Control demonstrations in operational environments. FY 2013 Plans: <ul style="list-style-type: none"> • Advance technology and procedures to minimize an insider threat to intentionally exceed or misuse an authorized level of access to nuclear materials or weapons. • Develop interruption methods to provide immediate, semi-lethal effect on the interior of structures containing nuclear resources without any additional specialized equipment. • Transition Defense Installation Access Control to system development and demonstration activities. FY 2014 Plans: <ul style="list-style-type: none"> • Develop Protective Aircraft Structure Internal Denial Capability • Identify Marine Mammal System Delay – Final Denial Enhancement Capability • Determine Methods to Delay/Deny Access to Airborne Launch Control System 		4.218	3.015	2.912
Title: Installation and Transport Security Description: Robust installation and transport security are vital to preventing a weapon of mass destruction attack or the unauthorized access to key assets such as nuclear weapons and special nuclear material. This capability area will focus on programs and equipment intended to improve the physical security profile of fixed sites and facilities, as well as critical items while in-transit. FY 2012 Accomplishments:		5.898	5.995	5.790

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 4: Advanced Component Development & Prototypes (ACD&P)	R-1 ITEM NOMENCLATURE PE 0603161D8Z: Nuclear and Conventional Physical Security/Countering Nuclear Threats	PROJECT P162: Nuclear and Conventional Physical Security		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
<ul style="list-style-type: none">• Evaluated detection options and response capabilities, to include the full spectrum of non-lethal to lethal tactical weapon systems, to protect personnel and assets against the terrorist threat in a waterside security environment.• Developed persistent surveillance, intrusion detection, explosive detection, entry denial, acoustic hailing, autonomous unmanned systems, chemical, biological, radiological, nuclear, and high-explosive and associated functions. <p>FY 2013 Plans:</p> <ul style="list-style-type: none">• Determine if the radar technology can be successfully modified for operation in a cluttered environment while providing extended area protection against direct trajectory stand-off threats.• Assess the ability of electronic warfare sensor to perform off-axis defeats against standoff direct-fired threats.• Establish a semi-permanent installation or relocatable short-term and rapidly installed perimeter security system.• Proof of concept for detection options and response capabilities previously identified, to include the full spectrum of non-lethal to lethal tactical weapon systems, to protect personnel and assets against the terrorist threat in a waterside security environment.• Proof of concept for persistent surveillance, intrusion detection, explosive detection, entry denial, acoustic hailing, autonomous unmanned systems, chemical, biological, radiological, nuclear, and high-explosive and associated functions.• Design a software baseline that brings all of the Tactical Automated Security System software versions back under Government configuration management and control.• Develop a low frequency, single crystal-based, non-lethal to lethal scalable transducer capable of emitting acoustic energy signal. <p>FY 2014 Plans:</p> <ul style="list-style-type: none">• Develop a Defense Security Enterprise Architecture that provides a common framework and standards for security domains to share information on a near real-time basis within DoD and with other government agencies.• Develop an improved electro-optical sensor for the US Navy Spike Weapon System.				
<p>Title: Storage and Safeguards</p> <p>Description: Properly securing critical assets to prevent access by unauthorized persons and implementing control measures that ensure access is limited to authorized persons is the foundation of physical security. This capability area will focus on equipment (e.g., locks, doors, etc.) designed to delay or stop unauthorized entry / access to a specified / localized area.</p> <p>FY 2012 Accomplishments:</p> <ul style="list-style-type: none">• Identified material accounting, inventory, and tracking methods using modern technologies to strengthen nuclear material safeguards and controls.• Developed options for intercontinental ballistic missile launcher closure door/lock mechanism upgrades to improve delay features.		1.788	2.314	2.235

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>	R-1 ITEM NOMENCLATURE PE 0603161D8Z: <i>Nuclear and Conventional Physical Security/Countering Nuclear Threats</i>	PROJECT P162: <i>Nuclear and Conventional Physical Security</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
<ul style="list-style-type: none"> • Evaluated the intercontinental ballistic missile security system to include access delay features, intrusion detection systems, and response forces. • Explored interior denial options for the intercontinental ballistic missile launch facility and develop recommendations based on weapon system impact, cost and overall security performance. <p>FY 2013 Plans:</p> <ul style="list-style-type: none"> • Advance material accounting, inventory, and tracking methods using modern technologies to strengthen nuclear material safeguards and controls. • Evaluate options for intercontinental ballistic missile launcher closure door/lock mechanism upgrades to improve delay features. • Identify solutions for gaps in intercontinental ballistic missile security system to include access delay features, intrusion detection systems, and response forces. • Test interior denial options for the intercontinental ballistic missile launch facility and develop recommendations based on weapon system impact, cost and overall security performance. <p>FY 2014 Plans:</p> <ul style="list-style-type: none"> • Develop specifications for Ordnance Storage and Operating Facilities that addresses explosives safety and physical security design requirements. • Design a Semi-Hardened Prime Nuclear Air Force Secure Transport Container. • Develop specifications for portable containers for Arms, Ammunition & Explosives that increase primary denial of assets located in expeditionary and temporary storage facilities and open storage areas. 				
<p>Title: Prevention</p> <p>Description: The security procedures taken to discourage an adversary from accessing weapons of mass destruction or gaining unauthorized access to critical assets are at the heart of prevention. This capability area will focus on broad spectrum, generic efforts which have the ability to influence multiple areas.</p> <p>FY 2012 Accomplishments:</p> <ul style="list-style-type: none"> • Conducted effectiveness analyses to identify the weapon system combinations that offer the most cost-effective approach to counter those threats. • Identified military, commercial and homemade explosives by integrating two identification technologies into one handheld rugged system. • Provided federal physical security decision-makers the opportunity to observe and become familiar with commercial-off-the-shelf force protection equipment available for procurement. 		5.769	8.094	7.817

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>	R-1 ITEM NOMENCLATURE PE 0603161D8Z: <i>Nuclear and Conventional Physical Security/Countering Nuclear Threats</i>	PROJECT P162: <i>Nuclear and Conventional Physical Security</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
<ul style="list-style-type: none"> • Qualified for procurement an array of Commercial Off-The-Shelf (COTS) intrusion detection and assessment equipment that addresses capability gaps. • Created a non-ionizing personnel scanner that can detect threats on the body in a high throughput environment. • Integrated security system components via wireless communications with high security over long ranges, without repeaters. • Planned for the Force Protection Equipment Demonstration IX. <p>FY 2013 Plans:</p> <ul style="list-style-type: none"> • Support bi-lateral engagements for the successful DoD participation in Exercise Opal Tiger. • Establish a Global Initiative to Combat Nuclear Terrorism Strategic Engagement Plan to ensure an effective and efficient DoD participation in radiation detection and forensics activities. • Develop Inventory Management curriculum in conjunction with National Nuclear Security Administration • Improve test and standard reference materials for National Technical Nuclear Forensics simulation and exercise support. • Support Physical Security Modeling and simulation support for curriculum development and support in conjunction with Global Nuclear Lockdown efforts at Internationals Centers of Excellence. • Understand air assault threats and use modeling & simulation to conduct effectiveness analyses to identify the weapon system combinations that offer the most cost-effective approach to counter those threats. • Identify military, commercial and homemade explosives by integrating two identification technologies into one handheld rugged system. • Provide federal physical security decision-makers the opportunity to observe and become familiar with commercial-off-the-shelf force protection equipment available for procurement. • Qualify for procurement an array of commercial off-the-shelf intrusion detection and assessment equipment that addresses capability gaps. • Create a non-ionizing personnel scanner that can detect threats on the body in a high throughput environment. • Integrate security system components via wireless communications with high security over long ranges, without repeaters. • Execute Force Protection Equipment Demonstration IX. <p>FY 2014 Plans:</p> <ul style="list-style-type: none"> • Expand engagement opportunities with international partners in Nuclear Security. • Develop nuclear threat-related scenarios & use cases to frame Countering Nuclear Threat situational awareness development. • Conduct gap analysis between Global Threat Reduction Initiative and Cooperative Threat Reduction to ensure all requirements are met for Global Nuclear Lockdown. 				
Title: Decision Support Systems		4.895	5.414	5.761

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>		R-1 ITEM NOMENCLATURE PE 0603161D8Z: <i>Nuclear and Conventional Physical Security/Countering Nuclear Threats</i>	PROJECT P162: <i>Nuclear and Conventional Physical Security</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
Description: Decision support systems serve the management, operations, and planning levels of the DoD physical security enterprise to help to make decisions, which may be rapidly changing and not easily specified in advance. This capability area will focus on command and control equipment and projects related to the creation and enhancement of common operating pictures, and the establishment of common architectures / interface standards.				
FY 2012 Accomplishments: <ul style="list-style-type: none"> • Integrated sensors, sensor systems and unmanned systems with automated fusion capabilities to populate available Common Operating Pictures (COP) with in-depth security, surveillance, and response data for fixed and semi-fixed/expeditionary elements. • Provided DoD and industry the means to achieve Physical Security Equipment interoperability through standards and interface specifications. • Designed the framework for the collection and consolidation of data from disparate small to large security systems. 				
FY 2013 Plans: <ul style="list-style-type: none"> • Advance Integration of sensors, sensor systems and unmanned systems with automated fusion capabilities to populate available Common Operating Pictures (COP) with in-depth security, surveillance, and response data for fixed and semi-fixed/expeditionary elements. • Provide DoD and industry the means to achieve Physical Security Equipment interoperability through standards and interface specifications. • Design the framework for the collection and consolidation of data from disparate small to large security systems. • Train and demonstrate the ability for marine mammal to perform a 24/7 autonomous swimmer/diver detection and localization mission. 				
FY 2014 Plans: <ul style="list-style-type: none"> • Develop capability to ensure threat alert and response systems are interoperable with equipment used by the DoD and mutual aid partners in the local communities. • Provide a backbone extending command and control and situational awareness within, between, and out to the edges of the missile launch facility complex. 				
Title: Analytical Support		1.326	2.646	4.369
Description: This capability area will focus on studies related to physical security topics and operational and management efforts related to day-to-day activities of the DoD Physical Security Equipment/Countering Nuclear Threats RDT&E Program.				
FY 2012 Accomplishments: <ul style="list-style-type: none"> • Conducted test and evaluation efforts for physical security equipment 				

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>		R-1 ITEM NOMENCLATURE PE 0603161D8Z: <i>Nuclear and Conventional Physical Security/Countering Nuclear Threats</i>	PROJECT P162: <i>Nuclear and Conventional Physical Security</i>
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
<ul style="list-style-type: none"> Conducted live-fire and modeling tests of selected weapons, perform analysis, and develop policy requirements based on findings. Qualified, for procurement, an array of COTS intrusion detection and assessment equipment that meets identified Integrated Base Defense Security Systems capability and sustainment gaps. <p>FY 2013 Plans:</p> <ul style="list-style-type: none"> Continue to conduct test and evaluation efforts for physical security equipment (PSE) Continue to conduct live-fire and modeling tests of selected weapons, perform analysis, and develop policy requirements based on findings. Continue to qualify, for procurement, an array of Commercial Off-The-Shelf (COTS) intrusion detection and assessment equipment that meets identified Integrated Base Defense Security Systems capability and sustainment gaps. <p>FY 2014 Plans:</p> <ul style="list-style-type: none"> Provide DOD and industry the means to achieve PSE interoperability through the Security Equipment Integration Working Group Develop a comprehensive Physical Security Enterprise Test & Evaluation Program Conducts analyses and review of requirements, evaluates proposed RDT&E solutions and recommends priorities for the integrated investment portfolio 			
Accomplishments/Planned Programs Subtotals		29.792	33.234
C. Other Program Funding Summary (\$ in Millions)			
N/A			
Remarks			
D. Acquisition Strategy			
N/A			
E. Performance Metrics			
The program performance metrics are established/approved through the DoD Physical Security Enterprise and Analysis Group (PSEAG). The cost, schedule and technical progress is reviewed at quarterly PSEAG meetings. Performance variances are addressed and corrective action(s) is(are) implemented as necessary.			

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 4: Advanced Component Development & Prototypes (ACD&P)	R-1 ITEM NOMENCLATURE PE 0603161D8Z: Nuclear and Conventional Physical Security/Countering Nuclear Threats	PROJECT P162: Nuclear and Conventional Physical Security
-------------------------------------------------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------

Product Development (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Integrated Base Defense	Sub Allot	PM-FPS:Ft Belvoir, VA	5.850	4.688		2.323		-		-		-	0.000	12.861	12.861
Defense Installation Access Control	Various	Various performers:Various locations	7.150	4.065		2.500		-		-		-	0.000	13.715	13.715
Countering Nuclear Threats	Various	Various performers:Various locations	1.400	2.084		2.400		2.400		-		2.400	0.000	8.284	8.284
Force Protection Equipment Demonstration	Sub Allot	PM-FPS:Fort Belvoir, VA	1.837	0.500		-		-		-		-	0.000	2.337	2.337
Integrated Waterside Security	MIPR	Various performers:Various locations	0.700	0.922		-		1.000		-		1.000	0.000	2.622	2.622
Shipboard Security Containers	MIPR	NAVFAC ESC:Pt. Hueneme	0.480	0.480		-		-		-		-	0.000	0.960	0.960
Ordnance Storage and Handling Facilities	MIPR	NAVFAC ESC:Pt. Hueneme	0.400	0.400		0.250		-		-		-	0.000	1.050	1.050
Shoreline Monitoring System	MIPR	NAVFAC ESC:Pt. Hueneme	2.456	0.750		-		-		-		-	0.000	3.206	3.206
Project JIGSAW	MIPR	SPAWAR Atlantic:Charleston, SC	1.500	0.310		-		-		-		-	0.000	1.810	1.810
Video Management System	Sub Allot	Force Protection Branch ESC/ HSS:Hanscom AFB, MA	0.649	1.526		-		-		-		-	0.000	2.175	2.175
Interior Video Motion Detection	Sub Allot	Force Protection Branch ESC/ HSS:Hanscom AFB, MA	0.455	0.605		-		-		-		-	0.000	1.060	1.060
Wide Area Detection	Sub Allot	Force Protection Branch ESC/	0.850	0.875		0.716		-		-		-	0.000	2.441	2.441

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 4: Advanced Component Development & Prototypes (ACD&P)	R-1 ITEM NOMENCLATURE PE 0603161D8Z: Nuclear and Conventional Physical Security/Countering Nuclear Threats	PROJECT P162: Nuclear and Conventional Physical Security
-------------------------------------------------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------

Product Development (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
		HSS:Hanscom AFB, MA													
Insider Threat	IA	Applied Research Labs: University of Texas:Austin, TX	1.000	-		-		-		-		-	0.000	1.000	1.000
Defense Security Enterprise Architecture	Various	Various performers:Various locations	0.000	0.750		2.500		2.500		-		2.500	0.000	5.750	5.750
Joint Force Protection Threat Alert & Response System	MIPR	Various performers:Various locations	0.000	0.507		2.000		2.000		-		2.000	0.000	4.507	4.507
Long Range Threat Identification Sonar	MIPR	SPAWAR Atlantic:Charleston, SC	0.000	0.875		0.640		-		-		-	0.000	1.515	1.515
Missile Field Defense Force C3 / Situational Awareness	MIPR	SPAWAR Atlantic:Charleston, SC	0.000	0.000		0.850		1.000		-		1.000	0.000	1.850	1.850
Foliage Penetrating Technology Evaluation	MIPR	SPAWAR Atlantic:Charleston, SC	0.000	0.000		0.200		0.650		-		0.650	0.000	0.850	0.850
Portable Detection System for Select Environments	Various	ICBM System Program Office:Hill AFB, UT	0.000	0.000		0.260		0.500		-		0.500	0.000	0.760	0.760
Semi-Hardened PNAF Secure Transport Container	Various	Various Performers:Various Locations	0.000	0.000		0.414		0.500		-		0.500	0.000	0.914	0.914
Standoff Weapon Replacement for Internal Denial	Various	Various Performers:Various Locations	0.000	0.000		0.500		0.500		-		0.500	0.000	1.000	1.000
Launcher Closure Door Upgrade	MIPR	ICBM System Program Office :Hill AFB, UT	0.000	0.000		0.350		2.000		-		2.000	0.000	2.350	2.350

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>	R-1 ITEM NOMENCLATURE PE 0603161D8Z: <i>Nuclear and Conventional Physical Security/Countering Nuclear Threats</i>	PROJECT P162: <i>Nuclear and Conventional Physical Security</i>
---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------

Product Development (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Land-Water Interface Detection and Tracking	MIPR	SPAWAR Atlantic:Charleston, SC	0.000	0.000		0.168		0.750		-		0.750	0.000	0.918	0.918
Marine Mammal System Delay – Final Denial Enhancement Capability	MIPR	Various Performers:Various Locations	0.000	0.000		0.532		1.000		-		1.000	0.000	1.532	1.532
Airborne Launch Control System Interruption	Various	ICBM System Program Office:Hill AFB, UT	0.000	0.000		0.250		0.750		-		0.750	0.000	1.000	1.000
Missile Defense Security (Interceptor)	TBD	TBD:TBD	0.000	0.000		0.500		-		-		-	0.000	0.500	0.500
Weapon Storage Containers	MIPR	NAVFAC ESC:Pt. Hueneme	0.000	0.000		0.250		0.500		-		0.500	0.000	0.750	0.750
Ground-Based Operational Surveillance System	Sub Allot	PM-FPS:Ft Belvoir, VA	0.000	0.000		1.000		1.000		-		1.000	0.000	2.000	2.000
Radiological Detection System	Various	Various Performers:Various Locations	0.000	0.000		1.400		2.300		-		2.300	0.000	3.700	3.700
Access Controls	Various	Various Performers:Various Locations	0.000	1.044		1.730		1.528		-		1.528	0.000	4.302	4.302
Installation & Transport Security	Various	Various Performers:Various Locations	0.000	1.044		1.755		1.553		-		1.553	0.000	4.352	4.352
Prevention	Various	Various Performers:Various Locations	0.000	1.044		1.755		1.553		-		1.553	0.000	4.352	4.352
Decision Support	Various	Various Performers:Various Locations	0.000	1.044		1.755		1.553		-		1.553	0.000	4.352	4.352

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 4: Advanced Component Development & Prototypes (ACD&P)				R-1 ITEM NOMENCLATURE PE 0603161D8Z: Nuclear and Conventional Physical Security/Countering Nuclear Threats				PROJECT P162: Nuclear and Conventional Physical Security			
-------------------------------------------------------------------------------------------------------------------------------------------------------------------	--	--	--	----------------------------------------------------------------------------------------------------------------------	--	--	--	--------------------------------------------------------------------	--	--	--

Product Development (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Storage & Safeguards	Various	Various Performers:Various Locations	0.000	1.045		1.756		1.552		-		1.552	0.000	4.353	4.353
Detection & Assessment	Various	Various Performers:Various Locations	0.000	1.044		0.355		1.533		-		1.533	0.000	2.932	2.932
Subtotal			24.727	25.602		29.109		28.622		0.000		28.622	0.000	108.060	108.060

Support (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Security Equipment Integration Working Group	MIPR	SPAWAR Atlantic:Charleston, SC	2.602	1.000		1.000		1.000		-		1.000	0.000	5.602	5.602
NM Support Contract	PO	Washington Headquarters Services:Washington DC	2.080	1.090		1.100		1.200		-		1.200	0.000	5.470	5.470
Physical Security Requirements Group Support	MIPR	Various Performers:Various Locations	0.000	1.000		0.700		0.700		-		0.700	0.000	2.400	2.400
PSEP Technical Advisor	MIPR	SPAWAR Atlantic:Charleston, SC	0.900	0.300		0.300		0.300		-		0.300	0.000	1.800	1.800
Subtotal			5.582	3.390		3.100		3.200		0.000		3.200	0.000	15.272	15.272

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2014 Office of Secretary Of Defense												DATE: April 2013			
APPROPRIATION/BUDGET ACTIVITY						R-1 ITEM NOMENCLATURE				PROJECT					
0400: Research, Development, Test & Evaluation, Defense-Wide BA 4: Advanced Component Development & Prototypes (ACD&P)						PE 0603161D8Z: Nuclear and Conventional Physical Security/Countering Nuclear Threats				P162: Nuclear and Conventional Physical Security					
Test and Evaluation (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Wide Area Surveillance Thermal Imager	Sub Allot	Force Protection Branch ESC/ HSS:Hanscom AFB, MA	0.000	0.000		0.250		0.250		-		0.250	0.000	0.500	0.500
Sensor Fusion: IR and Raman	MIPR	NAVEOD Tech Div:Indian Head, MD	1.600	0.800		0.500		-		-		-	0.000	2.900	2.900
Enhance IMS Systems	MIPR	NAVEOD Tech Div:Indian Head, MD	1.700	-		0.000		-		-		-	0.000	1.700	1.700
Long Range Thermal Imager	Sub Allot	Force Protection Branch ESC/ HSS:Hanscom AFB, MA	0.000	0.000		0.250		0.000		-		0.000	0.000	0.250	0.250
Fence Sensors & Cold Weather Testing	Sub Allot	Force Protection Branch ESC/ HSS:Hanscom AFB, MA	0.000	0.000		0.000		2.346		-		2.346	0.000	2.346	2.346
Subtotal			3.300	0.800		1.000		2.596		0.000		2.596	0.000	7.696	7.696
Management Services (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
RDT&E Travel	TBD	Washington Headquarters Services:Washington DC	0.000	0.000		0.025		0.025		-		0.025	0.000	0.050	0.050
Subtotal			0.000	0.000		0.025		0.025		0.000		0.025	0.000	0.050	0.050
			All Prior Years	FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			33.609	29.792		33.234		34.443		0.000		34.443	0.000	131.078	131.078

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2014 Office of Secretary Of Defense							DATE: April 2013			
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 4: Advanced Component Development & Prototypes (ACD&P)			R-1 ITEM NOMENCLATURE PE 0603161D8Z: Nuclear and Conventional Physical Security/Countering Nuclear Threats			PROJECT P162: Nuclear and Conventional Physical Security				
	All Prior Years	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total	Cost To Complete	Total Cost	Target Value of Contract	

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 4: Advanced Component Development & Prototypes (ACD&P)					R-1 ITEM NOMENCLATURE PE 0603161D8Z: Nuclear and Conventional Physical Security/Countering Nuclear Threats				PROJECT P164: CNT Rad/Nuc Passive Defense			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013[#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
P164: CNT Rad/Nuc Passive Defense	0.000	0.000	0.000	1.985	-	1.985	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles												
[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012 ^{##} The FY 2014 OCO Request will be submitted at a later date												
A. Mission Description and Budget Item Justification												
This project establishes a Defense-wide Countering Nuclear Threats (CNT) Materiel development Program. The CNT acquisition strategy directly applies to a Joint requirement for CNT materiel development and addresses the materiel and sustainment gaps for general purpose Joint Forces, including the US Army 20th Support Command and Navy Visit, Board, Search, and Seizure, as well as the Technical Support Groups; NIMBLE ELDER and the US Special Operations Command where required.												
B. Accomplishments/Planned Programs (\$ in Millions)										FY 2012	FY 2013	FY 2014
Title: CNT Rad/Nuc Passive Defense										0.000	0.000	1.985
Description: Advanced Development of Joint Radiological and Nuclear passive defense systems												
FY 2014 Plans: Development of Joint Radiological and Nuclear passive defense systems (i.e. Man Portable Detection System and the Joint Personal Dosimeter)												
Accomplishments/Planned Programs Subtotals										0.000	0.000	1.985
C. Other Program Funding Summary (\$ in Millions)												
N/A												
Remarks												
D. Acquisition Strategy												
N/A												
E. Performance Metrics												
The program performance metrics are established/approved through the Countering Nuclear Threats Program Manager. The cost, schedule and technical progress is reviewed on a quarterly basis. Performance variances are addressed and corrective action(s) is(are) implemented as necessary.												

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2014 Office of Secretary Of Defense												DATE: April 2013			
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>						R-1 ITEM NOMENCLATURE PE 0603161D8Z: <i>Nuclear and Conventional Physical Security/Countering Nuclear Threats</i>						PROJECT P164: <i>CNT Rad/Nuc Passive Defense</i>			

Product Development (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
CNT Rad/Nuc Passive Defense Development	TBD	TBD:TBD	0.000	0.000		0.000		1.985		-		1.985	0.000	1.985	1.985
Subtotal			0.000	0.000		0.000		1.985		0.000		1.985	0.000	1.985	1.985

	All Prior Years	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	0.000	0.000	1.985	0.000	1.985	0.000	1.985	1.985

Remarks

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE				PROJECT			
0400: Research, Development, Test & Evaluation, Defense-Wide BA 4: Advanced Component Development & Prototypes (ACD&P)					PE 0603161D8Z: Nuclear and Conventional Physical Security/Countering Nuclear Threats				P165: National Technical Nuclear Forensics Systems			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
P165: National Technical Nuclear Forensics Systems	0.000	0.000	0.000	27.213	-	27.213	14.572	14.215	13.000	13.500	Continuing	Continuing
Quantity of RDT&E Articles												
# FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012												
## The FY 2014 OCO Request will be submitted at a later date												
A. Mission Description and Budget Item Justification												
Nuclear forensics is the thorough collection, analysis and evaluation of radiological and nuclear material in a pre-detonation state and post-detonation radiological or nuclear materials, devices and debris, as well as the immediate effects created by a nuclear detonation. The ability to identify the source of nuclear material from radioactive debris is critical to our national defense and security. Swift and accurate forensic and attribution (identification) capabilities are vital to developing an appropriate national response to a nuclear event and preventing future attacks in a timely manner.												
Nuclear Terrorism is one of the most significant and pressing threats identified by national leadership. A credible nuclear forensics program is essential to preventing nuclear terrorism by deterring nations from sponsoring nuclear terrorism. During the Deputy Management Advisory Group process shortfalls and resources to close these gaps were identified and supported by the Deputy Secretary of Defense. The purpose of this program is to develop systems such as ground based Prompt Diagnostic sensors and Particulate Airborne Collection Systems to provide timely and accurate information to national leadership in the area of Nuclear Forensics.												
Per DoDI 2060.04 OSD AT&L NCB is the program lead for the Department of Defense in Nuclear Forensics. NCB represents DoD interests in all areas of nuclear forensics but focuses heavily on post-detonation applications due to Presidential guidance assigning the department the lead role in develop, providing, and maintaining post detonation Nuclear Forensics capability.												
This PE can fund travel to support the requirements of this program.												
B. Accomplishments/Planned Programs (\$ in Millions)									FY 2012	FY 2013	FY 2014	
Title: National Technical Nuclear Forensics Systems									0.000	0.000	27.213	
Description: Advanced development of ground based diagnostic and collection systems												
FY 2014 Plans:												

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>	R-1 ITEM NOMENCLATURE PE 0603161D8Z: <i>Nuclear and Conventional Physical Security/Countering Nuclear Threats</i>	PROJECT P165: <i>National Technical Nuclear Forensics Systems</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
Development for a Particulate Airborne Collection System that allows additional airborne sampling flexibility to reduce the risk in providing samples for the forensics process. Installation, testing, and operational support and integration of ground based Prompt Diagnostic systems in various key metropolitan areas.			
Accomplishments/Planned Programs Subtotals		0.000	0.000
C. Other Program Funding Summary (\$ in Millions) N/A			
Remarks			
D. Acquisition Strategy N/A			
E. Performance Metrics The program performance metrics are established/approved through the Countering Nuclear Threats Program Manager. The cost, schedule and technical progress is reviewed on a quarterly basis. Performance variances are addressed and corrective action(s) is(are) implemented as necessary. This is new program focusing on advanced development to meet critical needs.			

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2014 Office of Secretary Of Defense												DATE: April 2013			
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 4: Advanced Component Development & Prototypes (ACD&P)						R-1 ITEM NOMENCLATURE PE 0603161D8Z: Nuclear and Conventional Physical Security/Countering Nuclear Threats					PROJECT P165: National Technical Nuclear Forensics Systems				
Product Development (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
National Technical Nuclear Forensics Systems Development	TBD	TBD:TBD	0.000	0.000		0.000		27.188		-		27.188	0.000	27.188	27.188
Subtotal			0.000	0.000		0.000		27.188		0.000		27.188	0.000	27.188	27.188
Management Services (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
RDT&E Travel	TBD	Washington Headquarters Services:Washington DC	0.000	0.000		0.000		0.025		-		0.025	0.000	0.025	0.025
Subtotal			0.000	0.000		0.000		0.025		0.000		0.025	0.000	0.025	0.025
			All Prior Years	FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			0.000	0.000		0.000		27.213		0.000		27.213	0.000	27.213	27.213
Remarks															

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense	DATE: April 2013
-------------------------------------------------------------------------------------------------	-------------------------

APPROPRIATION/BUDGET ACTIVITY

0400: *Research, Development, Test & Evaluation, Defense-Wide*
 BA 4: *Advanced Component Development & Prototypes (ACD&P)*

R-1 ITEM NOMENCLATURE

PE 0603527D8Z: *Retract Larch*

COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
Total Program Element	-	20.431	21.023	19.152	-	19.152	21.536	21.779	22.018	22.370	Continuing	Continuing
P527: <i>Retract Larch</i>	-	20.431	21.023	19.152	-	19.152	21.536	21.779	22.018	22.370	Continuing	Continuing
Quantity of RDT&E Articles												

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

This program is reported in accordance with Title 10, United States Code, Section 119(a)(1) in the Special Access Program Annual Report to Congress. For further information, please contact the Director of Special Programs, OUSD(AT&L)/DSP.

B. Program Change Summary (\$ in Millions)

	<u>FY 2012</u>	<u>FY 2013</u>	<u>FY 2014 Base</u>	<u>FY 2014 OCO</u>	<u>FY 2014 Total</u>
Previous President's Budget	20.437	21.023	21.276	-	21.276
Current President's Budget	20.431	21.023	19.152	-	19.152
Total Adjustments	-0.006	0.000	-2.124	-	-2.124
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments	-0.006	-	-2.124	-	-2.124

C. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	<u>FY 2012</u>	<u>FY 2013</u>	<u>FY 2014</u>
Title: Retract Larch	20.431	21.023	19.152
Articles:			0
Description: Not applicable. Information Classified			
FY 2012 Accomplishments: Not applicable. Information Classified			
FY 2013 Plans:			

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>		R-1 ITEM NOMENCLATURE PE 0603527D8Z: <i>Retract Larch</i>		
C. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2012	FY 2013	FY 2014
Not applicable. Information Classified				
<i>FY 2014 Plans:</i>				
Not applicable. Information Classified				
Accomplishments/Planned Programs Subtotals		20.431	21.023	19.152
D. Other Program Funding Summary (\$ in Millions) N/A				
Remarks				
E. Acquisition Strategy Not Applicable. Classified				
F. Performance Metrics Not Applicable. Classified				

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 4: Advanced Component Development & Prototypes (ACD&P)	R-1 ITEM NOMENCLATURE PE 0603527D8Z: Retract Larch	PROJECT P527: Retract Larch
-------------------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------	---------------------------------------

Product Development (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Produc Development	SS/BA	Various:Virginia	-	20.431		21.023		19.152		-		19.152	Continuing	Continuing	
Subtotal			0.000	20.431		21.023		19.152		0.000		19.152			
			All Prior Years	FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			0.000	20.431		21.023		19.152		0.000		19.152			

Remarks

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE							
0400: Research, Development, Test & Evaluation, Defense-Wide					PE 0603600D8Z: WALKOFF							
BA 4: Advanced Component Development & Prototypes (ACD&P)												
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
Total Program Element	-	90.665	94.624	70.763	-	70.763	103.084	101.012	94.844	96.685	Continuing	Continuing
600: WALKOFF	-	90.665	94.624	70.763	-	70.763	103.084	101.012	94.844	96.685	Continuing	Continuing
Quantity of RDT&E Articles												
# FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012												
## The FY 2014 OCO Request will be submitted at a later date												
A. Mission Description and Budget Item Justification												
Classified, Special Access Program.												
B. Program Change Summary (\$ in Millions)				FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total				
Previous President's Budget				108.698	94.624	91.041	-	91.041				
Current President's Budget				90.665	94.624	70.763	-	70.763				
Total Adjustments				-18.033	0.000	-20.278	-	-20.278				
• Congressional General Reductions				-	-							
• Congressional Directed Reductions				-	-							
• Congressional Rescissions				-	-							
• Congressional Adds				-	-							
• Congressional Directed Transfers				-	-							
• Reprogrammings				-18.033	-							
• SBIR/STTR Transfer				-	-							
• Department Adjustment				-	-	-20.278	-	-20.278				
C. Accomplishments/Planned Programs (\$ in Millions)										FY 2012	FY 2013	FY 2014
Title: WALKOFF										90.665	94.624	70.763
FY 2012 Accomplishments: Classified, Special Access Program.												
FY 2013 Plans: Classified, Special Access Program.												
FY 2014 Plans:												

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>		R-1 ITEM NOMENCLATURE PE 0603600D8Z: <i>WALKOFF</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
Classified, Special Access Program.				
Accomplishments/Planned Programs Subtotals		90.665	94.624	70.763
D. Other Program Funding Summary (\$ in Millions) N/A				
Remarks				
E. Acquisition Strategy Classified, Special Access Program.				
F. Performance Metrics Classified, Special Access Program.				

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>	R-1 ITEM NOMENCLATURE PE 0603600D8Z: <i>WALKOFF</i>	PROJECT 600: <i>WALKOFF</i>
---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------	---------------------------------------

Test and Evaluation (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
WALKOFF	Option/ UCA	Classified:Classified	0.000	90.665		94.624		70.763		-		70.763	Continuing	Continuing	Continuing
Subtotal			0.000	90.665		94.624		70.763		0.000		70.763			

Remarks

Classified, Special Access Program.

	All Prior Years	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	90.665	94.624	70.763	0.000	70.763			

Remarks

Classified, Special Access Program.

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE							
0400: Research, Development, Test & Evaluation, Defense-Wide BA 4: Advanced Component Development & Prototypes (ACD&P)					PE 0603709D8Z: Joint Robotics Program							
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
Total Program Element	-	10.932	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
P709: Joint Robotics Program	-	10.932	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

(U) This Program Element (PE) was established in response to Congressional guidance to consolidate DoD robotic programs on unmanned ground systems and related robotic technologies in order to increase the focus of the robotic programs on operational requirements. Technologies in the PE support the continued development of technologies beyond Budget Activity 3 (PE 0603711D8Z) for technology transition and transformation to close warfighter requirement capability gaps. By exercising its oversight role through a technology advisory board, senior military Council and Senior Steering Group (Flag level), Joint Ground Robotics (JGRE) applies this PE to enable coordination between the Services and places emphasis on interoperability and commonality among unmanned ground systems. This PE funds efforts to overcome technology barriers in thrust areas of unmanned ground system technologies to include Autonomous & Tactical Behaviors, Collaborative Operations, Interoperability, Man-portable Unmanned Ground System Technologies, Manipulation Technologies, and Technology Transition/Transformation. This PE funds unmanned ground system technologies and supports the integration of technologies into representative models or prototype systems in a high fidelity and realistic operating environment and expedites technology transition from the laboratory to operational use. Emphasis is on proving component and subsystem maturity prior to integration in major and complex systems and may involve risk reduction initiatives. Within this PE, funded projects will continue the delivery of advanced technology directed at enhancing the warfighter's capabilities identified during new concept development, operational assessments and field feedback of current unmanned systems. The technologies are generally at TRL 4 or 5 with the intent to mature them through JGRE efforts to TRL 6.

B. Program Change Summary (\$ in Millions)	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total
Previous President's Budget	10.954	0.000	0.000	-	0.000
Current President's Budget	10.932	0.000	0.000	-	0.000
Total Adjustments	-0.022	0.000	0.000	-	0.000
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-0.022	-			
• SBIR/STTR Transfer	-	-			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE				PROJECT			
0400: Research, Development, Test & Evaluation, Defense-Wide BA 4: Advanced Component Development & Prototypes (ACD&P)					PE 0603709D8Z: Joint Robotics Program				P709: Joint Robotics Program			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
P709: Joint Robotics Program	-	10.932	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles												

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

(U) This Program Element (PE) was established in response to Congressional guidance to consolidate DOD robotic programs on unmanned ground systems and related robotic technologies in order to increase the focus of the robotic programs on operational requirements. Technologies in the PE supported the continued development of technologies beyond Budget Activity 3 (PE 0603711D8Z) for technology transition and transformation to close war fighter requirement capability gaps. By exercising its oversight role through a technology advisory board, senior military Council and Senior Steering Group (Flag level), Joint Ground Robotics (JGRE) applied this PE to enable coordination between the Services and places emphasis on interoperability and commonality among unmanned ground systems. This PE funded efforts to overcome technology barriers in thrust areas of unmanned ground system technologies to include Autonomous & Tactical Behaviors, Collaborative Operations, Interoperability, Man-portable Unmanned Ground System Technologies, Manipulation Technologies, and Technology Transition/Transformation. This PE funded unmanned ground system technologies and supports the integration of technologies into representative models or prototype systems in a high fidelity and realistic operating environment and expedites technology transition from the laboratory to operational use. Emphasis is on proving component and subsystem maturity prior to integration in major and complex systems and may involve risk reduction initiatives. Within this PE, funded projects continue the delivery of advanced technology directed at enhancing the war fighter's capabilities identified during new concept development, operational assessments and field feedback of current unmanned systems. The technologies are generally at TRL 4 or 5 with the intent to mature them through JGRE efforts to TRL 6.

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2012	FY 2013	FY 2014
Title: Command, Communication & Control	1.609	0.000	0.000
Description: Development of data delivery, control and display, or task execution technologies enhanced unmanned ground vehicle operations, reduce operator loads and improve effectiveness. Development and integration of communication, mission planning, human-robot interface technologies, and advanced intelligence capabilities to support robotic operations.			
FY 2012 Accomplishments: 1) Automated Mobile Communication Relay - Integrated sensors and processing payload onto man-portable robots (both EOD and communications robots) - Developed software components required to conduct automated relay mission - Conducted experimental assessment system concept utilizing COTS components and radios to validate concept feasibility - Terrain and road estimation module development - Prediction moduel development			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>	R-1 ITEM NOMENCLATURE PE 0603709D8Z: <i>Joint Robotics Program</i>	PROJECT P709: <i>Joint Robotics Program</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
<ul style="list-style-type: none"> - Prototype hardware development and construction - Performed prototype hardware validations and test - Technology demonstration 1 - Critical Design 2 <p>4) Long Range Vision for Obstacle Detection from a moving ground vehicle (LROD) project increased the capability of unmanned ground vehicles (UGVs) to respond to positive, negative and moving obstacles. Project previously funded from PE 0603711D8Z</p> <ul style="list-style-type: none"> - Early performance testing - Prototype development - Unmanned ground vehicle integration - Performed verification testing - Held final demonstration - Provided final report <p>FY 2013 Plans:</p> <ol style="list-style-type: none"> 1) Automated Mobile Communication Relay <ul style="list-style-type: none"> - Further develop system components, and conduct experimental assessment in a relevant environment 			
<p>Title: Interoperability</p> <p>Description: Promoted and guided technology development that met joint requirements and promoted ground as well as air unmanned systems interoperability. Supported the bridging of currently incompatible robots and controllers from various manufacturers, using different communications channels and hardware. Optimized best features of prior/ongoing research efforts into a maturing, standardized system that can be easily ported to robotic platforms used throughout the Department of Defense.</p> <p>FY 2012 Accomplishments:</p> <ol style="list-style-type: none"> 1) Interoperability Challenges <ul style="list-style-type: none"> - Extended Interoperability Profile, Version 0 to autonomous systems, specifically those with Applique Kits. <p>FY 2013 Plans:</p> <ol style="list-style-type: none"> 1) Interoperability Challenges <ul style="list-style-type: none"> - Develop testing capability/environment associated with the Interoperability Profiles for autonomous systems. - Verify test environment/procedures, an Applique Kit prototype solution will be provided and tested. 		1.134	0.000
<p>Title: Mission/Platform Specific</p> <p>Description: Development of a technology that addressed the requirements of a particular mission and integrated with a specific platform.</p>		5.656	0.000

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>	R-1 ITEM NOMENCLATURE PE 0603709D8Z: <i>Joint Robotics Program</i>	PROJECT P709: <i>Joint Robotics Program</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
<i>FY 2012 Accomplishments:</i> 1) Counter Tunnel Exploitation/Mapping - Developed Autonomy Architecture - Developed 3D Mapping Capability - Integrated 1st generation Sensor Suite - Miniaturized Sensor Suite - Conducted experiments of the bore hole apparatus and the Snakebot 2) Cargo Unmanned Ground Vehicle - Finalized system build for second MTRV as UGV - Conducted second Limited User Assessment - Conducted Limited Objective Experiment for Logistics Mission 3) Virtual Autonomous Navigation Environment - Completed the development of a high-impact, releasable version of the ANVEL - Developed scenario setup and mission plan assignment - Created runtime scene modifications for rapid scenario variations - Developed geo-specific environments for virtual UGV performance evaluations - Integrated sensor models for lower-fidelity desktop simulations - Implemented and verified high-fidelity vehicle terrain interface with deformable ground effects - Updated technical documentation and user guide <i>FY 2013 Plans:</i> 1) Counter Tunnel Exploitation/Mapping - Integrate sensor suite onto the platform - Conduct user assessment of the system - Finalize report on system progress and development			
<i>Title:</i> Navigation <i>Description:</i> Development of reliable motion planning, path planning, obstacle detection/obstacle avoidance, characterization, and decision analysis capabilities based on the perceived environment and specific missions outlined for the robot. <i>FY 2012 Accomplishments:</i> 1) Collision Prediction Utilizing Traversability - Advanced module development and hardware upgrades - Phase 2 validation and tests		2.533	0.000
			0.000

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>	R-1 ITEM NOMENCLATURE PE 0603709D8Z: <i>Joint Robotics Program</i>	PROJECT P709: <i>Joint Robotics Program</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
<ul style="list-style-type: none"> - Technology demonstration and End User Support 2) Long Range Global Positioning System-Denied Localization <ul style="list-style-type: none"> - Completed study and evaluation of possible external data sources (aerial imagery, DTED, road/route networks, aerial lidar libraries, etc.). That study included a evaluation of how well those data sources can be match to a like set of multi-modal onboard sensors. An initial design was developed and implemented on a relevant UGV. Different combinations of external data sources and onboard sensors was evaluated to determine that best combination. 3) Autonomous Assisted Mobility for Small UGVs <ul style="list-style-type: none"> - Development of autonomy package and payload provided mobility assist functionalities during UGV operations. - Development and integration of onboard sensors and vision systems. - Development of behaviors such as auto CG adjustment, automatic flipper and manipulator configurations. 4) Tipover Prevention Behaviors <ul style="list-style-type: none"> - Reactive behavior software integrated on a robot with static payloads in rough and sloped terrain. <p>FY 2013 Plans:</p> <ul style="list-style-type: none"> 1) Long Range Global Positioning System-Denied Localization <ul style="list-style-type: none"> - Develop the algorithms to match the external data to the onboard sensor data - Reference design and software will be delivered with full Government rights and as open source so that the larger UGV community can make use of and build on it 2) Autonomous Assisted Mobility for Small UGVs <ul style="list-style-type: none"> - Combination of separate capabilities to enable autonomous reconfiguration of the platform to maximize the mobility performance of the UGV. - Technology demonstrations and assessments of the technology will be performed to examine utility of the technology in operational contexts. 3) Tipover Prevention Behaviors <ul style="list-style-type: none"> - Reactive behavior software integrated on a robot with dynamic payload in rough and sloped terrain. - Report recommending a JAUS message format for inertial and kinematic properties of robots and payloads. 4) Other projects for this area will be determined by 4QFY12 			
<p>Title: Perception</p> <p>Description: Development of post-processing software technologies (proprioceptive and/or exetroceptive) enhanced unmanned ground vehicle perception capabilities for navigation, manipulation, and general unmanned ground vehicle situational awareness in a wide range of environments and conditions.</p> <p>FY 2012 Accomplishments:</p> <ul style="list-style-type: none"> 1) Real Time Radio Modeling 		0.000	0.000
		0.000	0.000

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>	R-1 ITEM NOMENCLATURE PE 0603709D8Z: <i>Joint Robotics Program</i>	PROJECT P709: <i>Joint Robotics Program</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
<ul style="list-style-type: none"> - Integrated with Building Properties into the model - Integrated Building Properties with TARDEC IG - Integrated Building Properties with TARDEC UGV - Development of Urban Canyon Models - Built Clearing/Urban Canyon Comparison Analysis - Development of rain, snow, wind, and smoke models 2) Long Range Obstacle Detection <ul style="list-style-type: none"> - Finalized sensor processing algorithm development - Finalized prototype system development - Completed system integration onto UGV platform - Conducted performance verification testing - Conducted final demonstration - Compiled/delivered final report 			
FY 2013 Plans: <ul style="list-style-type: none"> 1) Real Time Radio Modeling - Continue development of rain, snow, wind, and smoke models - Integration with TARDEC IG - Integration with TARDEC UGV - Weather Comparisons Analysis 			
Title: Vision/Sensors Description: Development of technologies (hardware and software) enhanced unmanned ground vehicle sensory (visual, audible and/or tactile) capabilities for navigation, manipulation, and general unmanned ground vehicle situational awareness in a wide range of environments and conditions. FY 2012 Accomplishments: <ul style="list-style-type: none"> 1) Very Low Cost Light Detection and Ranging System - Improved warfighter agility, survivability, lethality, and effectiveness which enabled lower-cost UGVs/SUGVs with superior situational awareness. - Integrated a set of existing technologies with minimal modification which realized a sensor package capable of generating 3D depth/image models of the environment. 		0.000	0.000
Accomplishments/Planned Programs Subtotals		10.932	0.000
			0.000

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>	R-1 ITEM NOMENCLATURE PE 0603709D8Z: <i>Joint Robotics Program</i>	PROJECT P709: <i>Joint Robotics Program</i>
---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	------------------------------------------------------------------------------	-------------------------------------------------------

C. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2012</u>	<u>FY 2013</u>	<u>FY 2014</u> <u>Base</u>	<u>FY 2014</u> <u>OCO</u>	<u>FY 2014</u> <u>Total</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• 0603711D8Z : <i>Autonomous</i>	9.481	0.000	0.000		0.000	0.000	0.000	0.000		Continuing	Continuing
• 0604709D8Z : <i>Robotics</i>	2.705	0.000	0.000		0.000	0.000	0.000	0.000		Continuing	Continuing

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

1. Technologies developed and reviewed by Joint Capability Area focused working groups. The Joint Staff Functional Capabilities Boards reviewed to determine progress, transition plans, and relevance of each project.
2. Project plans were submitted, evaluated and analyzed by the Joint Robotics Ground Enterprises management and technical staff for risk and progress.
3. Project progress toward goals and milestones were assessed during mid-year and end-of-year reviews.
4. Technologies developed by the Joint Robotics Ground Enterprises (JGRE) were tracked and documented using the DoD Technical Readiness Level (TRL) scale for developing TRL 3 or 4 technologies to TRL 6 and adhering to the integrated baselines with regard to cost and schedule.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2014 Office of Secretary Of Defense												DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 4: Advanced Component Development & Prototypes (ACD&P)						R-1 ITEM NOMENCLATURE PE 0603709D8Z: Joint Robotics Program				PROJECT P709: Joint Robotics Program				

Support (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Robotics Technology Consortium	C/Various	Various:Various	-	10.932		0.000		-		-		-	Continuing	Continuing	
Subtotal			0.000	10.932		0.000		0.000		0.000		0.000			

			All Prior Years	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			0.000	10.932	0.000	0.000	0.000	0.000			

Remarks

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2014 Office of Secretary Of Defense

DATE: April 2013

APPROPRIATION/BUDGET ACTIVITY

0400: Research, Development, Test & Evaluation, Defense-Wide
BA 4: Advanced Component Development & Prototypes (ACD&P)

R-1 ITEM NOMENCLATURE

PE 0603709D8Z: Joint Robotics Program

PROJECT

P709: Joint Robotics Program

	FY 2012				FY 2013				FY 2014				FY 2015				FY 2016				FY 2017				FY 2018			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Very Low Cost LADAR																												
Urban Environment Modeling																												
Miniature 3D Spatial Phase Sensors																												
High Speed Small Teleoperation Robotic Command and Control																												
Conformal End Effector																												
Collision Prediction Utilizing Traversability Models for Dynamic Environments																												
Maritime Interdiction Operations																												
Adaptive Navigation Systems																												
Urban Environment Exploration																												
HRI for EOD UGVs																												
Long Range Vision for Obstacle Detection																												
Cargo UGV																												
Robotic Range Clearance Competition																												
Autonomous Navigation for Small UGVs																												
Real Time Radio Marketing																												
Tipover Prevention Behaviors																												
Counter Tunnel (Mapping and Exploitation)																												
Non-RF Communication for Small UGVs																												
Virtual Autonomous Navigation Environment (VANE)																												
UGV Interoperability Challenges																												
Automated Mobile Communications Relay																												
Autonomous Assisted Mobility for Small UGVs																												

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2014 Office of Secretary Of Defense																								DATE: April 2013							
APPROPRIATION/BUDGET ACTIVITY												R-1 ITEM NOMENCLATURE												PROJECT							
0400: Research, Development, Test & Evaluation, Defense-Wide BA 4: Advanced Component Development & Prototypes (ACD&P)												PE 0603709D8Z: Joint Robotics Program												P709: Joint Robotics Program							
				FY 2012				FY 2013				FY 2014				FY 2015				FY 2016				FY 2017				FY 2018			
				1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4				
Long-Range GPS Denied Localization/ Navigation in Off-road Environments				<div></div>																											

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY

0400: Research, Development, Test & Evaluation, Defense-Wide
BA 4: Advanced Component Development & Prototypes (ACD&P)

R-1 ITEM NOMENCLATURE

PE 0603709D8Z: Joint Robotics Program

PROJECT

P709: Joint Robotics Program

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Very Low Cost LADAR	1	2012	4	2012
Urban Environment Modeling	1	2012	1	2012
Miniature 3D Spatial Phase Sensors	1	2012	3	2012
High Speed Small Teleoperation Robotic Command and Control	1	2012	4	2012
Conformal End Effector	1	2012	4	2012
Collision Prediction Utilizing Traversability Models for Dynamic Environments	1	2012	3	2012
Maritime Interdiction Operations	1	2012	1	2012
Adaptive Navigation Systems	1	2012	4	2012
Urban Environment Exploration	1	2012	3	2012
HRI for EOD UGVs	1	2012	3	2012
Long Range Vision for Obstacle Detection	1	2012	1	2013
Cargo UGV	1	2012	4	2012
Robotic Range Clearance Competition	1	2012	4	2012
Autonomous Navigation for Small UGVs	1	2012	3	2012
Real Time Radio Marketing	3	2012	3	2013
Tipover Prevention Behaviors	3	2012	3	2013
Counter Tunnel (Mapping and Exploitation	1	2012	2	2013
Non-RF Communication for Small UGVs	1	2012	4	2012
Virtual Autonomous Navigation Environment (VANE)	1	2012	3	2012
UGV Interoperability Challenges	3	2012	3	2013
Automated Mobile Communications Relay	2	2012	2	2013
Autonomous Assisted Mobility for Small UGVs	2	2012	2	2013

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2014 Office of Secretary Of Defense				DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY		R-1 ITEM NOMENCLATURE		PROJECT	
0400: Research, Development, Test & Evaluation, Defense-Wide		PE 0603709D8Z: Joint Robotics Program		P709: Joint Robotics Program	
BA 4: Advanced Component Development & Prototypes (ACD&P)					
		Start		End	
Events		Quarter	Year	Quarter	Year
Long-Range GPS Denied Localization/Navigation in Off-road Environments		2	2012	2	2013

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense	DATE: April 2013
-------------------------------------------------------------------------------------------------	-------------------------

APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE							
0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>					PE 0603714D8Z: <i>Advanced Sensor Applications Program</i>							
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013[#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
Total Program Element	17.896	18.402	16.958	17.230	-	17.230	17.664	18.231	18.561	18.921	Continuing	Continuing
714: <i>Advanced Sensor Applications Program</i>	17.896	18.402	16.958	17.230	-	17.230	17.664	18.231	18.561	18.921	Continuing	Continuing
Quantity of RDT&E Articles												

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

The program focuses on continued development of domestic technologies to support the assessment of foreign technologies that have demonstrated potential. In coordination with an international partner, unique and innovative approaches are used to expand the performance envelopes. This program supports military requirements identified in Joint Vision 2020, the Defense Science and Technology Strategy, the Anti-Submarine Warfare (ASW) Initial Capabilities Document, and the Fleet ASW Integrated Prioritized Capability List.

B. Program Change Summary (\$ in Millions)	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total
Previous President's Budget	18.402	16.958	17.340	-	17.340
Current President's Budget	18.402	16.958	17.230	-	17.230
Total Adjustments	0.000	0.000	-0.110	-	-0.110
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Department Adjustment	0.000	0.000	-0.110	-	-0.110

C. Accomplishments/Planned Programs (\$ in Millions)

	FY 2012	FY 2013	FY 2014
Title: Advanced Sensor Applications Program	18.402	16.958	17.230
FY 2012 Accomplishments: Mission Support (Details provided in Defense-Wide classified book)			
FY 2013 Plans:			

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>		R-1 ITEM NOMENCLATURE PE 0603714D8Z: <i>Advanced Sensor Applications Program</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
Mission Support (Details provided in Defense-Wide classified book)				
FY 2014 Plans: Mission Support (Details provided in Defense-Wide classified book)				
Accomplishments/Planned Programs Subtotals		18.402	16.958	17.230
D. Other Program Funding Summary (\$ in Millions) N/A				
Remarks				
E. Acquisition Strategy Details provided in Defense-Wide classified book.				
F. Performance Metrics Numbers of operational field demonstrations; actual/in-kind resource sharing differential among participating entities; studies produced; successful anomaly detections; false-positive results; and technology transfers.				

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>	R-1 ITEM NOMENCLATURE PE 0603714D8Z: <i>Advanced Sensor Applications Program</i>	PROJECT 714: <i>Advanced Sensor Applications Program</i>
---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------	--------------------------------------------------------------------

Product Development (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Advanced Sensor Applications Program	Option/ UCA	See Classified Submission:See Classified Submission	17.896	18.402		16.958		17.230		-		17.230	Continuing	Continuing	Continuing
Subtotal			17.896	18.402		16.958		17.230		0.000		17.230			

Remarks
Details provided in the Defense-Wide classified book.

	All Prior Years	FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total		Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	17.896	18.402		16.958		17.230		0.000		17.230				

Remarks
Details provided in the Defense-Wide classified book.

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY

0400: *Research, Development, Test & Evaluation, Defense-Wide*
BA 4: *Advanced Component Development & Prototypes (ACD&P)*

R-1 ITEM NOMENCLATURE

PE 0603851D8Z: *Environmental Security Technology Certification Program*

COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013[#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
Total Program Element	-	61.838	75.941	71.453	-	71.453	60.414	60.439	61.117	62.342	Continuing	Continuing
P514: <i>Environmental Security Technology Certification Program</i>	-	61.838	75.941	71.453	-	71.453	60.414	60.439	61.117	62.342	Continuing	Continuing

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

(U) ESTCP demonstrates and validates the most promising innovative environmental and energy technologies that target DoD's most urgent needs. Technologies selected are projected to provide a return on the investment through cost savings and improved efficiencies. The program responds to: (1) Congressional concern over the slow pace of remediation of environmentally polluted sites on military installations, (2) Congressional direction to conduct demonstrations specifically focused on emerging new technologies, and (3) the need to improve defense readiness by reducing the drain on the Department's operation and maintenance dollars caused by environmental restoration, waste management, and the cost of energy. Preference for demonstrations is given to technologies that have successfully completed all necessary research and development objectives, and address the highest priority DoD requirements.

B. Program Change Summary (\$ in Millions)

	<u>FY 2012</u>	<u>FY 2013</u>	<u>FY 2014 Base</u>	<u>FY 2014 OCO</u>	<u>FY 2014 Total</u>
Previous President's Budget	62.007	75.941	72.637	-	72.637
Current President's Budget	61.838	75.941	71.453	-	71.453
Total Adjustments	-0.169	0.000	-1.184	-	-1.184
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.169	-			
• Other Adjustments	-	-	-1.184	-	-1.184

Change Summary Explanation

The revised funding levels for FY14 are due to the need to address high priority programs within AT&L as determined by senior leadership.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE				PROJECT			
0400: Research, Development, Test & Evaluation, Defense-Wide BA 4: Advanced Component Development & Prototypes (ACD&P)					PE 0603851D8Z: Environmental Security Technology Certification Program				P514: Environmental Security Technology Certification Program			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
P514: Environmental Security Technology Certification Program	-	61.838	75.941	71.453	-	71.453	60.414	60.439	61.117	62.342	Continuing	Continuing
Quantity of RDT&E Articles												
# FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012												
## The FY 2014 OCO Request will be submitted at a later date												
A. Mission Description and Budget Item Justification												
(U) ESTCP demonstrates and validates the most promising innovative environmental and energy technologies that target DoD's most urgent needs. Technologies selected are projected to provide a return on the investment through cost savings and improved efficiencies. The program responds to: (1) Congressional concern over the slow pace of remediation of environmentally polluted sites on military installations, (2) Congressional direction to conduct demonstrations specifically focused on emerging new technologies, and (3) the need to improve defense readiness by reducing the drain on the Department's operation and maintenance dollars caused by environmental restoration,waste management, and the cost of energy. Preference for demonstrations is given to technologies that have successfully completed all necessary research and development objectives, and address the highest priority DoD requirements.												
B. Accomplishments/Planned Programs (\$ in Millions)										FY 2012	FY 2013	FY 2014
Title: Environmental Technology Demonstration/Validation										31.838	43.941	39.453
Description: Funds are programmed for investments in projects that address priority DoD environmental requirements. The focus of the program is on live site UXO discrimination demonstrations, addressing emerging and recalcitrant cleanup issues, range sustainment technologies, and reducing life cycle costs of DoD weapon systems by eliminating hazardous materials. Accomplishments/plans are described for each FY below.												
FY 2012 Accomplishments: Funds were obligated to projects that address priority DoD environmental requirements. Focused new investment topics for FY 2012 included: 1) Long Term Management of Contaminated Groundwater; 2) Bioavailability Technologies and Tools; 3) UXO Live Site Demonstrations; and 4) Natural Resource Management. Increased funding in FY 2012 is supporting new live site UXO demonstrations. This effort will transition innovative technologies that can reduce DoD's military munitions response liabilities by approximately 75% with an expected cost savings of \$10 billion. Details are provided at www.serdp-estcp.org. Projects have been competitively selected, funds were obligated to federal performers, contracts are in place, and work is underway.												
FY 2013 Plans:												

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense			DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 4: Advanced Component Development & Prototypes (ACD&P)		R-1 ITEM NOMENCLATURE PE 0603851D8Z: Environmental Security Technology Certification Program	PROJECT P514: Environmental Security Technology Certification Program		
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2012	FY 2013	FY 2014
Funds are planned for continued investment in projects that address priority DoD environmental requirements.					
FY 2014 Plans: Funds are planned for continued investment in projects that address priority DoD environmental requirements.					
Title: Energy Technology Demonstration/Validation Description: Funds are programmed for investments in projects that respond to Congressional direction for the Department to increase energy efficiency, reduce installation energy intensity, increase the use of renewable energy, and improve energy security. Emerging energy technologies offer DoD a cost effective opportunity to meet these requirements for reduced energy consumption and improved energy security on its installations while reducing energy and operational costs. FY 2012 Accomplishments: Funds were obligated to initiate investments in energy projects that constitute the Installation Energy Test Bed Initiative. Projects were competitively selected, funds were obligated to federal performers, contracts are in place, and work is underway. The test bed program is validating and testing the operational cost and performance of innovative energy technologies in a real-world integrated building environment so as to reduce risk, overcome the barriers to deployment, and facilitate wide-scale deployment. The DoD test bed program exploits the Department's existing built infrastructure to test energy efficiency and renewable energy technologies in three areas: component technologies (i.e., HVAC, lighting, distributed energy generation); system approaches to building energy design, control, and management; and installation-level smart micro-grid technologies. It is a distributed test bed designed to evaluate energy technologies under the varied climatic conditions and building types DoD manages. The test beds key elements are: 1) competitive selection of new technologies, 2) systematic and consistent evaluation to determine performance, operational readiness and life cycle costs, and 3) development of guidance and design information for future deployment across installations. This process has been developed, piloted, and validated through previous Congressional funding. Information on existing demonstrations can be found at WWW.SERDP-ESTCP.ORG. FY 2013 Plans: Funds are planned to continue investments in energy projects initiated in FY2012 that constitute the Installation Energy Test Bed Initiative. FY 2014 Plans: Funds are planned to continue investments in energy projects initiated in FY2012 that constitute the Installation Energy Test Bed Initiative.			30.000	32.000	32.000
Accomplishments/Planned Programs Subtotals			61.838	75.941	71.453

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>	R-1 ITEM NOMENCLATURE PE 0603851D8Z: <i>Environmental Security Technology Certification Program</i>	PROJECT P514: <i>Environmental Security Technology Certification Program</i>
C. Other Program Funding Summary (\$ in Millions) N/A		
Remarks		
D. Acquisition Strategy ESTCP solicits proposals from all DoD organizations, other Federal Agencies, and the commercial sector. Projects are selected based on an annual competitive process through reviews by multi-agency panels.		
E. Performance Metrics Performance in this program is monitored at two levels. At the lowest level, each individual project is measured against technical and financial milestones on a quarterly and annual basis. At a program-wide level, progress is measured against DoD's environmental requirements and the demonstration and transition of technologies that address these requirements.		

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2014 Office of Secretary Of Defense												DATE: April 2013			
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 4: Advanced Component Development & Prototypes (ACD&P)						R-1 ITEM NOMENCLATURE PE 0603851D8Z: Environmental Security Technology Certification Program						PROJECT P514: Environmental Security Technology Certification Program			
Support (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Support Contract	C/IDIQ	HydroGeoLogic Inc.:Reston, VA	-	3.700		3.900		4.000		-		4.000	Continuing	Continuing	
Subtotal			0.000	3.700		3.900		4.000		0.000		4.000			
Test and Evaluation (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Energy and Water	TBD	TBD:TBD	-	27.200		31.341		31.300		-		31.300	Continuing	Continuing	
Resource Conservation and Climate Change	TBD	TBD:TBD	-	4.400		6.500		6.353		-		6.353	Continuing	Continuing	
Environmental Restoration	TBD	TBD:TBD	-	7.800		9.500		8.300		-		8.300	Continuing	Continuing	
Munitions Response	TBD	TBD:TBD	-	10.088		14.200		11.000		-		11.000	Continuing	Continuing	
Weapons Systems and Platforms	TBD	TBD:TBD	-	8.650		10.500		10.500		-		10.500	Continuing	Continuing	
Subtotal			0.000	58.138		72.041		67.453		0.000		67.453			
Project Cost Totals			0.000	61.838		75.941		71.453		0.000		71.453			
Remarks															

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2014 Office of Secretary Of Defense			DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>	R-1 ITEM NOMENCLATURE PE 0603851D8Z: <i>Environmental Security Technology Certification Program</i>	PROJECT P514: <i>Environmental Security Technology Certification Program</i>	

	FY 2012				FY 2013				FY 2014				FY 2015				FY 2016				FY 2017				FY 2018			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
FY12 In Progress Reviews																												
Develop FY13 Program																												
FY13 In Progress Reviews																												
Develop FY14 Program																												
FY14 In Progress Reviews																												

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2014 Office of Secretary Of Defense			DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>	R-1 ITEM NOMENCLATURE PE 0603851D8Z: <i>Environmental Security Technology Certification Program</i>	PROJECT P514: <i>Environmental Security Technology Certification Program</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
FY12 In Progress Reviews	2	2012	3	2012
Develop FY13 Program	2	2012	4	2012
FY13 In Progress Reviews	2	2013	3	2013
Develop FY14 Program	1	2013	4	2013
FY14 In Progress Reviews	2	2014	4	2014

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense	DATE: April 2013
-------------------------------------------------------------------------------------------------	-------------------------

APPROPRIATION/BUDGET ACTIVITY

0400: *Research, Development, Test & Evaluation, Defense-Wide*
 BA 4: *Advanced Component Development & Prototypes (ACD&P)*

R-1 ITEM NOMENCLATURE

PE 0603920D8Z: *Humanitarian De-mining*

COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
Total Program Element	-	14.540	13.231	11.704	-	11.704	11.607	10.515	10.687	10.895	Continuing	Continuing
920: <i>Humanitarian De-mining</i>	-	14.540	13.231	11.704	-	11.704	11.607	10.515	10.687	10.895	Continuing	Continuing
Quantity of RDT&E Articles												

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

The Humanitarian Demining Research and Development (HD R&D) program element rapidly develops, demonstrates and validates new technologies for DoD-supported nations to detect and clear landmines and unexploded ordnance (UXO), and to contribute to U.S. military countermining R&D. The HD R&D Program is the only U.S. organization conducting research and development for Humanitarian Mine Action (HMA) detection and mechanical clearance technologies. HMA is a critical component of stability operations, which HD R&D directly supports by speeding improvements to technologies used by U.S. forces in support of USG operations; reducing the post-conflict threat to host nation population and U.S. forces; reducing insurgent access to explosives (landmines and UXO); enhancing mine action capacity of non-governmental organizations and mine action centers in mine-affected countries; and providing engagement opportunities for DoD personnel in mine-affected countries.

The HD R&D Program adapts commercial-off-the-shelf equipment, integrates mature technologies, and leverages R&D activity within DoD, particularly in the Army's Night Vision and Electronic Sensors Directorate (NVESD) Tactical Countermining mission area. The program aims to improve existing technologies for: mine/UXO detection, technical survey/area reduction, mechanical mine/UXO clearance, vegetation clearance, mine neutralization, and post-clearance quality assurance (QA). Evaluations of HD R&D Program-developed technologies in actual minefields are conducted by host nation demining partners (foreign military, non-governmental organizations and mine action centers) and provide valuable data for U.S. military countermining R&D and next generation HD technology developments while directly contributing to worldwide mine and UXO clearance. Since 1995 the program has fielded technologies for 160 evaluations in 36 countries, including Iraq and Afghanistan. The program's technologies have cleared 18+ million sq meters of the world's toughest minefields; found or destroyed 80,000+ mines and UXO; and provided 280,000 mine/UXO disposal charges with 33 tons of explosive recovered from stockpiles and abandoned munitions in PACOM.

Under the Office of the Assistant Secretary of Defense for Special Operations and Low-Intensity Conflict (OASD SO/LIC), the HD R&D Program works closely with the U.S. combatant commands (COCOMS) and the Humanitarian Demining Training Center (HDTTC) to support the Warfighter. Areas of emphasis are identified and validated at a biennial Requirements Workshop held by OASD SO/LIC. The Requirements Workshop involves representatives from Department of State (DoS), COCOMS and mine-affected nations.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense				DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY		R-1 ITEM NOMENCLATURE				
0400: Research, Development, Test & Evaluation, Defense-Wide BA 4: Advanced Component Development & Prototypes (ACD&P)		PE 0603920D8Z: Humanitarian De-mining				
B. Program Change Summary (\$ in Millions)	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total	
Previous President's Budget	14.544	13.231	11.779	-	11.779	
Current President's Budget	14.540	13.231	11.704	-	11.704	
Total Adjustments	-0.004	0.000	-0.075	-	-0.075	
• Congressional General Reductions	-	-				
• Congressional Directed Reductions	-	-				
• Congressional Rescissions	-	-				
• Congressional Adds	-	-				
• Congressional Directed Transfers	-	-				
• Reprogrammings	-	-				
• SBIR/STTR Transfer	-	-				
• Other Adjustments	-0.004	-	-0.075	-	-0.075	
Change Summary Explanation						
The FY 2014 baseline budget was reduced due to fiscal constraints and higher priorities within the Department.						
C. Accomplishments/Planned Programs (\$ in Millions)				FY 2012	FY 2013	FY 2014
Title: 0603920D8Z - SO/LIC Humanitarian De-mining				14.540	13.231	11.704
Description: The Humanitarian Demining Research and Development (HD R&D) program element rapidly develops, demonstrates and validates new technologies for DoD-supported nations to detect and clear landmines and unexploded ordnance (UXO), and to contribute to US military countermine R&D. The HD R&D Program focuses on development of new technologies to improve the efficiency and safety of indigenous nation-conducted, post-conflict clearance of residual mines and UXO, which pose a serious threat to US forces conducting stability operations, and to the host nation's population and economy.						
The HD R&D Program adapts commercial-off-the-shelf equipment, integrates mature technologies, and leverages R&D activity within DoD, particularly in the Army's Night Vision and Electronic Sensors Directorate (NVESD) Tactical Countermine mission area. The program aims to improve existing technologies for: mine/UXO detection, technical survey/area reduction, mechanical mine/UXO clearance, vegetation clearance, mine neutralization, individual deminer protection, and post-clearance quality assurance (QA). Evaluations of HD R&D Program-developed technologies in actual minefields are conducted by host nation demining partners (foreign military, non-governmental organizations and mine action centers) and provide valuable data for US military countermine R&D and next generation HD technology developments while directly contributing to world-wide mine and UXO clearance. Since 1995 the program has fielded technologies for 139 evaluations in 36 countries, including Iraq and Afghanistan. The program's technologies have cleared 16+ million sq meters of the world's toughest minefields; found or destroyed 80,000+ mines and UXO; and provided 267,000 mine/UXO disposal charges with 33 tons of explosive recovered from stockpiles and abandoned munitions in PACOM.						

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>		R-1 ITEM NOMENCLATURE PE 0603920D8Z: <i>Humanitarian De-mining</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
<p>Under the Office of the Assistant Secretary of Defense for Special Operations and Low-Intensity Conflict (OASD SO/LIC), the HD R&D Program works closely with the COCOMS and the Humanitarian Demining Training Center (HDTC) to support the Warfighter by developing and implementing mine/UXO detection and clearance technologies; speeding improvements to technologies used by U.S. forces in support of USG operations; reducing the threat to host nation population and US forces; reducing insurgent access to explosives (landmines and UXO); enhancing mine action capacity of non-governmental organizations and mine action centers in mine-affected countries; and providing engagement opportunities for DoD personnel in mine-affected countries.</p> <p>Areas of emphasis are identified and validated at a biennial Requirements Workshop held by OASD SO/LIC. The Requirements Workshop involves representatives from Department of State (DoS), U.S. combatant commands (COCOMS) and mine-affected nations.</p> <p>FY 2012 Accomplishments: The HD R&D Program completed ongoing equipment developments/modifications and continued 34 operational evaluations in 10 countries from FY2011. The program initiated new evaluations including the Badger vegetation/UXO clearance system in Guadalcanal; HSTAMIDS mine detection system in Mozambique; the Minehound, Luxor, and Scorpion mine/UXO detection systems and Wolverine quality assurance tiller in Cambodia; excavator UXO/mine sifting attachments and Terrapin UXO/ mine clearance system in Lebanon; and the Portable UXO Cutting System in Vietnam. The HD R&D Program held its biennial technology requirements workshop, bringing together representatives from demining non-governmental organizations, foreign nation military units and mine action centers, the U.S. Departments of State and Defense, and the Organization of American States. The workshop discussions focused future development efforts on technologies most needed to remove post-conflict mines and UXO. The HD R&D Program supported the combatant commands and U.S. Embassy staffs by conducting site surveys and country assessments. The program continued development, test and evaluation of prototype technologies in the following areas: mine/UXO detection, mechanical mine/UXO clearance, vegetation clearance, mine neutralization, technical survey, and post-clearance quality assurance (QA).</p> <p>FY 2013 Plans: The HD R&D Program will complete ongoing equipment developments/modifications, continue to support 53 ongoing operational evaluations in 13 countries from FY2012. The HD R&D Program will deploy at least nine new technologies for operational field evaluation, including Raptor II in Afghanistan, Rebel Crusher in Iraq, Mine Stalker in Angola, HSTAMIDS in Sri Lanka, Scout and Piranha in Cambodia, PAC-MAG in Laos, Mini MineWolf in Thailand, and Loader Based Demining in Chile. The HD R&D Program will support the combatant commands and U.S. Embassy staffs by conducting site surveys and country assessments. The program will develop, test and evaluate new prototype technologies in mine/UXO and detection, mechanical mine/UXO clearance, vegetation clearance, mine neutralization, technical survey, and post-clearance quality assurance (QA).</p>				

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>	R-1 ITEM NOMENCLATURE PE 0603920D8Z: <i>Humanitarian De-mining</i>			
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
New developments include the latest ground penetrating radar and magnetic sensing technologies to detect mines and UXO among high densities of clutter; semi-autonomous platforms and advanced perception sensors to aid in navigation and detection operations; and Sparrow and Armtrac ground-engaging/rapid investigation tools for mine/UXO suspect areas. <i>FY 2014 Plans:</i> The HD R&D Program will complete ongoing equipment developments/modifications, continue operational evaluations from FY2013. The HD R&D Program will support the combatant commands and U.S. Embassy staffs by conducting site surveys and country assessments. The program will develop, test and evaluate new prototype technologies in the following areas: mine/UXO detection, mechanical mine/UXO clearance, vegetation clearance, mine neutralization, technical survey, and post-clearance quality assurance (QA).				
Accomplishments/Planned Programs Subtotals		14.540	13.231	11.704
D. Other Program Funding Summary (\$ in Millions) N/A				
Remarks				
E. Acquisition Strategy Following a rapid prototyping strategy, the program emphasizes the use/modification of existing, commercially-available items and components to build functional prototype equipment suited for humanitarian demining operations. This approach is required due to the immediate need for new demining technologies in the face of ongoing U.S. forces and host nation citizen casualties in mine-affected countries. The program evaluates prototype equipment by acquiring it off-the-shelf from industry using competition to the extent possible, by leveraging ongoing countermine R&D efforts in other U.S. and foreign R&D activities, and by taking advantage of extensive in-house fabrication capabilities at the Army's Night Vision and Electronic Sensors Division (NVESD).				
F. Performance Metrics Long Term Strategies: Obtain adequate funding to support critical shortfalls; prioritize proposals that are deemed acceptable and allocate funding accordingly; and establish outreach programs to leverage institutional knowledge and expertise. Performance Indicator and Rating: FY 2012 Target - Achieved: 90% of currently funded research technologies are completed on time and within budget Complete scheduled R&D project tasks Transition field-ready technologies to host nation demining partners				

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>		R-1 ITEM NOMENCLATURE PE 0603920D8Z: <i>Humanitarian De-mining</i>
<p>Conduct biennial Humanitarian R&D Program Requirements Workshop</p> <p>FY 2013 Target: 90% of currently funded research technologies are completed on time and within budget Complete scheduled R&D project tasks Transition field-ready technologies to host nation demining partners Conduct focused working group on UXO detection and clearance in Southeast Asia</p> <p>FY 2014 Target: 90% of currently funded research technologies are completed on time and within budget Complete scheduled R&D project tasks Transition field-ready technologies to host nation demining partners Conduct biennial Humanitarian R&D Program Requirements Workshop</p> <p>Basis of FY 2012 to Date Performance Rating: Currently the number of funded research technologies is on track to be completed per the target.</p> <p>Verification: The Humanitarian Demining Program performs program reviews with other USG agencies (DOS PM WRA, DTRA SA/LW, DSCA, HDTC, CENTCOM, PACOM, SOUTHCOM, AFRICOM, EUCOM) and has oversight from OSD SO/LIC.</p> <p>Validation: Completed R&D products increase the capabilities of the DoD to effectively perform demining missions.</p>		

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 4: Advanced Component Development & Prototypes (ACD&P)	R-1 ITEM NOMENCLATURE PE 0603920D8Z: Humanitarian De-mining	PROJECT 920: Humanitarian De-mining
-------------------------------------------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------	-----------------------------------------------

Product Development (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Primary Hardware Development	Sub Allot	RDECOM-NVESD:Fort Belvoir, VA	0.000	7.844		7.434		6.576		-		6.576	Continuing	Continuing	Continuing
Subtotal			0.000	7.844		7.434		6.576		0.000		6.576			

Remarks

The HD R&D Program adapts commercial-off-the-shelf equipment, integrates mature technologies, and leverages R&D activity within DoD, particularly in the Army's Night Vision and Electronic Sensors Directorate (NVESD) Tactical Countermine mission area.

Test and Evaluation (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Humanitarian Demining Research and Development Program	Sub Allot	RDECOM-NVESD:Fort Belvoir, VA	-	6.212		5.309		4.696		-		4.696	Continuing	Continuing	Continuing
Subtotal			0.000	6.212		5.309		4.696		0.000		4.696			

Remarks

Under the Office of the Assistant Secretary of Defense for Special Operations and Low-Intensity Conflict (OASD SO/LIC), the HD R&D Program works closely with the COCOMS and the Humanitarian Demining Training Center (HDTC) to support the Warfighter by developing and implementing mine/UXO detection and clearance technologies; speeding improvements to technologies used by U.S. forces in support of USG operations; reducing the threat to host nation population and US forces; reducing insurgent access to explosives (landmines and UXO); enhancing mine action capacity of non-governmental organizations and mine action centers in mine-affected countries; and providing engagement opportunities for DoD personnel in mine-affected countries.

Management Services (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Humanitarian Demining Program Management Support	Sub Allot	RDECOM-NVESD:Fort Belvoir, VA	-	0.484		0.488		0.432		-		0.432	Continuing	Continuing	Continuing
Subtotal			0.000	0.484		0.488		0.432		0.000		0.432			

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2014 Office of Secretary Of Defense												DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>						R-1 ITEM NOMENCLATURE PE 0603920D8Z: <i>Humanitarian De-mining</i>				PROJECT 920: <i>Humanitarian De-mining</i>				

Management Services (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total						
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
Remarks The HD R&D Program adapts commercial-off-the-shelf equipment, integrates mature technologies, and leverages R&D activity within DoD, particularly in the Army's Night Vision and Electronic Sensors Directorate (NVESD) Tactical Countermining mission area. Areas of emphasis are identified and validated at a biennial Requirements Workshop held by OASD SO/LIC. The Requirements Workshop involves representatives from Department of State (DoS), U.S. combatant commands (COCOMS) and mine-affected nations.																		
				All Prior Years		FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total		Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals				0.000		14.540		13.231		11.704		0.000		11.704				
Remarks The Humanitarian Demining Research and Development (HD R&D) program element rapidly develops, demonstrates and validates new technologies for DoD-supported nations to detect and clear landmines and unexploded ordnance (UXO), and to contribute to US military countermining R&D. The HD R&D Program focuses on development of new technologies to improve the efficiency and safety of indigenous nation-conducted, post-conflict clearance of residual mines and UXO, which pose a serious threat to US forces conducting stability operations, and to the host nation's population and economy.																		

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2014 Office of Secretary Of Defense

DATE: April 2013

APPROPRIATION/BUDGET ACTIVITY

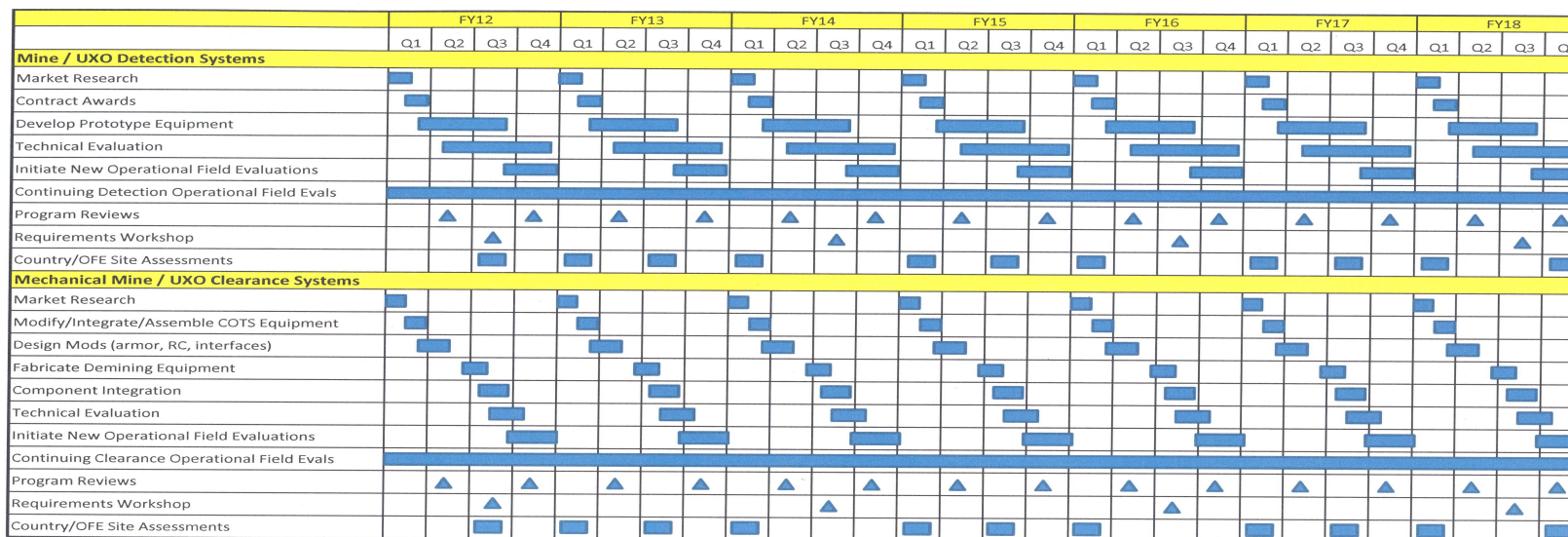
0400: Research, Development, Test & Evaluation, Defense-Wide
BA 4: Advanced Component Development & Prototypes (ACD&P)

R-1 ITEM NOMENCLATURE

PE 0603920D8Z: Humanitarian De-mining

PROJECT

920: Humanitarian De-mining



UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2014 Office of Secretary Of Defense			DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>	R-1 ITEM NOMENCLATURE PE 0603920D8Z: <i>Humanitarian De-mining</i>	PROJECT 920: <i>Humanitarian De-mining</i>	

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>Mine/UXO Detection Systems</i>				
Market Research	1	2012	1	2012
Contract Awards	1	2012	1	2012
Develop Prototype Eq	1	2012	3	2012
<i>Mechanical Mine/UXO Clearance Systems</i>				
Market Research	1	2012	1	2012

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY

0400: *Research, Development, Test & Evaluation, Defense-Wide*
BA 4: *Advanced Component Development & Prototypes (ACD&P)*

R-1 ITEM NOMENCLATURE

PE 0603923D8Z: *Coalition Warfare*

COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
Total Program Element	-	11.389	11.398	9.842	-	9.842	12.438	12.359	11.927	12.158	Continuing	Continuing
P923: <i>Coalition Warfare</i>	-	11.389	11.398	9.842	-	9.842	12.438	12.359	11.927	12.158	Continuing	Continuing

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

Note

CWP Budget rephased, with \$1.53M moved out of the FY14 budget and into the FY15 and FY16 budgets.

A. Mission Description and Budget Item Justification

Current U.S. military strategy and the global security environment make coalition warfare and multinational operations fundamental features of the U.S. national security strategy. Coalitions provide a broad base of technological, operational, and logistical support for military operations and ease the U.S. financial and manpower burdens associated with meeting military goals and objectives. U.S. strategic guidance confirms that coalitions and relationships with international partners are high priorities for the nation and the Department of Defense.

The Coalition Warfare Program (CWP) responds to this guidance while striving to deliver new and improved capabilities to the warfighter. CWP provides seed funding to DoD organizations to conduct cooperative research, development, test, and evaluation (RDT&E) projects with foreign government partners. It is the only Office of the Secretary of Defense (OSD) program dedicated to initiating cooperative RDT&E projects with allied and partner nations. CWP seed funding is leveraged against funding from other U.S. government sponsors and foreign partners. In its twelve-year history, CWP has leveraged \$3.1 of other U.S. funding for every \$1 it has invested in cooperative projects and \$4.4 of foreign partner funding for every \$1 investment.

CWP projects enable Project Teams to move a technology into the next stage of development or prepare for transition to operational forces. These projects may also form the basis for future cooperation with our international partners. CWP projects support DoD acquisition by helping program offices convert U.S.-only projects into coalition solutions for the U.S. warfighter, influencing coalition interoperability in major programs that will have far-reaching use by U.S. forces, addressing requirements of combined operations early in a program's development cycle to avert risks to joint/coalition operations and avoid costs associated with adding requirements later in the acquisition process, enabling U.S. DoD access to leading-edge global technology, and providing significant cost savings to the DoD while maintaining a strong research and development base.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense	DATE: April 2013
-------------------------------------------------------------------------------------------------	-------------------------

APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>	R-1 ITEM NOMENCLATURE PE 0603923D8Z: <i>Coalition Warfare</i>
---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------

B. Program Change Summary (\$ in Millions)	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total
Previous President's Budget	12.434	11.398	11.495	-	11.495
Current President's Budget	11.389	11.398	9.842	-	9.842
Total Adjustments	-1.045	0.000	-1.653	-	-1.653
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments	-1.045	-	-1.653	-	-1.653

Change Summary Explanation

The FY 2014 decrease was due to funding other higher priority programs within AT&L.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 4: Advanced Component Development & Prototypes (ACD&P)					R-1 ITEM NOMENCLATURE PE 0603923D8Z: Coalition Warfare				PROJECT P923: Coalition Warfare			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
P923: Coalition Warfare	-	11.389	11.398	9.842	-	9.842	12.438	12.359	11.927	12.158	Continuing	Continuing
Quantity of RDT&E Articles												
# FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012												
## The FY 2014 OCO Request will be submitted at a later date												
A. Mission Description and Budget Item Justification												
Current U.S. military strategy and the global security environment make coalition warfare and multinational operations fundamental features of the U.S. national security strategy. Coalitions provide a broad base of technological, operational, and logistical support for military operations and ease the U.S. financial and manpower burdens associated with meeting military goals and objectives. U.S. strategic guidance confirms that coalitions and relationships with international partners are high priorities for the nation and the Department of Defense.												
The Coalition Warfare Program (CWP) responds to this guidance while striving to deliver new and improved capabilities to the warfighter. CWP provides seed funding to DoD organizations to conduct cooperative research, development, test, and evaluation (RDT&E) projects with foreign government partners. It is the only Office of the Secretary of Defense (OSD) program dedicated to initiating cooperative RDT&E projects with allied and partner nations. CWP seed funding is leveraged against funding from other U.S. government sponsors and foreign partners. In its twelve-year history, CWP has leveraged \$3.1 of other U.S. funding for every \$1 it has invested in cooperative projects and \$4.4 of foreign partner funding for every \$1 investment.												
CWP projects enable Project Teams to move a technology into the next stage of development or prepare for transition to operational forces. These projects may also form the basis for future cooperation with our international partners. CWP projects support DoD acquisition by helping program offices convert U.S.-only projects into coalition solutions for the U.S. warfighter, influencing coalition interoperability in major programs that will have far-reaching use by U.S. forces, addressing requirements of combined operations early in a program's development cycle to avert risks to joint/coalition operations and avoid costs associated with adding requirements later in the acquisition process, enabling U.S. DoD access to leading-edge global technology, and providing significant cost savings to the DoD while maintaining a strong research and development base.												
B. Accomplishments/Planned Programs (\$ in Millions)									FY 2012	FY 2013	FY 2014	
Title: Previous Year Continuing Projects									9.420	5.130	0.000	
Description: Program provided additional funding to projects that began in earlier selection cycles.												
FY 2012 Accomplishments:												
Projects completed efforts in areas such as: a physics-based mission planning tool to direct the selection and placement of electromagnetic sensors for tunnel detection: an extensible capability of performing distributed federated query and information dissemination across a network of distributed, disparate data and information sources; and a hybrid power source capable of												

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>	R-1 ITEM NOMENCLATURE PE 0603923D8Z: <i>Coalition Warfare</i>	PROJECT P923: <i>Coalition Warfare</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
producing 150 watts of continuous power for powering military devices and charging military rechargeable batteries in a small, lightweight package. FY 2013 Plans: Continuation of efforts that will result in delivery of: an improved small directional battlefield antenna; a portable power system utilizing renewable energy; fused data from sensor networks to characterize the ionosphere over the African continent; and a satellite angular mapping tool to characterize coastlines for targeting and for shore assault operations technologies.			
Title: FY14 Project Selections Description: Program will conduct competitive nomination process to identify new projects. FY 2014 Plans: FY14 projects will be selected based on COCOM, Service, Joint Staff, OSD, and DoD Agency priorities and requirements.		0.000	0.000
Title: Blast Propagation Through Failed Blast Door in Tunnel Description: Develop and validate a new fast running model for blast propagation through failing blast doors in tunnels to be used to predict weapons effects beyond blast doors (BDs) in tunnels FY 2013 Plans: Development of the fast running model (FRM) for blast doors using high fidelity physics based (HFPB) calculations to scope the test event, and run an array of HFPB calculations to form a computational database from which to develop the FRM. FY 2014 Plans: Validating fast running model.		0.000	0.500
Title: Coalition Wideband Waveform Development Description: A multinational project to procure a secure wideband networking waveform, modify it as needed to meet the agreed upon specification, and deliver this waveform on a radio platform that coalition partners can test against to verify interoperability as they port to their own national Software Defined Radios (SDRs). FY 2013 Plans: Creation of Coalition Wideband Waveform Crypto Algorithm. FY 2014 Plans: Waveform/Crypto Integration, COTS Waveform assessment.		0.000	0.800
Title: Dualband Pointer and Illuminator System		0.600	0.000
			0.000

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 4: Advanced Component Development & Prototypes (ACD&P)	R-1 ITEM NOMENCLATURE PE 0603923D8Z: Coalition Warfare	PROJECT P923: Coalition Warfare		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
Description: To develop a near infrared (NIR) and shortwave infrared (SWIR) Dualband Pointer and Illuminator System that will complement the Clip-On Shortwave Imager (COSI), for augmented night vision goggle applications. FY 2012 Accomplishments: Requirements analysis and prototype development.				
Title: International Collaborative Development of Enhanced (ICODE) Maritime Domain Awareness (MDA) Description: ICODE-MDA will confront maritime threats to the U.S. and coalition allies by developing an open source library of advanced analysis tools (“software widgets”) that will work in concert with established MDA portals and Common Operating Pictures. FY 2013 Plans: Collaboratively develop and test tools for the analysis of MDA data, including but not limited to: automated imagery analysis, anomaly detection and behavioral analysis, data fusion, and monitoring, control and surveillance automation. FY 2014 Plans: Further develop and test tools and integrate them into web-portals. Conduct collaborative sea tests to evaluate and update tools accordingly.		0.000	0.500	0.500
Title: Nonlinear Energy Harvester for Low Frequency Vibrations Embedded in Low Frequency Background Noise Description: Develop Micro Electrical Mechanical Systems (MEMS) which is a micro-scale vibrational energy harvester capable of operating at low frequency in the presence of low frequency band-limited noise. FY 2013 Plans: Modeling of randomly driven nonlinear oscillators. Conducting simulations. Design of readout circuits and prototype(s) testing.		0.000	0.600	0.000
Title: Incorporation of Magnesium Backing Plate for Improved Body Armor Description: This project will yield a body armor design with enhanced protection against small caliber threats as well as ergonomic improvements through the inclusion and integration of a lightweight, ultrahigh strength magnesium alloy backing plate. FY 2013 Plans: Purchase of materials, computational modeling, and ballistic testing of test panels. FY 2014 Plans: Purchase of additional material and additional ballistic testing.		0.000	0.275	0.275
Title: Multi-functional Earpiece		0.225	0.225	0.000

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>	R-1 ITEM NOMENCLATURE PE 0603923D8Z: <i>Coalition Warfare</i>	PROJECT P923: <i>Coalition Warfare</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
Description: Provide a Soldier with a Multi-functional Earpiece that will mitigate hearing injuries, enhance situational awareness, and help identify potential harmful injuries due to blast or blunt exposure on the battlefield. FY 2012 Accomplishments: Design and development of the microelectromechanical systems accelerometer. FY 2013 Plans: Hearing protection testing and validation of amplification and acceleration monitor.			
Title: NASIC Project Description: An offline PED suite to process data. FY 2013 Plans: Develop hardware. FY 2014 Plans: Hardware validation		0.000	0.500
Title: High-Fidelity RF-over-Fiber Link for Improved Interoperability of C4ISR Systems Description: Develop a radio frequency (RF)-over-fiber link fiber-optic cable prototype that suppresses optical noise effects so as to create a low-noise, broadband, and light-weight communications solution for C4ISR systems. FY 2013 Plans: Purchase equipment. Design, construct, and optimize prototype. FY 2014 Plans: Continued prototype development. Purchase additional equipment.		0.000	0.225
Title: Solar Solutions for Soldier Nano-Grids Description: Advancement and integration of photovoltaic technology and conformal batteries with wearable energy harvesting and nano-grid platforms to produce an optimized, integrated platform to reduce the human and logistical burdens associated with soldier power mission requirements. FY 2012 Accomplishments: Prototype design. FY 2013 Plans:		0.100	0.110
			0.000

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>	R-1 ITEM NOMENCLATURE PE 0603923D8Z: <i>Coalition Warfare</i>	PROJECT P923: <i>Coalition Warfare</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
Prototype testing.			
Title: Submarine Anti-Jam GPS Enhancement Description: Provide GPS anti-jam antenna system for submarines to support missions dependent on GPS position and timing. FY 2012 Accomplishments: Initial design and development of production representative prototypes. FY 2013 Plans: Delivery of prototypes. Cooperative land, air, and sea testing.		0.150	0.410
Title: Spectrum Management Interoperability and Electronic Warfare (EW) Analysis Description: Advance the spectrum data exchange mechanism and evaluate Electronic Warfare (EW) capabilities. FY 2013 Plans: Collaboratively define the interoperability spectrum data and begin development of the format for data exchange. FY 2014 Plans: Finalize the development of the data exchange software tool. Validate through simulations.		0.000	0.145
Title: Small Scalable Kinetic Weapon Description: Conduct systems engineering trade study and hardware-in-the-loop ground test of integrated, unmanned aerial system launched, small, low collateral damage, munition with scalable effects warhead and an electro-optic seeker. FY 2013 Plans: Provide specifications and designs. Prepare the hardware-in-the-loop facility. FY 2014 Plans: Finish hardware-in-the-loop facility preparations and execute the test objectives.		0.000	0.500
Title: Transatlantic Collaborative Biological Resiliency Demonstration (TaCBRD) Bio-detector Development (Test and Evaluation) Description: System maturation and testing of novel standoff biological agent detector that identifies the presence of multiple biological agents. FY 2013 Plans: Two chamber release tests to identify required system improvements. FY 2014 Plans:		0.000	0.150

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>	R-1 ITEM NOMENCLATURE PE 0603923D8Z: <i>Coalition Warfare</i>	PROJECT P923: <i>Coalition Warfare</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
Two field release tests and additional system improvements.			
Title: Coalition Warfare Program (CWP) Support		0.527	0.554
Description: Program funds contractors to support CWP program management, which includes: ensuring CWP projects are consistent with the policies and principles articulated in Department of Defense directives and regulations; monitoring project progress toward goals and objectives as well as tracking project budget execution; providing assessment of program status and risk to higher authorities; briefing and providing recommendations to the Director, International Cooperation concerning new and continuing CWP projects; supporting periodic CWP meetings to foster international cooperation and improve U.S. interoperability with foreign partners; supporting CWP proposal selection process and coordinating financial activities at the OUSD(AT&L) level; briefing program stakeholders on the status of CWP projects and interoperability initiatives; educating Combatant Command, Service, Agency, and OSD personnel about the CWP and the opportunity to improve coalition interoperability.			
FY 2012 Accomplishments: Contractor provided management support of the CWP, to include evaluating proposals for FY13 funding, attending RDT&E meetings and events, and monitoring and managing projects' technical and financial performance. On-site contractor support reduced by 33% due to Efficiency Defense-wide cut.			
FY 2013 Plans: Contractor will continue to provide management support of the CWP, to include evaluating proposals for FY14 funding, attending RDT&E meetings and events, and monitoring and managing projects' technical and financial performance.			
FY 2014 Plans: Contractor will continue to provide management support of the CWP, to include evaluating proposals for FY15 funding, attending RDT&E meetings and events, and monitoring and managing projects' technical and financial performance.			
Title: Interoperability and Collaboration Initiatives		0.367	0.774
Description: Program provides funds in support of new or planned acquisition programs with the aim of 1) promoting coalition interoperability early in the requirements or technical development phases, 2) harmonizing common goals between U.S. and foreign partners, 3) improving management of collaborative efforts. Funds support workshops, risk reduction efforts, standards development, architecture analysis, and information management initiatives.			
FY 2012 Accomplishments: Program funded efforts aimed at improving U.S. interoperability with foreign partners and improving collaborative project processes.			
FY 2013 Plans:			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>	R-1 ITEM NOMENCLATURE PE 0603923D8Z: <i>Coalition Warfare</i>	PROJECT P923: <i>Coalition Warfare</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
Program will fund efforts aimed at improving U.S. interoperability with foreign partners and improving collaborative project processes. FY 2014 Plans: Program will fund efforts aimed at improving U.S. interoperability with foreign partners and improving collaborative project processes.			
Accomplishments/Planned Programs Subtotals		11.389	11.398
C. Other Program Funding Summary (\$ in Millions) N/A			
Remarks			
D. Acquisition Strategy The Combatant Commands, Services, Defense Agencies, and the Office of the Secretary of Defense nominate candidate projects on an annual basis. CWP provides selected projects one to two years of funding. The Program selects projects that address DoD priorities and meet the needs and requirements specified by the Joint Staff and the Combatant Commanders. Projects have equitable contributions from international partners, strong potential for transition, and contribute to allied interoperability and/or meet a user need.			
E. Performance Metrics After successful completion of the competitive nomination process, initial project funding is dependent on receipt of project documentation, which includes financial information, project plan, description of project team, etc. Continued project funding is dependent on compliance with CWP requirements, which include: adequate progress toward each project's stated goals, timely reporting on financial status and project activities, provision of updated project plans and charts, and progress towards transition goals.			

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>	R-1 ITEM NOMENCLATURE PE 0603923D8Z: <i>Coalition Warfare</i>	PROJECT P923: <i>Coalition Warfare</i>
---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------	--------------------------------------------------

Product Development (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Coalition Warfare Program Project Product Development Costs	Various	Various Activities:Various Locations	-	7.660		8.519		5.863		-		5.863	Continuing	Continuing	
Subtotal			0.000	7.660		8.519		5.863		0.000		5.863			

Remarks

Typical costs include engineering services, hardware procurement and development, and software development.

Support (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Coalition Warfare Program Project Support Costs	Various	Various Activities:Various Locations	-	0.215		0.296		0.088		-		0.088	Continuing	Continuing	
Subtotal			0.000	0.215		0.296		0.088		0.000		0.088			

Remarks

Typical costs include project management, program analysis and support, and strategic planning.

Test and Evaluation (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Coalition Warfare Program Project Test and Evaluations Costs	Various	Various Activities:Various Locations	-	2.220		1.427		2.057		-		2.057	Continuing	Continuing	
Subtotal			0.000	2.220		1.427		2.057		0.000		2.057			

Remarks

Support and execution related to developmental test and evaluation, and related analysis.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2014 Office of Secretary Of Defense												DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>						R-1 ITEM NOMENCLATURE PE 0603923D8Z: <i>Coalition Warfare</i>				PROJECT P923: <i>Coalition Warfare</i>				

Management Services (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Coalition Warfare Program Project Management Services Costs	Various	Various Activities:Various Locations	-	1.294		1.156		1.834		-		1.834	Continuing	Continuing	
Subtotal			0.000	1.294		1.156		1.834		0.000		1.834			

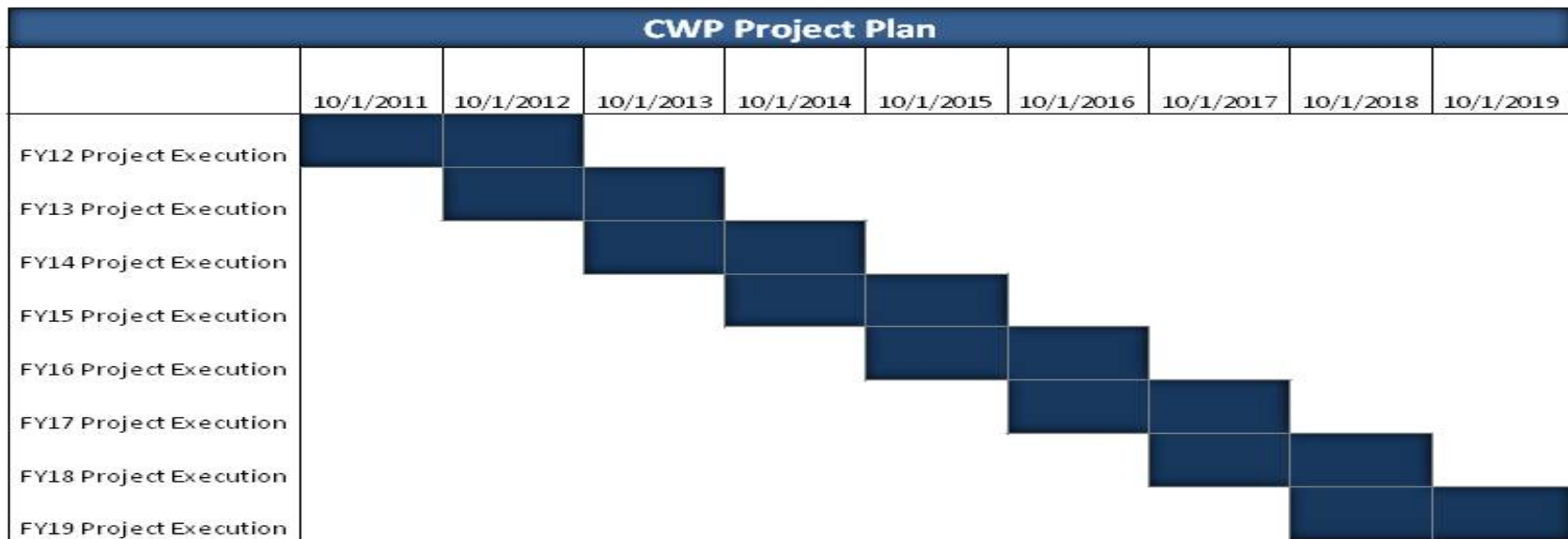
Remarks
Typical costs include government program management personnel and related contracted management support labor and related travel.

	All Prior Years	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	11.389	11.398	9.842	0.000	9.842			

Remarks

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2014 Office of Secretary Of Defense							DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>				R-1 ITEM NOMENCLATURE PE 0603923D8Z: <i>Coalition Warfare</i>			PROJECT P923: <i>Coalition Warfare</i>		



UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2014 Office of Secretary Of Defense			DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>	R-1 ITEM NOMENCLATURE PE 0603923D8Z: <i>Coalition Warfare</i>	PROJECT P923: <i>Coalition Warfare</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
FY11-FY12 Projects	1	2012	4	2012
FY12-FY13 Projects	1	2012	4	2013
FY13-FY14 Projects	1	2012	4	2014
FY14-FY15 Projects	1	2013	4	2015
FY15-FY16 Projects	1	2014	4	2016
FY16-FY17 Projects	1	2015	4	2017
FY17-FY18 Projects	1	2016	4	2018

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY

0400: *Research, Development, Test & Evaluation, Defense-Wide*
BA 4: *Advanced Component Development & Prototypes (ACD&P)*

R-1 ITEM NOMENCLATURE

PE 0604016D8Z: *Department of Defense Corrosion Policy and Oversight*

COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013[#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
Total Program Element	-	34.249	3.283	3.312	-	3.312	3.392	3.543	3.542	3.611	Continuing	Continuing
P015: <i>Corrosion Protection Projects</i>	-	34.249	3.283	3.312	-	3.312	3.392	3.543	3.542	3.611	Continuing	Continuing

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

(U) The purpose of this program is to develop a comprehensive capability to prevent and mitigate corrosion and its effects on Department of Defense (DoD) weapon systems and infrastructure. Corrosion severely impacts system and facility reliability, readiness and safety, and consumes a disproportionate amount of material and labor hours for repair and treatment of corrosion damaged systems and facilities. The cost of corrosion across the DoD has been estimated at over 23 billion each year. The impact and cost of corrosion are so pervasive that Congress enacted Public Law 107-314 Sec: 1067 [portions codified in 10 U.S.C. 2228]: Prevention and mitigation of corrosion of military infrastructure and equipment. This legislation requires that DoD develop a long-term corrosion strategy to include establishment of a coordinated R&D program with transition plans. The legislation also requires that DoD designate a responsible official or organization to oversee a corrosion prevention and mitigation program. The responsibilities of the Director, Corrosion Policy and Oversight and the Military Department Corrosion Prevention and Control Executives were further delineated in DODI 5000.67 "Prevention and Mitigation of Corrosion on Military Equipment and Infrastructure" of 01 February 2010.

(U) The Deputy Secretary of Defense designated the Principal Deputy Under Secretary of Defense (Acquisition, Technology, and Logistics) (PDUSD(AT&L)) as the DoD Corrosion Executive in May 2003. The DoD Corrosion Executive subsequently established a Corrosion Control and Oversight office to implement the program. Subsequently, in accordance with Section 371 of the 2008 National Defense Authorization Act, the Under Secretary of Defense (USD(AT&L)) designated a Director, Corrosion Policy and Oversight to perform the duties of the DoD Corrosion Executive with responsibilities as described in the 2008 NDAA legislation. A major responsibility of the Director, Corrosion Policy and Oversight is to select high payoff research and development projects that promise to prevent or mitigate corrosion and significantly reduce the total cost of corrosion along with the adverse impact of corrosion effects on weapon system and infrastructure operational capability. This office chartered a Corrosion Prevention and Control Integrated Product Team (CPCIPT) that has selected and funded Operation and Maintenance projects for each Fiscal Year (FY) commencing in FY 2005. However, the DoD CPCIPT has determined that the biggest payoff in corrosion prevention and mitigation will come from investing in up-front prevention technologies, materials, and processes to leverage downstream cost avoidance in corrosion maintenance and repair. Likewise, development of improved predictive and prognostic techniques can eliminate unseen failure and reduce unnecessary maintenance and repair costs. Thus, technology development, demonstration, and transition projects have been selected and funded since FY 2006. In FY 2009, the Military Departments assigned corrosion executives and began submitting reports to Congress on inserting corrosion planning into the acquisition process. The FY 2011 NDAA added a requirement for the DoD to report the amount of funds requested in the preceding year budget for each planned project or activity, as compared to the funding required for each project or activity. These funds provide a portion of the funds used to implement associated corrosion control projects and activities.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY

0400: *Research, Development, Test & Evaluation, Defense-Wide*
BA 4: *Advanced Component Development & Prototypes (ACD&P)*

R-1 ITEM NOMENCLATURE

PE 0604016D8Z: *Department of Defense Corrosion Policy and Oversight*

(U) The Corrosion Prevention Control Integrated Product Team membership consists of both the equipment and infrastructure corrosion control experts from the Services, the Joint Staff, the Coast Guard, and the National Aeronautics and Space Administration. The Services are given project submission instructions, evaluation procedures and selection criteria. The CPC project selection board, chaired by the Director, Corrosion Policy and Oversight, reviews the projects and makes recommendations to the USD(AT&L) for final approval.

(U) The former DoD Corrosion Executive issued a policy letter that states: "Basic systems design, materials and processes selection, and intrinsic corrosion-prevention strategies establish the corrosion susceptibility of Defense material. The early stages of acquisition provide our best opportunity to make effective trade-offs among the many competing design criteria. . ." The Congress and former DoD Corrosion Executive made it clear that research and development into materials and methods to prevent or mitigate corrosion should receive high priority. Since Congress has clearly established this program as one of its highest priorities, and has reiterated its expectations regarding funding levels and methods, our budget request is designed to reflect both fiscal realities of one or more on many proposed projects over the next five to ten years.

These projects address critical corrosion issues in both Department of Defense infrastructure as well as warfighting systems. A number of low-risk, high-payoff technologies promise to vastly improve the service life and significantly reduce the maintenance costs of storage tanks and other mission support facilities essential to maintain support for the warfighter. Each of the services has identified important projects that vastly increase operational readiness and reduce operations and maintenance costs. All services are studying corrosion inhibitors that improve reliability and life of electrical and avionics equipment. Likewise, an array of highly effective, rapid cure coatings that are easy to apply and can forestall corrosion for many years on aircraft and ships are being developed. Other vital projects being considered include sealants, wash down systems, sensors and prognostic technologies that have joint service applications and potential to prevent and mitigate corrosion and its effects over a wide range of systems. Funding for this program will provide a critically needed resource to trigger even larger investment and cost avoidance.

B. Program Change Summary (\$ in Millions)	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total
Previous President's Budget	34.153	3.283	3.366	-	3.366
Current President's Budget	34.249	3.283	3.312	-	3.312
Total Adjustments	0.096	0.000	-0.054	-	-0.054
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	0.096	-			
• SBIR/STTR Transfer	-	-			
• Other Adjustments	-	-	-0.054	-	-0.054

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense	DATE: April 2013
-------------------------------------------------------------------------------------------------	-------------------------

APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>	R-1 ITEM NOMENCLATURE PE 0604016D8Z: <i>Department of Defense Corrosion Policy and Oversight</i>
---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	------------------------------------------------------------------------------------------------------------

Congressional Add Details (\$ in Millions, and Includes General Reductions)

Project: P015: *Corrosion Protection Projects*

Congressional Add: *Corrosion Control, Prevention and Prediction through Coatings, Materials and Maintenance R&D*

Congressional Add Subtotals for Project: P015

Congressional Add Totals for all Projects

FY 2012	FY 2013
32.196	-
32.196	0.000
32.196	0.000

Change Summary Explanation

Increased efficiencies in the project submission and selection processes enables the FY 2014 funding reduction.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE				PROJECT			
0400: Research, Development, Test & Evaluation, Defense-Wide BA 4: Advanced Component Development & Prototypes (ACD&P)					PE 0604016D8Z: Department of Defense Corrosion Policy and Oversight				P015: Corrosion Protection Projects			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
P015: Corrosion Protection Projects	-	34.249	3.283	3.312	-	3.312	3.392	3.543	3.542	3.611	Continuing	Continuing
Quantity of RDT&E Articles												

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

U) The purpose of this program is to develop a comprehensive capability to prevent and mitigate corrosion and its effects on Department of Defense (DoD) weapon systems and infrastructure. Corrosion severely impacts system and facility reliability, readiness and safety, and consumes a disproportionate amount of material and labor hours for repair and treatment of corrosion damaged systems and facilities. The cost of corrosion across the DoD has been estimated at over 23 billion each year. The impact and cost of corrosion are so pervasive that Congress enacted Public Law 107-314 Sec: 1067 [portions codified in 10 U.S.C. 2228]: Prevention and mitigation of corrosion of military infrastructure and equipment. This legislation requires that DoD develop a long-term corrosion strategy to include establishment of a coordinated R&D program with transition plans. The legislation also requires that DoD designate a responsible official or organization to oversee a corrosion prevention and mitigation program. The responsibilities of the Director, Corrosion Policy and Oversight and the Military Department Corrosion Prevention and Control Executives were further delineated in DODI 5000.67 "Prevention and Mitigation of Corrosion on Military Equipment and Infrastructure" of 01 February 2010.

(U) The Deputy Secretary of Defense designated the Principal Deputy Under Secretary of Defense (Acquisition, Technology, and Logistics) (PDUSD(AT&L)) as the DoD Corrosion Executive in May 2003. The DoD Corrosion Executive subsequently established a Corrosion Control and Oversight office to implement the program. Subsequently, in accordance with Section 371 of the 2008 National Defense Authorization Act, the Under Secretary of Defense (USD(AT&L)) designated a Director, Corrosion Policy and Oversight to perform the duties of the DoD Corrosion Executive with responsibilities as described in the 2008 NDAA legislation. A major responsibility of the Director, Corrosion Policy and Oversight is to select high payoff research and development projects that promise to prevent or mitigate corrosion and significantly reduce the total cost of corrosion along with the adverse impact of corrosion effects on weapon system and infrastructure operational capability. This office chartered a Corrosion Prevention and Control Integrated Product Team (CPCIPT) that has selected and funded Operation and Maintenance projects for each Fiscal Year (FY) commencing in FY 2005. However, the DoD CPCIPT has determined that the biggest payoff in corrosion prevention and mitigation will come from investing in up-front prevention technologies, materials, and processes to leverage downstream cost avoidance in corrosion maintenance and repair. Likewise, development of improved predictive and prognostic techniques can eliminate unseen failure and reduce unnecessary maintenance and repair costs. Thus, technology development, demonstration, and transition projects have been selected and funded since FY 2006. In FY 2009, the Military Departments assigned corrosion executives and began submitting reports to Congress on inserting corrosion planning into the acquisition process. The FY 2011 NDAA added a requirement for the DoD to report the amount of funds requested in the preceding year budget for each planned project or activity, as compared to the funding required for each project or activity. These funds provide a portion of the funds used to implement associated corrosion control projects and activities.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 4: Advanced Component Development & Prototypes (ACD&P)	R-1 ITEM NOMENCLATURE PE 0604016D8Z: Department of Defense Corrosion Policy and Oversight	PROJECT P015: Corrosion Protection Projects		
<p>(U) The Corrosion Prevention Control Integrated Product Team membership consists of both the equipment and infrastructure corrosion control experts from the Services, the Joint Staff, the Coast Guard, and the National Aeronautics and Space Administration. The Services are given project submission instructions, evaluation procedures and selection criteria. The CPC project selection board, chaired by the Director, Corrosion Policy and Oversight, reviews the projects and makes recommendations to the USD(AT&L) for final approval.</p> <p>(U) The former DoD Corrosion Executive issued a policy letter that states: "Basic systems design, materials and processes selection, and intrinsic corrosion-prevention strategies establish the corrosion susceptibility of Defense material. The early stages of acquisition provide our best opportunity to make effective trade-offs among the many competing design criteria. . ." The Congress and former DoD Corrosion Executive made it clear that research and development into materials and methods to prevent or mitigate corrosion should receive high priority. Since Congress has clearly established this program as one of its highest priorities, and has reiterated its expectations regarding funding levels and methods, our budget request is designed to reflect both fiscal realities of one or more on many proposed projects over the next five to ten years.</p> <p>These projects address critical corrosion issues in both Department of Defense infrastructure as well as warfighting systems. A number of low-risk, high-payoff technologies promise to vastly improve the service life and significantly reduce the maintenance costs of storage tanks and other mission support facilities essential to maintain support for the warfighter. Each of the services has identified important projects that vastly increase operational readiness and reduce operations and maintenance costs. All services are studying corrosion inhibitors that improve reliability and life of electrical and avionics equipment. Likewise, an array of highly effective, rapid cure coatings that are easy to apply and can forestall corrosion for many years on aircraft and ships are being developed. Other vital projects being considered include sealants, wash down systems, sensors and prognostic technologies that have joint service applications and potential to prevent and mitigate corrosion and its effects over a wide range of systems. The FY 2012 budget request will provide a critically needed resource to trigger even larger investment and cost avoidance.</p>				
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
Title: Corrosion Prevention and Control Projects and Activities		2.053	3.283	3.312
FY 2012 Accomplishments: Magnesium-Zinc Rich Primer Non-Destructive Detection of Corrosion Under Coatings Condition-Based Corrosion Prediction Model for Fuel Distribution Durable Applique Repair Kits Corrosion-Resistant Steel Improvements				
FY 2013 Plans: Coatings and Corrosion Prevention Compounds Diagnostics, Prognostics, Monitoring and NDI Technologies Prediction, Modeling and Supporting Technologies Maintenance and Cathodic Protection Technologies and Practices				

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense			DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>		R-1 ITEM NOMENCLATURE PE 0604016D8Z: <i>Department of Defense Corrosion Policy and Oversight</i>		PROJECT P015: <i>Corrosion Protection Projects</i>	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2012	FY 2013	FY 2014
Materials Selection Processes					
FY 2014 Plans: Coatings and Corrosion Prevention Compounds Diagnostics, Prognostics, Monitoring and NDI Technologies Prediction, Modeling and Supporting Technologies Maintenance and Cathodic Protection Technologies and Practices Materials Selection Processes					
Accomplishments/Planned Programs Subtotals			2.053	3.283	3.312
			FY 2012	FY 2013	
Congressional Add: Corrosion Control, Prevention and Prediction through Coatings, Materials and Maintenance R&D			32.196	-	
FY 2012 Accomplishments: 1. Funded additional corrosion prevention and control (CPC) technology insertion projects: a) 2-Coat High-Performance Coating System b) Stress Corrosion Cracking/Corrosion Fatigue on High Strength Steel c) Chromated Pre-Treatments for Steel d) Hybrid Composite Bridge Beams e) Allowable Concrete Crack Widths for Reinforcement Materials 2. Continued performance of the Technology Corrosion Collaboration consisting of selected universities, the Service Academies, Service CPC Laboratories, AF Institute of Technology and the Naval Post Graduate School. a) Expanded role of Services' subject matter experts in focusing research b) Funded award-winning Cadet capstone project at USAFA c) Developed technology roadmap 3. Developed corrosion management education course series 4. Implemented college engineering corrosion classes and a bachelor's degree in corrosion engineering.					
Congressional Adds Subtotals			32.196	0.000	
C. Other Program Funding Summary (\$ in Millions) N/A					
Remarks					

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>	R-1 ITEM NOMENCLATURE PE 0604016D8Z: <i>Department of Defense Corrosion Policy and Oversight</i>	PROJECT P015: <i>Corrosion Protection Projects</i>
<p>D. Acquisition Strategy</p> <p>There is an annual Corrosion Prevention and Control Integrated Project Team (CPCIPT) call for proposed project plans in April. Projects are submitted by the Services annually in June. The project plan format is contained in the DoD Corrosion Prevention and Mitigation Strategic Plan. Each project plan contains:</p> <ol style="list-style-type: none"> 1. Problem statement: Description of the problem or situation, including background, history, issues, operational problems and support costs. 2. Impact statement: Details regarding why project is important including description of the operational and/or logistic impact if no action is taken. 3. Technical description: Definition of the corrosion prevention and control objective and description of the system affected by this project; applicable technologies and associated development; expected operations and logistics performance improvement characteristics; brief description of the user community and how it will apply to their mission; and current acquisition status. 4. Risk analysis: Description of the risk in managing/developing/prototyping/ testing/qualifying/manufacturing/completing the technical effort including assumptions that could affect project development or implementation. 5. Proposed phases: If project is complex and will be performed in phases, description of each phase objective. 6. Expected deliverables and results or outcomes: Description of products to be delivered such as type/number of hardware, technical orders/drawings, installation, training, etc.; and description of expected operations and/or logistics performance improvements. 7. Program management: Description of the overall approach and tasks to be taken to accomplish the project, including organization, coordination and acquisition approach. 8. Cost/benefit analysis: Definition of all resources necessary to accomplish project, description of resulting benefits, computation of Return-On-Investment (ROI), documentation of mission criticality, and description of joint applicability. 9. Schedule: Milestone chart showing all significant events through project completion. 10. Implementation plan: Explanation of how the project will be implemented when completed including a description of the transition approach, and plans to evaluate ROI during the first two years of implementation. <p>The Corrosion Prevention and Control Integrated Project Team (CPCIPT) receives project plans and engages an evaluation panel to review proposed projects and make recommendations regarding project selection. Projects are also evaluated using Data Envelopment Analysis (DEA) to rank projects by relative efficiency. DEA factors include project performance period, ratio of OSD funding to Service funding, return-on-investment (ROI), degree to which the proposed technology addresses high-cost corrosion problems, potential benefits, and joint service applicability. DEA efficiency scores are provided to the evaluation team to assist in their prioritization of projects for funding. In addition, evaluators consider the following in recommending final priorities:</p> <ol style="list-style-type: none"> 1. Return on investment credibility: Degree to which there is evidence that the project will achieve an acceptable return on investment 2. Technology maturity: Degree to which proposed technology has been developed or demonstrated and will satisfy project objectives 3. Schedule confidence: Degree to which the project is likely to be completed on time 4. Budget confidence: Degree to which the project is likely to be completed within the proposed budget 5. Management support: Degree to which management actively supports this project and has committed program resources to both manage and support this project <p>The project priority ranking is finalized and sent to the CPCIPT lead for a final decision.. Upon acceptance and approval of the projects by the CPCIPT, the projects are briefed to the Corrosion Forum. Funding is distributed between the Services based on funding priorities associated with the evaluation process results.</p>		

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>	R-1 ITEM NOMENCLATURE PE 0604016D8Z: <i>Department of Defense Corrosion Policy and Oversight</i>	PROJECT P015: <i>Corrosion Protection Projects</i>
<p>Upon selection by CPCIPT of the highest priority projects and final funding approval, Office of the Secretary of Defense (OSD) transfers individual project funding to the appropriate funding sites that are provided by the Services. After receiving the project funding, the Services are responsible for the funding and management of the projects. OSD retains oversight and direction of the Corrosion Prevention and Control initiative through the CPCIPT. Project oversight includes the review of quarterly status reports which address progress summary, performance goals and metrics and upcoming key events, as well as reports to periodic Corrosion Forums.</p> <p>The quarterly project report (PR) format has been defined and requires the following input:</p> <ol style="list-style-type: none"> 1. Statement of progress 2. Outstanding issues 3. Performance goals and metrics 4. Upcoming events 5. Schedule status 6. Current return on investment (ROI) status <p>These project reports (PRs) are submitted to the CPCIPT. The CPCIPT analyzes project status, progress and project statistics and informs the Service points of contact (POCs) of any project problems. Projects are also required to report verbally at Corrosion Forums, as appropriate.</p> <p>Corrosion Prevention and Control (CPC) Program direction, control and oversight include the following activities to be performed by staff and support contractors:</p> <ol style="list-style-type: none"> 1. Plan and schedule Corrosion Forums and oversee Corrosion Forum activities and working Integrated Product Team (IPT) meetings. 2. Oversee project performance including review of quarterly status reports which address progress summary, performance goals and metrics and upcoming key events, as well as reports to periodic Corrosion Forums. 3. Perform Department of Defense (DoD) cost of corrosion study. 4. Develop improved, standard DoD-wide specifications, standards and qualification processes. 5. Develop corrosion training courses. 6. Prepare and publish Corrosion Prevention and Control Planning Guidebook spirals. 7. Prepare and publish annual Reports to Congress. 8. Update short-term and long-term metrics. 9. Develop corrosion control program management guide for selecting materials. 10. Develop, implement, and update the DoD Corrosion Prevention and Mitigation Strategic Plan. 11. Develop and maintain Roadmaps of IPT activities and accomplishments. 12. Assist in the annual project plan implementation and evaluation process, including the assessment of return on investment associated with proposed projects. 13. Respond to Congressional, Government Accountability Office and DoD inquiries regarding the CPC Program. 14. Perform CPC Program communication and outreach to services, agencies and other organizations. 15. Develop and implement corrosion prevention and control policies applicable for acquisition and sustainment of both weapons systems and infrastructure. 16. Perform reviews of major programs to ensure they are in compliance with corrosion prevention and control policy. 17. Provide oversight of the corrosion programs of the Military Departments and Chair the DoD Corrosion Board of Directors (which includes the Corrosion Control and Prevention Executives from each of the Military Departments). 		

UNCLASSIFIED

PE 0604016D8Z: Department of Defense Corrosion Policy and Oversight
Office of Secretary Of Defense

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 4: Advanced Component Development & Prototypes (ACD&P)	R-1 ITEM NOMENCLATURE PE 0604016D8Z: Department of Defense Corrosion Policy and Oversight	PROJECT P015: Corrosion Protection Projects
-------------------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------	-------------------------------------------------------

Product Development (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Corrosion Protection Projects	MIPR	Corrosion Prevention and Control:Defense Wide	-	34.249		3.283		3.312		-		3.312	Continuing	Continuing	
Subtotal			0.000	34.249		3.283		3.312		0.000		3.312			
Project Cost Totals			0.000	34.249		3.283		3.312		0.000		3.312			

Remarks

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE							
0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>					PE 0604250D8Z: <i>Advanced Innovative Technologies</i>							
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
Total Program Element	-	0.000	0.000	130.000	-	130.000	102.000	0.000	0.000	0.000	Continuing	Continuing
P250: <i>Advanced Innovative Technologies</i>	-	0.000	0.000	130.000	-	130.000	102.000	0.000	0.000	0.000	Continuing	Continuing

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

Note

FY 2014 New Start Program.

A. Mission Description and Budget Item Justification

The Strategic Capabilities Office (SCO) was created to identify, analyze, and accelerate capabilities to counter strategic adversaries and improve the United States posture for engaging future threats. A distributed enterprise amongst Office of Secretary of Defense (OSD), Combatant Commands (COCOMs), and the Intelligence Community (IC), SCO uniquely blends technology and concepts of operations to develop a full spectrum of innovative capabilities. Those meriting acceleration are worked as joint projects with the Services to speed transition time for rapid fielding. SCO breaks up objectives from Commanders' intent into specific projects inside a strategic plan.

As part of its mission, SCO examines alternative strategies, such as: (1) explores multi-domain solutions (including cross-DoD/IC capabilities); (2) builds partnerships across national security divides; (3) analyzes cost effectiveness, risk, and performance; (4) develops prototypes to accelerate capabilities; and (5) increases the operational options available to senior leadership.

Under this new start program, SCO will develop new strategic capabilities that provides options for the Department of Defense's (DoD) operational priorities. New strategic capabilities will be composed of existing and advanced technologies and systems, with special emphasis on innovative and architecture-level concepts. The PE supports development, studies, analysis, and demonstration of integrated concepts and prototypes, analysis in support of ongoing efforts to shape and counter emerging threats, cross-Service and cross-Defense/Intelligence concepts, and red-teaming. Projects will focus on proving component and subsystem maturity prior to integration in major systems and may involve risk reduction initiatives. Specific applications and plans are available at a higher classification level.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense	DATE: April 2013
-------------------------------------------------------------------------------------------------	-------------------------

APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>	R-1 ITEM NOMENCLATURE PE 0604250D8Z: <i>Advanced Innovative Technologies</i>
---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------

B. Program Change Summary (\$ in Millions)	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total
Previous President's Budget	0.000	0.000	0.000	-	0.000
Current President's Budget	0.000	0.000	130.000	-	130.000
Total Adjustments	0.000	0.000	130.000	-	130.000
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Baseline Adjustment	-	-	130.000	-	130.000

Change Summary Explanation

This a FY 2014 New Start Program. The title for PE 0604250D8Z was changed from Systems 2020 Advanced Development and Prototypes to Advanced Innovative Technologies to meet the new defense strategy. Funds were realigned to meet the Department's highest priorities for accelerating capabilities to address future threats.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE				PROJECT			
0400: Research, Development, Test & Evaluation, Defense-Wide BA 4: Advanced Component Development & Prototypes (ACD&P)					PE 0604250D8Z: Advanced Innovative Technologies				P250: Advanced Innovative Technologies			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
P250: Advanced Innovative Technologies	-	0.000	0.000	130.000	-	130.000	102.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles												

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

The Strategic Capabilities Office (SCO) was created to identify, analyze, and accelerate capabilities to counter strategic adversaries and improve the United States posture for engaging future threats. A distributed enterprise amongst Office of Secretary of Defense (OSD), Combatant Commands (COCOMs), and the Intelligence Community (IC), SCO uniquely blends technology and concepts of operations to develop a full spectrum of innovative capabilities. Those meriting acceleration are worked as joint projects with the Services to speed transition time for rapid fielding. SCO breaks up objectives from Commanders' intent into specific projects inside a strategic plan.

As part of its mission, SCO examines alternative strategies, such as: (1) explores multi-domain solutions (including cross-DoD/IC capabilities); (2) builds partnerships across national security divides; (3) analyzes cost effectiveness, risk, and performance; (4) develops prototypes to accelerate capabilities; and (5) increases the operational options available to senior leadership.

Under this new start program, SCO will develop new strategic capabilities that provides options for the Department of Defense's (DoD) operational priorities. New strategic capabilities will be composed of existing and advanced technologies and systems, with special emphasis on innovative and architecture-level concepts. The PE supports development, studies, analysis, and demonstration of integrated concepts and prototypes, analysis in support of ongoing efforts to shape and counter emerging threats, cross-Service and cross-Defense/Intelligence concepts, and red-teaming. Projects will focus on proving component and subsystem maturity prior to integration in major systems and may involve risk reduction initiatives. Specific applications and plans are available at a higher classification level.

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2012	FY 2013	FY 2014
Title: Land Based Rail Gun (LBRG)	0.000	0.000	130.000
Description: Existing Navy Science and Technology (S&T) Railgun program leveraged into Land Based Rail Gun (LBRG) experiment. It will demonstrate a cost effective land base defense solution using prototype ground-launched Railgun projectiles. The experiment focus is on close-the-loop between sensor and the Railgun projectile. Step-by-step development by the integration of critical Railgun weapon capabilities will be initiated. LBRG will integrate the Railgun launcher, power, projectile and sensor to demonstrate capability with a series of seven flight tests. It will also verify lethality modeling and simulation through experimentation. The tests will demonstrate projectile fly-out and control; sensor tracking of projectiles, communication			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>		R-1 ITEM NOMENCLATURE PE 0604250D8Z: <i>Advanced Innovative Technologies</i>	PROJECT P250: <i>Advanced Innovative Technologies</i>
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
<p>from sensor to projectile, integrated guidance, navigation and control (GNC). FY 2015 experiment culminates in a track and a command link event from a 20 Mega Joule (MJ) Railgun located at Wallops Island test range.</p> <p><i>FY 2014 Plans:</i></p> <ul style="list-style-type: none"> • Initiate development of prototype projectiles. • Initiate procurement of 20MJ Railgun launcher system (power and energy, launcher, cables, test stand, and launcher/power controls). • Initiate development of close-loop-control for testing of prototype projectiles. • Initiate launcher testing of prototype projectile. • Initiate design and fabrication of high power prototype gun mount system. • Initiate integration of Railgun System; power, gun, projectile and sensor. 			
Accomplishments/Planned Programs Subtotals		0.000	0.000
C. Other Program Funding Summary (\$ in Millions)			
N/A			
Remarks			
D. Acquisition Strategy			
N/A			
E. Performance Metrics			
TBD			

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2014 Office of Secretary Of Defense												DATE: April 2013			
APPROPRIATION/BUDGET ACTIVITY						R-1 ITEM NOMENCLATURE				PROJECT					
0400: Research, Development, Test & Evaluation, Defense-Wide						PE 0604250D8Z: Advanced Innovative Technologies				P250: Advanced Innovative Technologies					
BA 4: Advanced Component Development & Prototypes (ACD&P)															
Product Development (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Primary Hardware	Option/CPFF	TBD1:TBD1	-	-		-		30.000	Oct 2014	-		30.000	Continuing	Continuing	Continuing
Primary Hardware	C/CPFF	TBD2:TBD2	-	-		-		33.750	Oct 2014	-		33.750	Continuing	Continuing	Continuing
Primary Hardware	WR	NSWCDD:Dahlgren, VA	-	-		-		6.050	Oct 2014	-		6.050	Continuing	Continuing	Continuing
Systems Engineering	WR	NSWCDD:Dahlgren, VA	-	-		-		4.300	Oct 2014	-		4.300	Continuing	Continuing	Continuing
Primary Hardware	Option/IDIQ	DMEA Tasks:TBD3	-	-		-		42.550	Oct 2014	-		42.550	Continuing	Continuing	Continuing
Primary Hardware	WR	NASA:Wallops Island, VA	-	-		-		1.800	Oct 2014	-		1.800	Continuing	Continuing	Continuing
Subtotal			0.000	0.000		0.000		118.450		0.000		118.450			
Support (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management	WR	NAVSEA:Washington, DC	-	-		-		1.500	Oct 2014	-		1.500	Continuing	Continuing	Continuing
Independent Analysis	Option/IDIQ	JHU/APL:Laurel, MD	-	-		-		1.400	Oct 2014	-		1.400	Continuing	Continuing	Continuing
Subtotal			0.000	0.000		0.000		2.900		0.000		2.900			
Test and Evaluation (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Development Test and Evaluation	WR	NSWCDD:Dahlgren, VA	-	-		-		8.650	Oct 2014	-		8.650	Continuing	Continuing	Continuing
Subtotal			0.000	0.000		0.000		8.650		0.000		8.650			

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2014 Office of Secretary Of Defense										DATE: April 2013				
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 4: Advanced Component Development & Prototypes (ACD&P)					R-1 ITEM NOMENCLATURE PE 0604250D8Z: Advanced Innovative Technologies					PROJECT P250: Advanced Innovative Technologies				
	All Prior Years	FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total	Cost To Complete	Total Cost	Target Value of Contract	
Project Cost Totals	0.000	0.000		0.000		130.000		0.000		130.000				

Remarks

N/A

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2014 Office of Secretary Of Defense			DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>		R-1 ITEM NOMENCLATURE PE 0604250D8Z: <i>Advanced Innovative Technologies</i>	PROJECT P250: <i>Advanced Innovative Technologies</i>

	FY 2012				FY 2013				FY 2014				FY 2015				FY 2016				FY 2017				FY 2018			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Major Milestones: LBRG Increment 1: Airframe Flight																												
Major Milestones: LBRG Increment 1: Install Tracker Hardware and Track Projectile																												
Major Milestones: LBRG Increment 1: Guidance and Control Demonstration																												
Major Milestones: LBRG Increment 1: Payload Dispense																												
Major Milestones: LBRG Increment 2: Install Railgun Test System at Wallops Range																												
Major Milestones: LBRG Increment 2: Track Maneuvering Projectile																												
Major Milestones: LBRG Increment 2: Command Projectile Maneuvers																												
Major Milestones: LBRG Increment 3: Railgun Prototype PDR																												
Major Milestones: LBRG Increment 3: Railgun Prototype CDR																												
Test and Evaluation: Decision to Proceed with Railgun Prototype Experimental Testing																												

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>	R-1 ITEM NOMENCLATURE PE 0604250D8Z: <i>Advanced Innovative Technologies</i>	PROJECT P250: <i>Advanced Innovative Technologies</i>
---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------	-----------------------------------------------------------------

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Major Milestones: LBRG Increment 1: Airframe Flight	2	2014	2	2014
Major Milestones: LBRG Increment 1: Install Tracker Hardware and Track Projectile	3	2014	3	2014
Major Milestones: LBRG Increment 1: Guidance and Control Demonstration	3	2014	3	2014
Major Milestones: LBRG Increment 1: Payload Dispense	4	2014	4	2014
Major Milestones: LBRG Increment 2: Install Railgun Test System at Wallops Range	2	2015	2	2015
Major Milestones: LBRG Increment 2: Track Maneuvering Projectile	3	2015	3	2015
Major Milestones: LBRG Increment 2: Command Projectile Maneuvers	4	2015	4	2015
Major Milestones: LBRG Increment 3: Railgun Prototype PDR	4	2014	4	2014
Major Milestones: LBRG Increment 3: Railgun Prototype CDR	4	2015	4	2015
Test and Evaluation: Decision to Proceed with Railgun Prototype Experimental Testing	4	2015	4	2015

Note

N/A

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE							
0400: Research, Development, Test & Evaluation, Defense-Wide BA 4: Advanced Component Development & Prototypes (ACD&P)					PE 0604400D8Z: Unmanned Aircraft Systems Common Development							
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
Total Program Element	-	24.161	12.368	8.300	-	8.300	4.321	3.653	3.979	4.375	Continuing	Continuing
P440: UAS Airspace Integration	-	13.591	8.482	4.740	-	4.740	2.311	1.633	1.848	2.133	Continuing	Continuing
P442: Interoperability	-	10.282	3.455	3.060	-	3.060	1.500	1.500	1.600	1.700	Continuing	Continuing
P443: Unmanned Systems Road Maps	-	0.288	0.431	0.500	-	0.500	0.510	0.520	0.531	0.542	Continuing	Continuing

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

Note

PE 0305220F: GLOBAL HAWK DEVELOPMENT/FIELDING contains funding for the Common-ABSAA development.

PE 0305219A: MQ-1 Sky Warrior A UAV contains additional funding for GBSAA development.

PE 0305220N: RQ-4 UAV (BAMS UAS) contains funding for an initial common RQ/MQ-4 ABSAA capability via a Pilot In The Loop (PITL) Due Regard system.

The FY2014 President's Budget transfers \$83.169M (FYDP) to the above UAS programs' PEs.

A. Mission Description and Budget Item Justification

The level of resourcing for the Unmanned Aircraft Systems (UAS) Common Development program reflects iterative reductions from efficiencies and budget reductions, which reduces the Department's ability to develop flexible responsive solutions to emerging war fighter needs. The Department of Defense (DOD) UAS Common Development is a joint effort to develop and demonstrate common standards, architectures, and technologies that address UAS-specific issues across all Military Services. The intent is to increase interoperability and effectiveness by promoting cooperative development of solutions that are applicable across major classes of UAS. This effort will initially focus on addressing DOD UAS integration into the National Airspace System (NAS) and demonstration of a common, interoperable ground station architecture and associated interface standards.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense	DATE: April 2013
-------------------------------------------------------------------------------------------------	-------------------------

APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>	R-1 ITEM NOMENCLATURE PE 0604400D8Z: <i>Unmanned Aircraft Systems Common Development</i>
---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------

B. Program Change Summary (\$ in Millions)	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total
Previous President's Budget	24.289	12.368	25.745	-	25.745
Current President's Budget	24.161	12.368	8.300	-	8.300
Total Adjustments	-0.128	0.000	-17.445	-	-17.445
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments	-0.128	-	-17.445	-	-17.445

Change Summary Explanation

The FY2014 President's Budget transfers \$83.169M (FYDP) to the above UAS programs' PEs. In FY2014 the transfer is \$17.445M.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense									DATE: April 2013			
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 4: Advanced Component Development & Prototypes (ACD&P)					R-1 ITEM NOMENCLATURE PE 0604400D8Z: Unmanned Aircraft Systems Common Development				PROJECT P440: UAS Airspace Integration			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
P440: UAS Airspace Integration	-	13.591	8.482	4.740	-	4.740	2.311	1.633	1.848	2.133	Continuing	Continuing
Quantity of RDT&E Articles												
# FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012												
## The FY 2014 OCO Request will be submitted at a later date												
Note												
ABSAA and GBSAA technology development transitions to UAS programs of record during FY2013.												
A. Mission Description and Budget Item Justification												
Global Hawk (GH) and the Triton, as well as other Group 3-5 UAS, need a sense-and-avoid (SAA) capability as an alternate means of compliance to Title 14 Code of Federal Regulations, Part 91.111 and Part 91.113, requirement to see-and-avoid other aircraft. The Global Hawk was selected as the as the flagship platform for Airborne Sense and Avoid (ABSAA). The MQ-4C Triton, MQ-1B Predator, MQ-1C Gray Eagle, and MQ-9 Reaper have similar requirements for SAA capability; their SAA technology development will leverage the Common-ABSAA technology. Development of a Ground Based Sense-and-Avoid (GBSAA) system using existing technology can provide a near-term solution for improved airspace access, both for terminal operations (e.g., Beale AFB, GH transit to/from controlled airspace) and for operations/training within the GBSAA system's coverage area (e.g., Gray Eagle at El Mirage, Shadow operations at Cherry Point).												
Provides joint funding to support development of standards, modeling and simulation tools, and technology to enable DoD UAS to routinely access the national and international airspace systems.												
B. Accomplishments/Planned Programs (\$ in Millions)									FY 2012	FY 2013	FY 2014	
Title: Unmanned Aircraft System Airspace Integration Initiatives									13.591	8.482	4.740	
Description: Starting in FY 2010 the Department's sense-and-avoid (SAA) developmental efforts are enhanced by this defense-wide program element. This program provides joint funding to accelerate the development of SAA technology and standards to enable UAS to routinely access the national and international airspace systems. This program also develops UAS airspace integration requirements and standards, as well as the modeling, simulation, and operational analysis tools needed to validate the systems and standards.												
FY 2012 Accomplishments: ABSAA - Concluded the Phase 1A effort after delivery of initial software requirements. The ABSAA design includes an integrated suite of sensors, decision logic algorithms, data recording, pilot displays, and prognostics & health management (P&HM) necessary to manage collision risk to an acceptable level of safety across the expected range of operational scenarios and mission environments for Global Hawk and other Group 3-5 UAS.												

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense			DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 4: Advanced Component Development & Prototypes (ACD&P)		R-1 ITEM NOMENCLATURE PE 0604400D8Z: Unmanned Aircraft Systems Common Development		PROJECT P440: UAS Airspace Integration	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2012	FY 2013	FY 2014
<p>Standards Development - Updated MIL-HDBK-516 for UAS airworthiness (100% complete on criteria, 70% complete on standards, 35% complete on methods of compliance)for both fixed and rotary wing UAS. Developed a proposed methodology for conducting a system safety assessment to calculate the accepted risk for operating UAS within the National Airspace System. Through a series of workshops captured Services' UAS airspace integration lessons learned. Coordinated performance requirements and safety guidelines within appropriate standards development organizations (SDOs). Developed UAS Airspace Integration (AI) Use Cases based upon the current AI CONOPs and operational assessments of current and planned UAS AI Terminal Area and Lateral Transit operations. Developed an Operational Capability Tracking Tool for assessing progress of the airspace integration activities needed to support a predefined set of UAS operational capabilities.</p> <p>Modeling & Simulation (M&S) - Provided modeling, simulation and analysis (MS&A) to the FY2012 requirements and standards efforts, as well as the safety analysis activities. Completed development of a Common Intruder Database, with representative radar cross section models. Developed a deterministic tool for evaluating sense and avoid algorithms and CONOPS.</p> <p>GBSAA – The Army completed development of system level requirements for their GBSAA system. The GBSAA IPT used these requirements as a starting point and with Service participation focused on development and demonstration of a common set of requirements for a universal GBSAA solution. The collaborative effort included a workshop to identify commonalities among the Services' processes for Software Certification for Airworthiness. The Army continued development of GBSAA technology and demonstrated their Phase 1 and 2 GBSAA systems in June 2012 utilizing the Army Test Bed at Dugway Proving Grounds.</p> <p>FY 2013 Plans: ABSAA - Development transitions to Service Programs of Record funding with a re-planned acquisition strategy.</p> <p>Standards Development - Continue the update of MIL-HDBK-516 for airworthiness criteria, standards, and methods of compliance for both fixed and rotary wing UAS, and SAA systems. Refine tool developed to determine Target Level of Safety (TLS) to 3rd parties on the ground for calculating accepted risk for operating UAS within the National Airspace System over populated areas. Conduct an ongoing analysis of UAS Airspace Integration Safety Case lessons learned. Conduct analysis to address high priority safety gaps as identified by the Sense and Avoid Research Panel (SARP). Coordinate system requirements and safety guidelines within appropriate standards development organizations (SDOs). Update the current UAS AI CONOPS and conduct operational analysis to assist DoD in overcoming UAS AI challenges. Continue to maintain the Operational Capability Tracking Tool for assessing progress of the AI activities needed to support all UAS operational capabilities.</p> <p>Modeling & Simulation (M&S) - Support modeling, simulation and analysis (MS&A) to address high priority research gaps, as identified by the SARP.</p>					

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>		R-1 ITEM NOMENCLATURE PE 0604400D8Z: <i>Unmanned Aircraft Systems Common Development</i>	PROJECT P440: <i>UAS Airspace Integration</i>
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
<p>GBSAA – Continue efforts begun in FY2012 to provide a common set of GBSAA requirements for Phase 2 Block 0 and Block 1, applicable across all Services. Specific focus of the collaborative effort will include maneuver algorithms and operator displays. Develop a common set of templates for the Safety Case documentation for submission to certifying authorities by leveraging U.S. Army work. Continue design and development of GBSAA system technology. Begin deliberate planning for GBSAA Phase 3, which is the integration of GBSAA and ABSAA. GBSAA development begins transition to Service Programs of Record funding.</p> <p>FY 2014 Plans: Standards Development - Complete and publish the update of MIL-HDBK-516 for airworthiness criteria, standards, and methods of compliance for both fixed and rotary wing UAS, and SAA systems. Conduct an ongoing analysis of UAS Airspace Integration Safety Case lessons learned. Conduct analysis to address high priority safety gaps as identified by the SARP. Coordinate system requirements and safety guidelines within appropriate standards development organizations (SDOs). Conduct operational analysis to assist DoD in overcoming UAS AI challenges. Continue to maintain the Operational Capability Tracking Tool for assessing progress of the AI activities needed to support all UAS operational capabilities.</p> <p>Modeling & Simulation (M&S) - Support modeling, simulation and analysis (MS&A) to address high priority research gaps, as identified by the SARP.</p>			
Accomplishments/Planned Programs Subtotals		13.591	8.482
C. Other Program Funding Summary (\$ in Millions)			
N/A			
Remarks			
D. Acquisition Strategy			
N/A			
E. Performance Metrics			
N/A			

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 4: Advanced Component Development & Prototypes (ACD&P)	R-1 ITEM NOMENCLATURE PE 0604400D8Z: Unmanned Aircraft Systems Common Development	PROJECT P440: UAS Airspace Integration
-------------------------------------------------------------------------------------------------------------------------------------------------------------------	------------------------------------------------------------------------------------------------	--------------------------------------------------

Product Development (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
ABSAA	MIPR	Various:Various	-	1.441		1.400		0.000		-		0.000	Continuing	Continuing	
GBSAA	Various	PM UAS / NAVAIR:AL / MD	-	6.233		2.000		0.000		-		0.000	Continuing	Continuing	
Airworthiness	Various	AED / AFMC / NAVAIR:AL / OH / MD	-	2.247		1.627		1.300		-		1.300	Continuing	Continuing	
Subtotal			0.000	9.921		5.027		1.300		0.000		1.300			

Remarks
ABSAA and GBSAA technology development transitions to the Services during FY2013.

Support (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Integration Analysis	MIPR	Various:Various	-	1.667		2.000		2.000		-		2.000	Continuing	Continuing	
UAS Task Force	MIPR	Various:Various	-	2.003		1.455		1.440		-		1.440	Continuing	Continuing	
Subtotal			0.000	3.670		3.455		3.440		0.000		3.440			

	All Prior Years	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	13.591	8.482	4.740	0.000	4.740			

Remarks

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 4: Advanced Component Development & Prototypes (ACD&P)					R-1 ITEM NOMENCLATURE PE 0604400D8Z: Unmanned Aircraft Systems Common Development				PROJECT P442: Interoperability			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
P442: Interoperability	-	10.282	3.455	3.060	-	3.060	1.500	1.500	1.600	1.700	Continuing	Continuing
Quantity of RDT&E Articles												
# FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012												
## The FY 2014 OCO Request will be submitted at a later date												
A. Mission Description and Budget Item Justification												
The UAS Common Ground Station Demonstration project will develop and demonstrate an interoperable, standards-based, open ground station architecture for RQ/MQ-4 (Global Hawk/Triton), MQ-1 (Predator/Gray Eagle), MQ-5 (Hunter), MQ-8 (Fire Scout), MQ-9 (Reaper), and future UAS. The intent is to improve joint- and coalition-interoperability and to promote competition through the implementation of open standards and open architectures.												
B. Accomplishments/Planned Programs (\$ in Millions)										FY 2012	FY 2013	FY 2014
Title: UAS Common Ground Station Demonstration										10.282	3.455	3.060
Description: Develop and demonstrate an interoperable, standards-based, open ground station architecture for RQ/MQ-4 (Global Hawk/TRITON), MQ-1 (Predator/Gray Eagle), MQ-5 (Hunter), MQ-8 (Fire Scout), MQ-9 (Reaper), and future UAS. The intent is to improve joint- and coalition-interoperability and to promote competition through the implementation of open standards and open architectures.												
FY 2012 Accomplishments: Completed development of an “Open” approach to v2.2 (buildable architecture) which can be transitioned to Programs of Record and user communities. Capitalized on new opportunities for synergy in the areas of common display nomenclature. Demonstrated Bi-Directional Remote Video Terminal control of a Shadow UAS system using the developed open architecture.												
FY 2013 Plans: Develop and demonstrate an interoperable, standards-based, open ground station architecture for RQ/MQ-4 (Global Hawk/TRITON), MQ-1 (Predator/Gray Eagle), MQ-5 (Hunter), MQ-8 (Fire Scout), MQ-9 (Reaper), and future UAS. Ensure open architecture requirements are adopted across the Military Departments and are incorporated into v3.0 of the architecture.												
FY 2014 Plans: Develop and sustain governance over ground station open architecture, ensure model driven architecture stays current, and maintain software and architecture repository.												
Accomplishments/Planned Programs Subtotals										10.282	3.455	3.060

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>	R-1 ITEM NOMENCLATURE PE 0604400D8Z: <i>Unmanned Aircraft Systems Common Development</i>	PROJECT P442: <i>Interoperability</i>
C. Other Program Funding Summary (\$ in Millions) N/A		
Remarks		
D. Acquisition Strategy n/a		
E. Performance Metrics n/a		

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2014 Office of Secretary Of Defense													DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 4: Advanced Component Development & Prototypes (ACD&P)							R-1 ITEM NOMENCLATURE PE 0604400D8Z: Unmanned Aircraft Systems Common Development					PROJECT P442: Interoperability			
Product Development (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
UCS Architecture	MIPR	COLSA:Huntsville, AL	-	8.259		2.670		2.403		-		2.403	Continuing	Continuing	
Subtotal			0.000	8.259		2.670		2.403		0.000		2.403			
Support (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
UAS Control Segment (UCS) Working Group	MIPR	Various:Various	-	0.677		0.095		-		-		-	Continuing	Continuing	
Subtotal			0.000	0.677		0.095		0.000		0.000		0.000			
Management Services (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Contract Management	MIPR	SMDC:Huntsville, AL	-	0.462		0.150		0.135		-		0.135	Continuing	Continuing	
Contract Execution	MIPR	COLSA:Huntsville, AL	-	0.527		0.180		0.162		-		0.162	Continuing	Continuing	
Program Management	MIPR	NSWC Panama City, FL:Panama City, FL	-	0.357		0.360		0.360		-		0.360	Continuing	Continuing	
Subtotal			0.000	1.346		0.690		0.657		0.000		0.657			
			All Prior Years	FY 2012	FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total	Cost To Complete	Total Cost	Target Value of Contract	
Project Cost Totals			0.000	10.282		3.455		3.060		0.000		3.060			
Remarks															

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense									DATE: April 2013			
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 4: Advanced Component Development & Prototypes (ACD&P)					R-1 ITEM NOMENCLATURE PE 0604400D8Z: Unmanned Aircraft Systems Common Development				PROJECT P443: Unmanned Systems Road Maps			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
P443: Unmanned Systems Road Maps	-	0.288	0.431	0.500	-	0.500	0.510	0.520	0.531	0.542	Continuing	Continuing
Quantity of RDT&E Articles												
# FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012												
## The FY 2014 OCO Request will be submitted at a later date												
A. Mission Description and Budget Item Justification												
This effort supports the Department's Unmanned Systems Roadmap and updates. The Unmanned Systems Roadmap provides a DoD vision for the continuing development, fielding and employment of unmanned systems technologies. This roadmap defines a common vision, establishes the current state of unmanned systems in today's force, and outlines a strategy for the common challenges that must be addressed to achieve the shared vision. Funding for this effort was contained within P440 and P442 of this Program Element before FY 2012.												
B. Accomplishments/Planned Programs (\$ in Millions)									FY 2012	FY 2013	FY 2014	
Title: Unmanned Systems Roadmap									0.288	0.431	0.500	
Description: Develops the Department's Unmanned Systems Roadmap and updates.												
FY 2012 Accomplishments: Began the update for the Department's Unmanned Systems Roadmap, 2013 - 2038 and performed related studies supporting the Department's vision for unmanned systems.												
FY 2013 Plans: Update the Department's Unmanned Systems Roadmap and perform related studies supporting the Department's vision for unmanned systems.												
FY 2014 Plans: Update the Department's Unmanned Systems Roadmap and perform related studies supporting the Department's vision for unmanned systems.												
Accomplishments/Planned Programs Subtotals									0.288	0.431	0.500	
C. Other Program Funding Summary (\$ in Millions)												
N/A												
Remarks												

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>	R-1 ITEM NOMENCLATURE PE 0604400D8Z: <i>Unmanned Aircraft Systems Common Development</i>	PROJECT P443: <i>Unmanned Systems Road Maps</i>
<u>D. Acquisition Strategy</u> N/A		
<u>E. Performance Metrics</u> Provide up-to-date Unmanned Systems Roadmap providing a DoD vision for the continuing development, fielding and employment of unmanned systems technologies.		

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 4: Advanced Component Development & Prototypes (ACD&P)	R-1 ITEM NOMENCLATURE PE 0604400D8Z: Unmanned Aircraft Systems Common Development	PROJECT P443: Unmanned Systems Road Maps
-------------------------------------------------------------------------------------------------------------------------------------------------------------------	------------------------------------------------------------------------------------------------	----------------------------------------------------

Product Development (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
UMS Roadmap	Various	Various:Various	-	0.288		0.431		0.500		-		0.500	Continuing	Continuing	
Subtotal			0.000	0.288		0.431		0.500		0.000		0.500			
			All Prior Years	FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			0.000	0.288		0.431		0.500		0.000		0.500			

Remarks

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE							
0400: Research, Development, Test & Evaluation, Defense-Wide BA 4: Advanced Component Development & Prototypes (ACD&P)					PE 0604670D8Z: Human Social Culture Behavior (HSCB) Modeling Research and Engineering							
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
Total Program Element	-	7.037	5.131	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
P670: Human Social Culture Behavior (HSCB) Modeling Research and Engineering	-	7.037	5.131	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

Note

Change from FY 2013 to FY 2014 reflects a reallocation of funds from the Office of the Secretary of Defense (OSD) Human Social Culture Behavior (HSCB) Modeling program to higher priority DoD requirements.

A. Mission Description and Budget Item Justification

The OSD HSCB Modeling Program is a vertically integrated effort to research, develop, and transition technologies, tools, and systems to programs of record and users in need. The Program exists to optimize U.S. forces' ability to perform population-centric sensing, understand behaviors driven by social and cultural variables, and select effective courses of action in the full range of military operations. Program research will enhance population-centric intelligence, surveillance, and reconnaissance (ISR) capabilities for understanding the increasingly complex global environment to address national strategic challenges such as instability, aggression, proliferation of weapons of mass destruction, and violent extremism. In three integrated program elements (PEs), the Program will conduct applied research, mature and demonstrate advanced technology, and develop transitionable methods, technology, tools, and prototypes. Work under PE 0604670D8Z will create transition ready software tools that will help intelligence analysts, operations analysts, operations planners, wargamers, and others represent, understand, and forecast sociocultural behavior at the strategic, operational, and tactical levels. This program focuses on maturing, hardening, and validating human, social, culture, and behavior modeling software for transition to meet the needs of the warfighter, integration into the architectures of existing programs of record, and/or maturing software via open architectures to allow broad systems integration. The Program provides a development to product transition pathway for sociocultural models, tools, and capabilities to rapidly meet immediate and emerging warfighter needs. The work supports the testing, validation, and transition of model-based technology into existing and developing systems in coordination with Program Executive Offices/Program Managers, Combatant Commanders, Joint and Service organizations, warfighters in need, and other transition customers. The Program will mature sociocultural relevant data and tools to provide essential sociocultural understanding and forecasting capabilities at the strategic, operational and tactical levels.

PE 0604670D8Z: Human Social Culture Behavior (HSCB) Modeling
Rese...

Office of Secretary Of Defense

UNCLASSIFIED

Page 1 of 10

R-1 Line #105

Volume 3 - 519

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense	DATE: April 2013
-------------------------------------------------------------------------------------------------	-------------------------

APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>	R-1 ITEM NOMENCLATURE PE 0604670D8Z: <i>Human Social Culture Behavior (HSCB) Modeling Research and Engineering</i>
---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	------------------------------------------------------------------------------------------------------------------------------

B. Program Change Summary (\$ in Millions)	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total
Previous President's Budget	7.252	5.131	5.234	-	5.234
Current President's Budget	7.037	5.131	0.000	-	0.000
Total Adjustments	-0.215	0.000	-5.234	-	-5.234
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-0.213	-			
• SBIR/STTR Transfer	-	-			
• Baseline Adjustments	-	-	-5.234	-	-5.234
• Other Adjustments	-0.002	-	-	-	-

Change Summary Explanation

FY 2014 baseline adjustments are reflective of DoD priorities and requirements.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 4: Advanced Component Development & Prototypes (ACD&P)	R-1 ITEM NOMENCLATURE PE 0604670D8Z: Human Social Culture Behavior (HSCB) Modeling Research and Engineering	PROJECT P670: Human Social Culture Behavior (HSCB) Modeling Research and Engineering
-------------------------------------------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------	------------------------------------------------------------------------------------------------

COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013[#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
P670: Human Social Culture Behavior (HSCB) Modeling Research and Engineering	-	7.037	5.131	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles												

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

Note

Change from FY 2013 to FY 2014 reflects a reallocation of funds from the Office of the Secretary of Defense (OSD) Human Social Culture Behavior (HSCB) Modeling program to higher priority DoD requirements.

A. Mission Description and Budget Item Justification

This Program will create transition-ready software tools that will help intelligence analysts, operations analysts, operations planners, wargamers, and others represent, understand, and forecast sociocultural behavior at the strategic, operational, and tactical levels. The Program focuses on maturing, hardening, and validating human, social, culture, and behavior modeling software for transition to meet the needs of the warfighter, integration into the architectures of existing programs of record, and/or maturing software via open architectures to allow broad systems integration. The Program provides a development to product transition pathway for sociocultural models, tools, and capabilities to rapidly meet immediate and emerging warfighter needs. The work supports the testing, validation, and transition of model-based technology into existing and developing systems in coordination with Program Executive Offices/Program Managers, Combatant Commanders, Joint and Service organizations, warfighters in need, and other transition customers. The Program will mature sociocultural relevant data and tools to provide essential forecasting capabilities at the strategic, operational, and tactical levels.

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2012	FY 2013	FY 2014
Title: Modeling Capabilities	3.100	3.531	0.000
Description: Mature and deliver sociocultural modeling capabilities for integration into existing DoD systems. Conduct validation testing of HSCB model based applications.			
FY 2012 Accomplishments: Matured and performed integration of models to enable forecasting of violent extremism at national level. Demonstrated proof of concept components of a "social radar" system to support short-term indications and warnings capability using news and other open source media text at scale.			
FY 2013 Plans:			

PE 0604670D8Z: Human Social Culture Behavior (HSCB) Modeling
Rese...

Office of Secretary Of Defense

UNCLASSIFIED

Page 3 of 10

R-1 Line #105

Volume 3 - 521

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>	R-1 ITEM NOMENCLATURE PE 0604670D8Z: <i>Human Social Culture Behavior (HSCB) Modeling Research and Engineering</i>	PROJECT P670: <i>Human Social Culture Behavior (HSCB) Modeling Research and Engineering</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
Complete development of sentiment analysis (ISENT) component into the Worldwide Integrated Crisis Early Warning System (W-ICEWS), increase the volume and range of data sources, and increase sensitivity of the core instability detection capability. Extend and complete sentiment analysis component to social media. Extend and complete SPECTRUM capabilities for countering violent extremism, with enhanced organization tracking, mining of social media, and coverage of additional regions. Demonstrate and complete prototype social radar in the Distributed Common Ground System-Army (DCGS-A) or comparable environment for one or more of the following use cases: counterinsurgency, counterterrorism, countering violent extremism, countering-weapons of mass destruction, countering transnational criminal organizations, or mitigating the effect of adversarial nation state influence.			
Title: Visualization Software Description: Mature and develop software that will visually and digitally represent cultural factors within existing and emerging command and control systems. FY 2012 Accomplishments: Developed new techniques for graphical representation of relevant sociocultural behavior signals in decision-support systems. As part of prototype systems for understanding instability and violent extremism, engineered dashboards for visualizing highly aggregated indicators with capabilities for drill-down to supporting models and/or applications.		0.205	0.000
Title: Data Collection Description: Develop and test methods and tools for collection of sociocultural behavior data, including and especially in denied areas. Demonstrate resources and tools for extraction, integrated analysis, and fusion of data from open sources at scale with particular focus on social media. Support development and testing of architectures and systems to enable access to structured, validated sociocultural behavior data across tactical to strategic levels. FY 2012 Accomplishments: Demonstrated tools for real-time processing and visualization of microblog and news data at scale. Demonstrated feasibility of at-scale, near real-time analysis of microblog data to detect short-term shifts in stability. Developed and demonstrated prototypes for representing social media data, measuring key HSCB concepts, and detecting meaningful changes in those measures over time. Developed automated data collection, management, translation, and extraction tools to service HSCB models, in order to facilitate the integration of current and emerging data sets into appropriate data stores and exploit data in forms appropriate for the models users need to address HSCB problem domains and applications. FY 2013 Plans:		1.866	0.000

PE 0604670D8Z: *Human Social Culture Behavior (HSCB) Modeling*
 Rese...
 Office of Secretary Of Defense

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense DATE: April 2013

APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 4: Advanced Component Development & Prototypes (ACD&P)	R-1 ITEM NOMENCLATURE PE 0604670D8Z: Human Social Culture Behavior (HSCB) Modeling Research and Engineering	PROJECT P670: Human Social Culture Behavior (HSCB) Modeling Research and Engineering
-------------------------------------------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------	------------------------------------------------------------------------------------------------

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2012	FY 2013	FY 2014
Complete development of and demonstrate ability to ingest, structure, and visualize multiple data modalities at scale, in real-time, or near real-time to support both short-term and long-term instability monitoring. Complete development of, and demonstrate, transition-ready automated data collection, management, translation, and extraction tools to service HSCB models.			
Title: Risk Reduction Description: Conduct the risk reduction activities necessary to ensure that HSCB technologies are validated, accurate, and address user/program of record requirements. FY 2012 Accomplishments: Conducted transition focused risk reduction activities designed to ensure that technologies targeted to end user and program of record requirements are brought through an appropriately scoped systems engineering and technical/theoretical assessment process. FY 2013 Plans: Continue to apply existing processes for evaluating discrete research projects. Gather data necessary to populate existing Program level measures of effectiveness. Develop, complete, and transition rapid prototypes to demonstrate technology effectiveness toward new U.S. Government challenges. Quantify effect of HSCB technologies on user effectiveness and efficiency.	1.866	0.400	0.000
Accomplishments/Planned Programs Subtotals	7.037	5.131	0.000

C. Other Program Funding Summary (\$ in Millions)

Line Item	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
• PE 0602670D8Z BA 2: HSCB Applied Research	7.658	6.771	0.000		0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
• PE 0603670D8Z BA 3: HSCB Advanced Development	12.153	8.235	0.000		0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

Remarks

D. Acquisition Strategy

The Program produces software prototypes configured for use in programs such as the Distributed Common Ground System (DCGS). The program is executed by a Broad Agency Announcement (BAA) and a targeted Request for Proposals (RFP) process. The BAA and RFPs were issued in FY 2011. Proposals were solicited from all DoD organizations, other federal agencies, and the commercial sector. Proposals were selected using review panels.

PE 0604670D8Z: Human Social Culture Behavior (HSCB) Modeling
Rese...

Office of Secretary Of Defense

UNCLASSIFIED

Page 5 of 10

R-1 Line #105

Volume 3 - 523

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 4: Advanced Component Development & Prototypes (ACD&P)	R-1 ITEM NOMENCLATURE PE 0604670D8Z: Human Social Culture Behavior (HSCB) Modeling Research and Engineering	PROJECT P670: Human Social Culture Behavior (HSCB) Modeling Research and Engineering
E. Performance Metrics N/A		

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY				R-1 ITEM NOMENCLATURE				PROJECT			
0400: Research, Development, Test & Evaluation, Defense-Wide				PE 0604670D8Z: Human Social Culture Behavior (HSCB) Modeling Research and Engineering				P670: Human Social Culture Behavior (HSCB) Modeling Research and Engineering			
BA 4: Advanced Component Development & Prototypes (ACD&P)											

Product Development (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Product Development	MIPR	Various:Various	-	1.618		4.366		-		-		-	Continuing	Continuing	
Product Development	MIPR	BBN Technologies Corp:Cambridge, MA	-	1.369		0.000		-		-		-	Continuing	Continuing	
Product Development	MIPR	Lockheed Martin Corp:King of Prussia, PA	-	2.927		0.000		-		-		-	Continuing	Continuing	
Subtotal			0.000	5.914		4.366		0.000		0.000		0.000			

Support (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Support Costs	MIPR	Various:Various	-	0.075		0.090		0.000		-		0.000	Continuing	Continuing	
Subtotal			0.000	0.075		0.090		0.000		0.000		0.000			

Test and Evaluation (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Test and Evaluation	MIPR	Various:Various	-	0.300		0.375		0.000		-		0.000	Continuing	Continuing	
Subtotal			0.000	0.300		0.375		0.000		0.000		0.000			

Management Services (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Management Services	MIPR	Various:Various	-	0.748		0.300		0.000		-		0.000	Continuing	Continuing	
Subtotal			0.000	0.748		0.300		0.000		0.000		0.000			

PE 0604670D8Z: Human Social Culture Behavior (HSCB) Modeling
 Rese...
 Office of Secretary Of Defense

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2014 Office of Secretary Of Defense	DATE: April 2013
---------------------------------------------------------------------------------------------	-------------------------

APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>	R-1 ITEM NOMENCLATURE PE 0604670D8Z: <i>Human Social Culture Behavior (HSCB) Modeling Research and Engineering</i>	PROJECT P670: <i>Human Social Culture Behavior (HSCB) Modeling Research and Engineering</i>
---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------

	All Prior Years	FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	7.037		5.131		0.000		0.000		0.000			

Remarks

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2014 Office of Secretary Of Defense

DATE: April 2013

APPROPRIATION/BUDGET ACTIVITY

0400: *Research, Development, Test & Evaluation, Defense-Wide*
BA 4: *Advanced Component Development & Prototypes (ACD&P)*

R-1 ITEM NOMENCLATURE

PE 0604670D8Z: *Human Social Culture Behavior (HSCB) Modeling Research and Engineering*

PROJECT

P670: *Human Social Culture Behavior (HSCB) Modeling Research and Engineering*

	FY 2012				FY 2013				FY 2014				FY 2015				FY 2016				FY 2017				FY 2018			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Spiral 2 of projects selected in FY 2009/2010 for influence analysis modeling, COA analysis, and decision support modeling tools																												
Spiral 3 of projects selected in FY 2009/2010 for influence analysis modeling, COA analysis, and decision support modeling tools																												
Spiral 2 of modeling and visualization framework																												
Spiral 3 of modeling and visualization framework																												
Spiral 1 of projects selected in FY 2011																												
Spiral 2 of FY 2011 projects																												
Spiral 3 of FY 2011 projects																												

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY

0400: *Research, Development, Test & Evaluation, Defense-Wide*
BA 4: *Advanced Component Development & Prototypes (ACD&P)*

R-1 ITEM NOMENCLATURE

PE 0604670D8Z: *Human Social Culture Behavior (HSCB) Modeling Research and Engineering*

PROJECT

P670: *Human Social Culture Behavior (HSCB) Modeling Research and Engineering*

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Spiral 2 of projects selected in FY 2009/2010 for influence analysis modeling, COA analysis, and decision support modeling tools	1	2012	1	2012
Spiral 3 of projects selected in FY 2009/2010 for influence analysis modeling, COA analysis, and decision support modeling tools	2	2012	2	2013
Spiral 2 of modeling and visualization framework	1	2012	2	2012
Spiral 3 of modeling and visualization framework	3	2012	4	2012
Spiral 1 of projects selected in FY 2011	1	2012	1	2013
Spiral 2 of FY 2011 projects	2	2013	4	2013
Spiral 3 of FY 2011 projects	1	2014	4	2014

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>	R-1 ITEM NOMENCLATURE PE 0604775D8Z: <i>Defense Rapid Innovation Fund</i>
---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------

COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
Total Program Element	-	199.233	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
P775: <i>Defense Rapid Innovation Program</i>	-	199.233	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles												

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

Section 4201 of the National Defense Authorization Act (NDAA) for FY2012 and the Consolidated Appropriations Act, 2012, provide the Department of Defense with authorities and funds to facilitate the rapid insertion of innovative technologies into military systems and programs. The purpose of the DoD-wide Rapid Innovation Fund (RIF) program is to perform a solicitation, evaluation and award of contracts that support the aforementioned Congressional authorities and support the DoD goals of emphasis on rapid, responsive acquisition and engagement of small, innovative businesses in solving defense challenges.

B. Program Change Summary (\$ in Millions)	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total
Previous President's Budget	192.805	0.000	0.000	-	0.000
Current President's Budget	199.233	0.000	0.000	-	0.000
Total Adjustments	6.428	0.000	0.000	-	0.000
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Restore SBIR/STTR and FFRDC	6.428	-	-	-	-

Congressional Add Details (\$ in Millions, and Includes General Reductions)

Project: P775: *Defense Rapid Innovation Program*

Congressional Add: *Defense Rapid Innovation Fund*

Congressional Add Subtotals for Project: P775

FY 2012	FY 2013
199.233	-
199.233	0.000

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>		R-1 ITEM NOMENCLATURE PE 0604775D8Z: <i>Defense Rapid Innovation Fund</i>	
Congressional Add Details (\$ in Millions, and Includes General Reductions)		FY 2012	FY 2013
Congressional Add Totals for all Projects		199.233	0.000
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
Congressional Add: Defense Rapid Innovation Fund		199.233	-
FY 2012 Accomplishments: FY 2012 accomplishments include the development and execution of Broad Agency Announcements to identify candidate innovative technologies for rapid insertion into military systems or programs.			
Congressional Adds Subtotals		199.233	0.000
D. Other Program Funding Summary (\$ in Millions)			
N/A			
Remarks			
E. Acquisition Strategy			
N/A			
F. Performance Metrics			
No performance metrics identified at this time.			

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 4: Advanced Component Development & Prototypes (ACD&P)	R-1 ITEM NOMENCLATURE PE 0604775D8Z: Defense Rapid Innovation Fund	PROJECT P775: Defense Rapid Innovation Program
-------------------------------------------------------------------------------------------------------------------------------------------------------------------	------------------------------------------------------------------------------	----------------------------------------------------------

Support (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
TBD	TBD	TBD:TBD	-	199.233		0.000		-		-		-	Continuing	Continuing	
Subtotal			0.000	199.233		0.000		0.000		0.000		0.000			
Project Cost Totals			0.000	199.233		0.000		0.000		0.000		0.000			

Remarks

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE							
0400: Research, Development, Test & Evaluation, Defense-Wide BA 4: Advanced Component Development & Prototypes (ACD&P)					PE 0604787D8Z: Joint Systems Integration Command							
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
Total Program Element	-	12.671	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
P787: Joint Systems Integration Command	-	12.671	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

Note

The Joint Systems Integration Command Program Element 0604787D8Z will transfer from OUSD AT&L to The Joint Staff in FY13.

A. Mission Description and Budget Item Justification

The Joint Systems Integration Command Program Element (JSIC PE) provides mission funding for the Joint System Integration Center (JSIC) to conduct interoperability assessments, and develop solutions/recommendations to improve integration of Service, Defense Agency, and coalition systems. JSIC promotes Service/Defense Agency C2 capability integration, and conducts technical, operational, and DOTMLPF assessments of Command and Control (C2) and Command, Control, Computer, Communication, Intelligence, Surveillance and Reconnaissance (C4ISR) capabilities. JSIC serves as the technical analysis and operational assessment activity in support of the Joint Staff capability-driven requirements process, the Joint Capabilities Integration and Development System (JCIDS). JSIC also serves as a joint interoperability compliance activity for the milestone decision authorities/program managers in the Defense acquisition enterprise.

The FY 2005 National Defense Authorization Act (NDAA) directed the transfer for Research, Development, Test and Evaluation (RDT&E) funding for joint warfare experimentation and training programs from Navy accounts to new Defense Wide RDT&E accounts beginning in FY 2007. Joint Staff J8 is the executive agent for the JSIC PE and Assistant Secretary of Defense for Research and Engineering (ASD (R&E)) provides execution oversight.

JSIC provides Combatant Commands, at the joint force headquarters level, with a laboratory and assessment environment for the warfighter and capability developer. This environment provides for assessment of current and near-term joint and coalition capabilities primarily at the operational and tactical levels. JSIC's Persistent Command and Control (C2) Environment accurately replicates an operational C2 environment. With this capability, JSIC assesses system of systems interoperability, operational capability, procedural compliance and technical suitability of emerging and existing systems and programs to confirm readiness for deployment. Through JSIC's analysis and assessment, systems are evaluated for "value-added" prior to employment in joint and coalition environments typical of deployed theaters of operation.

By establishing ground truth for interoperability and suggesting remedies for demonstrated shortfalls, JSIC is an enabler for interoperable joint and coalition solutions and provides a means to foster rapid, near-term insertion of C4ISR technology by promoting the ability to meet the DoD direction for spiral development and evolutionary acquisition. JSIC's mission is to provide for the fielding of warfighter C2 systems through rapid systems integration, technical assessment, and operational

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense	DATE: April 2013
-------------------------------------------------------------------------------------------------	-------------------------

APPROPRIATION/BUDGET ACTIVITY

0400: *Research, Development, Test & Evaluation, Defense-Wide*
 BA 4: *Advanced Component Development & Prototypes (ACD&P)*

R-1 ITEM NOMENCLATURE

PE 0604787D8Z: *Joint Systems Integration Command*

evaluation using laboratory environments and field venues. In the world of C2 and ISR interoperability, performance in the field is the bottom line. In terms of investment, JSIC is the "ounce of prevention" that precludes a "pound" of mission failure and loss of life due to interoperability failures in military operations.

B. Program Change Summary (\$ in Millions)	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total
Previous President's Budget	12.716	0.000	0.000	-	0.000
Current President's Budget	12.671	0.000	0.000	-	0.000
Total Adjustments	-0.045	0.000	0.000	-	0.000
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-0.045	-			
• SBIR/STTR Transfer	-	-			

Change Summary Explanation

Defense Efficiency – JFCOM Task Force. As part of the Department of Defense reform agenda, a zero-based review of the organization to align resources to the most critical priorities and eliminate lower priority functions. This is a result of the decision to disestablish U.S. Joint Forces Command, and the Secretary of Defense's efficiency initiatives. Any additional changes for FY12 projects and objectives will be provided when available.

Defense Efficiency – Baseline Review. As part of the Department of Defense reform agenda, implements a zero-based review of the organization to align resources to the most critical priorities and eliminate lower priority functions.

Defense Efficiency – Report, Studies, Boards and Commissions. As part of the Department of Defense reform agenda, reflects a reduction in the number and cost of reports, studies, DoD Boards and DoD Commissions below the aggregate level reported in previous budget submission.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE				PROJECT			
0400: Research, Development, Test & Evaluation, Defense-Wide BA 4: Advanced Component Development & Prototypes (ACD&P)					PE 0604787D8Z: Joint Systems Integration Command				P787: Joint Systems Integration Command			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
P787: Joint Systems Integration Command	-	12.671	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles												

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

Note

The Joint Systems Integration Command will transfer from OUSD AT&L to The Joint Staff in FY13.

A. Mission Description and Budget Item Justification

The Joint Systems Integration Command Program Element (JSIC PE) provides mission funding for the Joint System Integration Center (JSIC) to conduct interoperability assessments, and develop solutions/recommendations to improve integration of Service, Defense Agency, and coalition systems. JSIC promotes Service/Defense Agency C2 capability integration, and conducts technical, operational, and DOTMLPF assessments of Command and Control (C2) and Command, Control, Computer, Communication, Intelligence, Surveillance and Reconnaissance (C4ISR) capabilities. JSIC serves as the technical analysis and operational assessment activity in support of the Joint Staff capability-driven requirements process, the Joint Capabilities Integration and Development System (JCIDS). JSIC also serves as a joint interoperability compliance activity for the milestone decision authorities/program managers in the Defense acquisition enterprise.

The FY 2005 National Defense Authorization Act (NDAA) directed the transfer for Research, Development, Test and Evaluation (RDT&E) funding for joint warfare experimentation and training programs from Navy accounts to new Defense Wide RDT&E accounts beginning in FY 2007. Joint Staff J8 is the executive agent for the JSIC PE and Assistant Secretary of Defense for Research and Engineering (ASD (R&E)) provides execution oversight.

JSIC provides Combatant Commands, at the joint force headquarters level, with a laboratory and assessment environment for the warfighter and capability developer. This environment provides for assessment of current and near-term joint and coalition capabilities primarily at the operational and tactical levels. JSIC's Persistent Command and Control (C2) Environment accurately replicates an operational C2 environment. With this capability, JSIC assesses system of systems interoperability, operational capability, procedural compliance and technical suitability of emerging and existing systems and programs to confirm readiness for deployment. Through JSIC's analysis and assessment, systems are evaluated for "value-added" prior to employment in joint and coalition environments typical of deployed theaters of operation.

By establishing ground truth for interoperability and suggesting remedies for demonstrated shortfalls, JSIC is an enabler for interoperable joint and coalition solutions and provides a means to foster rapid, near-term insertion of C4ISR technology by promoting the ability to meet the DoD direction for spiral development and evolutionary acquisition. JSIC's mission is to provide for the fielding of warfighter C2 systems through rapid systems integration, technical assessment, and operational

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 4: Advanced Component Development & Prototypes (ACD&P)	R-1 ITEM NOMENCLATURE PE 0604787D8Z: Joint Systems Integration Command	PROJECT P787: Joint Systems Integration Command		
evaluation using laboratory environments and field venues. In the world of C2 and ISR interoperability, performance in the field is the bottom line. In terms of investment, JSIC is the "ounce of prevention" that precludes a "pound" of mission failure and loss of life due to interoperability failures in military operations.				
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
Title: Interoperability Technology Demonstration Center (ITDC) and Interoperability Assessments (IA)		4.935	0.000	0.000
Description: Primary Outcome (objective) for this effort is near-term technical solutions for integration, assessment and delivery of operational capabilities that address near-term operational and tactical requirements. TA&I use organic laboratory resources, equipment, and technical personnel to integrate emerging technologies.				
FY 2012 Accomplishments: Broad Band Cellular 4G and Beyond Technical Integration Assessment – Integrated an interoperable 4G cellular solution that provides access to secure C2 and ISR applications using broadband cellular technology for dismounted users and assessed the ability of BBC4G networks to interoperate and support the transport of C2 data for applications such as Joint Automated Deep Operations Coordination System (JADOCS), Command and Control Personal Computer (C2PC), Adobe Connect, and Force XXI Battle Command Brigade and Below (FBCB2) while simultaneously providing software based encryption. 4G Joint Long Term Evolution (LTE) Deployable (JOLTED) Tactical Cellular System (TACTICS) Integration Assessment - JOLTED-TACTICS is an Internet Protocol (IP) based system designed to provide robust communications to dismounted Special Operations Forces (SOF) teams and General Purpose Company and below tactical users. This system leverages innovations in Fourth Generation (4G) LTE Cellular technologies and mobile Ka band spread spectrum satellite communications to deliver megabits of data to mobile and dismounted teams armed with mobile devices such as smartphones or netbooks. Intelligence, Surveillance and Reconnaissance Video Dissemination Technologies – Performed a technical integration to validate industry-standard video technology and networking protocols Livecast®, MediaFLO®, Inca-X®, RealityVision®, and Negative Acknowledgement (NACK)-Oriented Reliable Multicast (NORM) Video Streaming System (NOViSS) are interoperable with selected systems and architectures. US Navy 4G/Long Term Evolution (LTE) Afloat – Began implementing a broadband cellular communications infrastructure in support of the US Navy counter-piracy mission. Celestial Reach Joint Capability Technical Demonstration (JCTD) Assessment – Began integrating a wide-band antenna solution for joint air, ground, and maritime operations and assessing the capability’s utility in providing wide-band communications that support Command and Control (C2) and Intelligence Surveillance and Reconnaissance (ISR) applications to enroute users.				

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>	R-1 ITEM NOMENCLATURE PE 0604787D8Z: <i>Joint Systems Integration Command</i>	PROJECT P787: <i>Joint Systems Integration Command</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
NSA Commercial Solutions for Classified (CSfC) Secure Wireless Local Area Network (SWLAN) Integration Assessment – Continued providing assistance to NSA in the development of a Suite B software encryption solution. This will make a capability available to communicate over SECRET wireless networks without using Type-1 hardware solutions (e.g., SecNet 54, Talon, or KG-250s)			
Air Event Information Sharing Service (A/EISS) Integration Assessment - Integrated an automated data handling capability that will fuse and share decision support data from national level authoritative sources so senior decision makers can make critical decision during air events over North America via desktop or mobile device.			
Tactical Mobility Security Integration Assessment (TMSIA)- Began integrating and assessing a Commercial Solutions for Classified (CSfC) compliant security architecture that would meet the US Navy's need for processing Smartphone and broadband wireless technology (such as 4G/LTE cellular) for Secret and below voice, video, and data for use during Vessel Boarding Search and Seizure (VBSS) operations.			
Title: Capability Assessment		0.000	0.000
Description: Primary Outcome (objective) for this effort is to provide objective based assessment of Doctrine, Organizational, Training, Materiel, Leadership, Personnel, Facilities (DOTMLPF) solution sets supporting the Joint Task Force Commander. JSIC will analyze COCOM near-term requirements using DOTMLPF criteria. JSIC will identify current, emerging, or mature technologies to address materiel requirements. Comprehensive assessments covering joint maturity, interoperability, warfighter utility, and operational effectiveness will be conducted on legacy and transformational projects. JSIC will provide DOTMLPF recommendations on fielding strategies for Joint Staff endorsement.			
The primary outputs and efficiencies realized are: 1) Increased number of recommended improvements that enhance the capability of Joint Task Force Headquarters (JTF HQ); 2) Increased number of verifiable capability solutions recommended for fielding to the Combatant Commander based on quantified capability improvements; 3) Increased empirical data to support benefit-cost ratio improvements of JTF HQ investment decisions to ensure JTF HQs command and control (C2) capabilities are interoperable from technical and operational standpoints; 4) Increased number of assessments conducted that identify current force JTF HQs C2 systems that are interoperable and supported, that inform and recommend solutions to integrate, modify, or retire current force systems; 5) Increased number of assessment based recommendations of technology solutions that address the military utility of proposed and existing Service solutions; and 6) Increased number of solutions deployed with recognized DOTMLPF impacts.			
Program Management offices benefit because the JSIC program provides a venue for Military Utility Assessments (MUAs) of technologies before committing to implementation. The potential savings associated with finding existing commercial technologies			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>		R-1 ITEM NOMENCLATURE PE 0604787D8Z: <i>Joint Systems Integration Command</i>	PROJECT P787: <i>Joint Systems Integration Command</i>	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2012	FY 2013
to provide gap filler solutions, and avoid the fielding of systems that are not interoperable or that fail to meet warfighter needs, are difficult to quantify. Potentially life-threatening shortfalls are identified and fixed in advance of fielding. Services benefit directly by reduced Program Manager costs and by fielding systems that are interoperable and meet warfighter needs.				
FY 2012 Accomplishments: Function was eliminated as part of the US Joint Forces Command (JFCOM) disestablishment.				
Title: Persistent Command and Control Environment / Federated Joint C2 Laboratories (FJC2L)			3.557	0.000
Description: JSIC supports a Persistent Command and Control Environment by aggressively engaging the Services in a collaborative effort to bring joint solutions through JSIC's capability integration, interoperability demonstrations and capability assessments process. JSIC works in collaboration and formal coordination with the Joint Staff, Combatant Commanders, Services, defense agencies, departments and agencies outside of DoD, as well as allies and other coalition partners to align efforts, create a culture of innovation, and foster the development of new joint operational capabilities, along with measures of merit, to serve as the basis for exploring future joint capabilities and operations through joint and coalition experimentation and assessment.				
FY 2012 Accomplishments: C4AD Project Engineering Support – Provided infrastructure, communications, network, information assurance, security, and engineering support as required.				
Coalition Warrior Interoperability Exercise 2012 (CWIX12) Support – Provided infrastructure, communications, network, information assurance, security, and engineering support as requested.				
Afghanistan Mission Network (AMN) C2 Systems Support – Provided infrastructure, communications, network, information assurance, security, and engineering support as requested.				
Bold Quest 12 Support - Provided infrastructure, communications, network, information assurance, security, and engineering support as requested.				
Title: Technical Assessments and Integration (TA&I)			4.179	0.000
Description: Primary Outcome (objective) for this effort is near-term technical solutions for integration, assessment and delivery of operational capabilities that address near-term operational and tactical requirements. TA&I use organic laboratory resources, equipment, and technical personnel to integrate emerging technologies.				
FY 2012 Accomplishments:				

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>	R-1 ITEM NOMENCLATURE PE 0604787D8Z: <i>Joint Systems Integration Command</i>	PROJECT P787: <i>Joint Systems Integration Command</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
Broad Band Cellular 4G and Beyond Technical Integration Assessment – Integrated an interoperable 4G cellular solution that provides access to secure C2 and ISR applications using broadband cellular technology for dismounted users and assessed the ability of BBC4G networks to interoperate and support the transport of C2 data for applications such as Joint Automated Deep Operations Coordination System (JADOCS), Command and Control Personal Computer (C2PC), Adobe Connect, and Force XXI Battle Command Brigade and Below (FBCB2) while simultaneously providing software based encryption.			
4G Joint Long Term Evolution (LTE) Deployable (JOLTED) Tactical Cellular System (TACTICS) Integration Assessment - JOLTED-TACTICS is an Internet Protocol (IP) based system designed to provide robust communications to dismounted Special Operations Forces (SOF) teams and General Purpose Company and below tactical users. This system leverages innovations in Fourth Generation (4G) LTE Cellular technologies and mobile Ka band spread spectrum satellite communications to deliver megabits of data to mobile and dismounted teams armed with mobile devices such as smartphones or netbooks.			
Intelligence, Surveillance and Reconnaissance Video Dissemination Technologies – Performed a technical integration to validate industry-standard video technology and networking protocols Livecast®, MediaFLO®, Inca-X®, RealityVision®, and Negative Acknowledgement (NACK)-Oriented Reliable Multicast (NORM) Video Streaming System (NOViSS) are interoperable with selected systems and architectures.			
US Navy 4G/Long Term Evolution (LTE) Afloat – Began implementing a broadband cellular communications infrastructure in support of the US Navy counter-piracy mission.			
Celestial Reach Joint Capability Technical Demonstration (JCTD) Assessment – Integrated a wide-band antenna solution for joint air, ground, and maritime operations and assessing the capability's utility in providing wide-band communications that support Command and Control (C2) and Intelligence Surveillance and Reconnaissance (ISR) applications to enroute users.			
NSA Commercial Solutions for Classified (CSfC) Secure Wireless Local Area Network (SWLAN) Integration Assessment – Continue providing assistance to NSA in the development of a Suite B software encryption solution. This will make a capability available to communicate over SECRET wireless networks without using Type-1 hardware solutions (e.g., SecNet 54, Talon, or KG-250s)			
Air Event Information Sharing Service (A/EISS) Integration Assessment - Integrated an automated data handling capability that will fuse and share decision support data from national level authoritative sources so senior decision makers can make critical decision during air events over North America via desktop or mobile device.			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>		R-1 ITEM NOMENCLATURE PE 0604787D8Z: <i>Joint Systems Integration Command</i>	PROJECT P787: <i>Joint Systems Integration Command</i>
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
Tactical Mobility Security Integration Assessment (TMSIA)- Integrating and assessing a Commercial Solutions for Classified (CSfC) compliant security architecture that would meet the US Navy's need for processing Smartphone and broadband wireless technology (such as 4G/LTE cellular) for Secret and below voice, video, and data for use during Vessel Boarding Search and Seizure (VBSS) operations.			
Accomplishments/Planned Programs Subtotals		12.671	0.000
C. Other Program Funding Summary (\$ in Millions) N/A			
Remarks			
D. Acquisition Strategy JSIC supports interoperability of systems selected for acquisition, integration and fielding. JSIC is intended to be a forcing function to discover and provide interoperable joint solutions as a means to foster rapid, near-term insertion of command and control technology by promoting the ability to meet the DoD direction for spiral development and evolutionary acquisition. Services and Defense Agencies are responsible for conducting acquisition activities in Programs of Record (POR).			
E. Performance Metrics FY 2012 Strategic Goals Supported: Joint Command and Control Existing Baseline: Number of FY 2009 Assessments/Interoperability Demonstrations/Capability Integrations/Persistent Command and Control Environment engagements Planned Performance Improvement / Requirement Goal: 5 percent increase in assessments, integrations and demonstrations Actual Performance Improvement: Achieved 23 of planned 23 assessments/demonstrations			

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>	R-1 ITEM NOMENCLATURE PE 0604787D8Z: <i>Joint Systems Integration Command</i>	PROJECT P787: <i>Joint Systems Integration Command</i>
---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------	------------------------------------------------------------------

Support (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
: Interoperability Technology Demonstration Center (ITDC)	Various	More than one - Various:More than one - Various	-	4.935		0.000		-		-		-	Continuing	Continuing	
Technical Assessments and Integration (TA&I)	Various	More than one - Various:More than one - Various	-	4.134		0.000		-		-		-	Continuing	Continuing	
Persistent Command and Control Environment / Federated Joint	Various	More than one - Various:More than one - Various	-	3.602		0.000		-		-		-	Continuing	Continuing	
Subtotal			0.000	12.671		0.000		0.000		0.000		0.000			
			All Prior Years	FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			0.000	12.671		0.000		0.000		0.000		0.000			

Remarks

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2014 Office of Secretary Of Defense	DATE: April 2013
----------------------------------------------------------------------------------------	-------------------------

APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>	R-1 ITEM NOMENCLATURE PE 0604787D8Z: <i>Joint Systems Integration Command</i>	PROJECT P787: <i>Joint Systems Integration Command</i>
---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------	------------------------------------------------------------------

	FY 2012				FY 2013				FY 2014				FY 2015				FY 2016				FY 2017				FY 2018			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Project Selection																												
Project Planning																												
Procurement																												
Testing/Integration/Assessment																												
Report/Findings																												

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2014 Office of Secretary Of Defense			DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>	R-1 ITEM NOMENCLATURE PE 0604787D8Z: <i>Joint Systems Integration Command</i>	PROJECT P787: <i>Joint Systems Integration Command</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Project Selection	1	2012	4	2014
Project Planning	1	2012	4	2014
Procurement	1	2012	4	2014
Testing/Integration/Assessment	1	2012	4	2014
Report/Findings	1	2012	4	2014

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense	DATE: April 2013
-------------------------------------------------------------------------------------------------	-------------------------

APPROPRIATION/BUDGET ACTIVITY

0400: *Research, Development, Test & Evaluation, Defense-Wide*
 BA 4: *Advanced Component Development & Prototypes (ACD&P)*

R-1 ITEM NOMENCLATURE

PE 0604828D8Z: *Joint Fires Integration and Interoperability Team*

COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
Total Program Element	-	8.965	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
P857: <i>Joint Deployable Analysis Team</i>	-	8.965	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

Note

The Joint Deployable Analysis Team Program Element 0604828D8Z will transfer from OUSD AT&L to The Joint Staff in FY13.

A. Mission Description and Budget Item Justification

The JDAT mission is to employ scientific methods to research, investigate, test, assess, and evaluate current and emergent Joint command and control (C2) information systems and associated procedures. These activities measure capabilities and limitations, identify shortfalls and root cause, recommend and verify solutions, and validate joint capabilities. The resultant empirical outcomes influence Joint Capability development in areas such as Policy; Joint Doctrine; Tactics, Techniques and Procedures; integration of capabilities; and digital interoperability. JDAT provides decision-quality data and cogent solutions to customers and stakeholders responsible for improving Joint C2 information systems integration and interoperability to inform acquisition decisions and ensure that Services and Agencies field interdependent and interoperable systems.

The emphasis of JDAT assessment efforts is the evaluation of C2 Information Systems and Procedures to provide Services and Agencies findings and recommendations based on quantifiable data in order to improve Joint C2 integration and interoperability. JDAT collects and analyzes data and provides observations, findings, conclusions, and recommendations to identify policy; Joint doctrine; tactics, techniques, and procedures (TTP); and material solutions and products that promote capability improvement. Evaluations range from small, single-focus events to large, multi-event/venue exercises.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense	DATE: April 2013
-------------------------------------------------------------------------------------------------	-------------------------

APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>	R-1 ITEM NOMENCLATURE PE 0604828D8Z: <i>Joint Fires Integration and Interoperability Team</i>
---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------

B. Program Change Summary (\$ in Millions)	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total
Previous President's Budget	9.008	0.000	0.000	-	0.000
Current President's Budget	8.965	0.000	0.000	-	0.000
Total Adjustments	-0.043	0.000	0.000	-	0.000
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	0.000	-			
• Other Adjustments	-0.043	0.000	0.000	-	0.000

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE				PROJECT			
0400: Research, Development, Test & Evaluation, Defense-Wide BA 4: Advanced Component Development & Prototypes (ACD&P)					PE 0604828D8Z: Joint Fires Integration and Interoperability Team				P857: Joint Deployable Analysis Team			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
P857: Joint Deployable Analysis Team	-	8.965	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles												

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

The JDAT mission is to employ scientific methods to research, investigate, test, assess, and evaluate current and emergent Joint command and control (C2) information systems and associated procedures. These activities measure capabilities and limitations, identify shortfalls and root cause, recommend and verify solutions, and validate joint capabilities. The resultant empirical outcomes influence Joint Capability development in areas such as Policy; Joint Doctrine; Tactics, Techniques and Procedures; integration of capabilities; and digital interoperability. JDAT provides decision-quality data and cogent solutions to customers and stakeholders responsible for improving Joint C2 information systems integration and interoperability to inform acquisition decisions and ensure that Services and Agencies field interdependent and interoperable systems.

The emphasis of JDAT assessment efforts is the evaluation of C2 Information Systems and Procedures to provide Services and Agencies findings and recommendations based on quantifiable data in order to improve Joint C2 integration and interoperability. JDAT collects and analyzes data and provides observations, findings, conclusions, and recommendations to identify policy; Joint doctrine; tactics, techniques, and procedures (TTP); and material solutions and products that promote capability improvement. Evaluations range from small, single-focus events to large, multi-event/venue exercises.

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2012	FY 2013	FY 2014
Title: Joint Deployable Analysis Team (JDAT) - Command and Control (Ce) Information Systems and Procedures Capability Assessments	8.965	0.000	0.000
Description: Description: JDAT conducts assessments in conjunction with Service and Combatant Command (CCMD) exercises, experiments, and test and evaluation events.			
The primary outputs and efficiencies include: <ul style="list-style-type: none"> - Improvement in the Services' ability to employ Joint C2 information systems - Recommendations for system integration and interoperability - Ability to include Joint context during new system acquisition or development - Updates and revisions to related CJCS Instructions and Manuals - Development of related Universal Joint Tasks (UJT) and Additional Task Detail (ATD) 			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>	R-1 ITEM NOMENCLATURE PE 0604828D8Z: <i>Joint Fires Integration and Interoperability Team</i>	PROJECT P857: <i>Joint Deployable Analysis Team</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
<ul style="list-style-type: none"> - Updates and revisions to doctrine, TTP, and other Joint publications - Development and refinement of analytical tools (i.e. Data Collection Architecture for Analytical Feedback (DCAAF), Track Event Reconstruction Application (TERA), <p>Joint Windows-based Warfare Assessment Model (JWinWAM))</p> <ul style="list-style-type: none"> - Recommended solutions integrated within the Joint Requirements Oversight Council (JROC) Joint Capabilities Integration Development System (JCIDS) and OSD Joint C2 Capability Portfolio Manager (JC2 CPM) processes - Identification of specific key performance parameters (KPPs) and key system attributes (KSAs) for new systems that meet Joint warfighter operational requirements to ensure Services and Agencies field interdependent and interoperable systems - Increased effectiveness and confidence in combat identification and a reduction in fratricide - Increased effectiveness and confidence in C2 information systems and procedures. <p>FY 2012 Accomplishments: FY 2012 Accomplishments</p> <ul style="list-style-type: none"> - Provided analytical support to Joint Staff capability development assessments of coalition and U.S. C2 information systems and procedures at Exercise Bold Quest 12. Provided instrumentation, data collection, data capture, real-time mission monitoring, and feedback to participants via daily debriefings. Benefits include improved ability to assess various participating coalition and US systems, improved joint task execution, and an effective assessment of emergent U.S. C2 information systems while greatly reducing the timeline required to provide fact-based recommendations. - Teamed with U.S. Army Test and Evaluation Command to conduct DOT&E directed interoperability and mission assurance assessments for USEUCOM during Exercise Austere Challenge 12. Objective was to investigate and recommend solutions to identified interoperability issues between Air Defense System Integrator (ADSI) and Global Command and Control System – Joint (GCCS-J) impacting the Joint Common Operational Picture. Provided data collection, analysis, and display using JDAT developed tools in the air and space operations center during the event function test. At the request of a participating Nation, exercise execution was delayed from May 2012 to Nov 2012. - Teamed with U.S. Army Test and Evaluation Command to conduct a DOT&E directed interoperability assessment for USSOUTHCOM during Exercise PANAMAX 2012. Objective was to investigate and recommend solutions to identified interoperability issues between Air Defense System Integrator (ADSI) and Global Command and Control System – Joint (GCCS-J) impacting the Joint Common Operational Picture. Provided data collection, analysis, and display using JDAT developed tools in the air and space operations center during the event function test. Benefit includes improvement in the Joint Force Commander's Common Operational Picture. 			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>	R-1 ITEM NOMENCLATURE PE 0604828D8Z: <i>Joint Fires Integration and Interoperability Team</i>	PROJECT P857: <i>Joint Deployable Analysis Team</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
<p>-Provided analytical support to assess technology integration and interoperability during JIAMD0 Joint Tactical Air Picture spiral 1 event. This was a risk reduction event for the assessment to be conducted in November 2012. Provided data collection, analysis and display using JDAT developed tools. Benefit includes an improved tactical air picture for battle-space managers.</p> <p>- Executed three risk reduction events (Joint Operational Test Approach 1, USAF Exercise Red Flag 12-3 and USAF Weapons School Mission Event 12A) in preparation for Department of Defense Joint Operational Test Approach (JOTA) 2, which is the Interim Operational Capability (IOC) event for Identification Friend or Foe (IFF) Mode 5 Level 1. JDAT, as the lead analytical organization in support of Commander, Operational Test and Evaluation Force (COMOPTEVFOR) during JOTA 2, validated integration and interoperability of fielded Mode 5 systems. Developed data collection and analysis methodologies, design and determine data collection architectures that meet JOTA 2 objectives. Benefit includes efficient Mode 5 data collection and analysis techniques for all weapons systems during JOTA 2.</p> <p>-Provided C2 data collection and analytical support to the Joint Fires Support Executive Steering Committee (JFS ESC). Chaired the ESC chartered Digitally Aided Close Air Support (DACAS) Engineering Change Implementation Group. Conducted Digitally Aided Close Air Support (DACAS) Coordinated Implementation risk reduction assessments to validate service compliance with requisite Engineering Change Proposals. Planned and executed testing and validation of DACAS engineering change proposals and coordinated implementation across the Department of Defense and partner nations. Benefit included recommendations for Doctrine and Tactics, Techniques, and Procedures in the areas of standardization and digital interoperability and development of associated Universal Joint Tasks</p> <p>-Provided policy updates to CJCSI 3265.01, Command and Control Governance and Management and CJCSM 3500.04, Universal Joint Task Manual.</p> <p>-Provided doctrine updates to JP 3-09.3, Close Air Support; JP 3-13, Information Operations; JP 3-33, Joint Task Force Headquarters; and JP 3-60, Joint Targeting</p> <p>- Provided subject matter expertise and tier 2 architecture products on development of the Joint Close Air Support (CAS) and Joint Fires Joint Mission Threads.</p> <p>-Developed the Track Event Reconstruction Application (TERA) to increase track-match accuracy and shorten analytical times for air picture assessments.</p> <p>-Provided observations, findings, conclusions, and recommendations from field assessments and subject matter expert support to DOD forums and boards (Joint Mission Environment Test Capability Program, NATO Technical Panel 8, Joint Fire Support Executive Steering Committee, Combat Identification – Friendly Force Tracker Executive Steering Committee, Joint Mission Thread Architecture and Testing Working Group, and Joint C4I Partnership Working Group)in developing and advancing capabilities and products.</p>				
Accomplishments/Planned Programs Subtotals		8.965	0.000	0.000

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>	R-1 ITEM NOMENCLATURE PE 0604828D8Z: <i>Joint Fires Integration and Interoperability Team</i>	PROJECT P857: <i>Joint Deployable Analysis Team</i>
C. Other Program Funding Summary (\$ in Millions) N/A		
Remarks		
D. Acquisition Strategy Not applicable for this item.		
E. Performance Metrics JDAT delivers Joint solutions for operational and tactical forces deployed to Combatant Commands (CCMDs) and Joint and Service Program managers. Deliverables may include: discrete improvements to training processes; doctrine; Tactics, Techniques, & Procedures (TTPs); and/or technical system performance specifications and standards; validated Doctrine, Organization, Training, Material, Leadership, Personnel, Facilities, and Policy (DOTmLPF-P) recommendations; timely delivery of quality feedback to exercise participants and developers for systems under test; or improvements to Joint context of testing and training venues. JDAT works with Joint Staff, CCMDs, and Services to approve the annual agenda of work and validate results.		

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 4: Advanced Component Development & Prototypes (ACD&P)	R-1 ITEM NOMENCLATURE PE 0604828D8Z: Joint Fires Integration and Interoperability Team	PROJECT P857: Joint Deployable Analysis Team
-------------------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------	--------------------------------------------------------

Support (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
TBD	TBD	TBD:TBD	-	8.965		0.000		-		-		-	Continuing	Continuing	
Subtotal			0.000	8.965		0.000		0.000		0.000		0.000			
			All Prior Years	FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			0.000	8.965		0.000		0.000		0.000		0.000			

Remarks

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2014 Office of Secretary Of Defense																DATE: April 2013			
APPROPRIATION/BUDGET ACTIVITY								R-1 ITEM NOMENCLATURE								PROJECT			
0400: Research, Development, Test & Evaluation, Defense-Wide								PE 0604828D8Z: Joint Fires Integration and								P857: Joint Deployable Analysis Team			
BA 4: Advanced Component Development & Prototypes (ACD&P)								Interoperability Team											

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2014 Office of Secretary Of Defense			DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY	R-1 ITEM NOMENCLATURE	PROJECT	
0400: Research, Development, Test & Evaluation, Defense-Wide BA 4: Advanced Component Development & Prototypes (ACD&P)	PE 0604828D8Z: Joint Fires Integration and Interoperability Team	P857: Joint Deployable Analysis Team	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Operational Test & Planning, Publications	1	2012	4	2016

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense	DATE: April 2013
-------------------------------------------------------------------------------------------------	-------------------------

APPROPRIATION/BUDGET ACTIVITY

0400: Research, Development, Test & Evaluation, Defense-Wide
BA 4: Advanced Component Development & Prototypes (ACD&P)

R-1 ITEM NOMENCLATURE

PE 0303191D8Z: Joint Electromagnetic Technology (JET) Program

COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
Total Program Element	-	3.357	3.158	3.169	-	3.169	3.023	2.800	3.116	3.135	Continuing	Continuing
192: Joint Electromagnetic Technology (JET) Program	-	3.357	3.158	3.169	-	3.169	3.023	2.800	3.116	3.135	Continuing	Continuing
Quantity of RDT&E Articles												

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

The JET Program supports the Defense Community in general with a particular emphasis on the communication requirements of Special Forces and Intelligence. Details of the program are classified. This program is funded under Budget Activity 4, Demonstration and Validation.

B. Program Change Summary (\$ in Millions)

	<u>FY 2012</u>	<u>FY 2013</u>	<u>FY 2014 Base</u>	<u>FY 2014 OCO</u>	<u>FY 2014 Total</u>
Previous President's Budget	3.358	3.158	3.169	-	3.169
Current President's Budget	3.357	3.158	3.169	-	3.169
Total Adjustments	-0.001	0.000	0.000	-	0.000
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Program Adjustment	-0.001	-	-	-	-

Change Summary Explanation

Change Summary Explanation:

FY 2012: Program Adjustment -0.001 million.

FY 2013: No change.

FY 2014: No change.

C. Accomplishments/Planned Programs (\$ in Millions)

	<u>FY 2012</u>	<u>FY 2013</u>	<u>FY 2014</u>
Title: JET Program Initiatives	3.357	3.158	3.169

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>		R-1 ITEM NOMENCLATURE PE 0303191D8Z: <i>Joint Electromagnetic Technology (JET) Program</i>	
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
FY 2012 Accomplishments: Program Planning and Support FY 2013 Plans: Program Planning and Support FY 2014 Plans: Program Planning and Support			
Accomplishments/Planned Programs Subtotals		3.357	3.158
D. Other Program Funding Summary (\$ in Millions) N/A			
Remarks			
E. Acquisition Strategy N/A			
F. Performance Metrics <ul style="list-style-type: none"> - Numbers of operational field demonstrations. - Numbers of false-positive results. - Successful technology transfer to service component. - Number of service requirements satisfied. 			

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2014 Office of Secretary Of Defense												DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 4: Advanced Component Development & Prototypes (ACD&P)						R-1 ITEM NOMENCLATURE PE 0303191D8Z: Joint Electromagnetic Technology (JET) Program				PROJECT 192: Joint Electromagnetic Technology (JET) Program				

Support (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Joint Electromagnetic Technology Program	C/FFP	Various:Various	0.000	3.357	Mar 2012	3.158	Mar 2013	3.169	Mar 2014	-		3.169	Continuing	Continuing	Continuing
Subtotal			0.000	3.357		3.158		3.169		0.000		3.169			

	All Prior Years	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	3.357	3.158	3.169	0.000	3.169			

Remarks

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense	DATE: April 2013
-------------------------------------------------------------------------------------------------	-------------------------

APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE							
0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 5: <i>System Development & Demonstration (SDD)</i>					PE 0604051D8Z: <i>Defense Acquisition Challenge Program (DACP)</i>							
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
Total Program Element	-	24.833	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
P051: <i>Defense Acquisition Challenge Program</i>	-	24.833	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

Authorized by Title 10, U.S. Code, Section 2359b, the Defense Acquisition Challenge Program (DACP) increases opportunities to insert innovative and cost saving technologies into Department of Defense (DoD) acquisition programs. DACP funds the test and evaluation of technologies and products with potential to improve performance, affordability, manufacturability, or operational capability of current acquisition programs at the subcomponent, component, or system level.

B. Program Change Summary (\$ in Millions)	<u>FY 2012</u>	<u>FY 2013</u>	<u>FY 2014 Base</u>	<u>FY 2014 OCO</u>	<u>FY 2014 Total</u>
Previous President's Budget	24.836	0.000	0.000	-	0.000
Current President's Budget	24.833	0.000	0.000	-	0.000
Total Adjustments	-0.003	0.000	0.000	-	0.000
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-0.003	-			
• SBIR/STTR Transfer	-	-			

Change Summary Explanation

The Defense Acquisition Challenge Program (DACP) concluded its efforts at the end of FY 2012.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE				PROJECT			
0400: Research, Development, Test & Evaluation, Defense-Wide BA 5: System Development & Demonstration (SDD)					PE 0604051D8Z: Defense Acquisition Challenge Program (DACP)				P051: Defense Acquisition Challenge Program			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
P051: Defense Acquisition Challenge Program	-	24.833	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles												

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

Authorized by Title 10, U.S. Code, Section 2359b, the Defense Acquisition Challenge Program (DACP) increases opportunities to insert innovative and cost-saving technologies into Department of Defense (DoD) acquisition programs. DACP funds the test and evaluation of technologies and products with potential to improve performance, affordability, manufacturability, or operational capability of current acquisition programs at the subcomponent, component, or system level.

Since the program inception in FY 2003, Office of Secretary of Defense (OSD) has initiated 176 projects; 117 projects have been completed to date; 83 met Service or Agency testing requirements, and 61 led to procurements with technology currently in use by our warfighters in Iraq, Afghanistan, or at U.S. training facilities. Given the program tests developed equipment, Service and United States Special Operations Command (USSOCOM) program managers report that the average Research, Development, Test and Evaluation (RDT&E) and Operations and Support (O&S) non-recurring cost avoidance is at least 5-to-1.

The DACP provides the DoD an efficiency that is not generally recognized. With centralized DACP funding in OSD, funding can be readily moved among the Services and USSOCOM to take advantage of emerging opportunities and fund joint projects.

DACP increases opportunities for domestic vendors to enter the DoD acquisition process. Although business size is not an evaluation criterion, approximately 60 percent of the projects awarded are with technology providers at the small or mid-sized enterprise level. DACP has the additional DoD/National Security benefit of expanding the industrial base for Defense acquisition.

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2012	FY 2013	FY 2014
Title: Expendable Automated Data Ex-filtration Module for Expeditionary Unmanned Underwater Vehicle (UUVs) (Navy)	1.250	0.000	0.000
Description: Test deployable radio relay buoys for the Navy's MK 18 UUV. The Wireless Aquatic Telemetry Exfiltration Radio Bottles (WATER Bottles) are released from a submerged UUV, float to the surface, and transmit critical sensor data via satellite communications to operator stations and surface ships. This project combines two Small Business Innovation Research Phase III concepts (launching system and relay device), integrates them onto a MK 18 UUV, and tests the system in an operationally representative environment. Successfully implementing this capability will reduce the Navy's Mine Warfare tactical timeline, expedite the delivery of mine detection data, allow the UUV to remain on task, and enable operators to locate disabled UUVs.			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 5: <i>System Development & Demonstration (SDD)</i>	R-1 ITEM NOMENCLATURE PE 0604051D8Z: <i>Defense Acquisition Challenge Program (DACP)</i>	PROJECT P051: <i>Defense Acquisition Challenge Program</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
<i>FY 2012 Accomplishments:</i> Initiated test planning in 1Q FY 2012. Coordinated with test facilities and integrated key product team members throughout 2Q FY 2012. Conducted UUV integration and initial testing during 1Q FY 2013. Execute field user evaluation during 2Q FY 2013. Anticipated final closeout and procurement decision during 3Q FY 2013.			
<i>Title:</i> Tactical Cloud Market Place (Navy) <i>Description:</i> Evaluate government open source software that has been tested and deployed in the Intelligence Community. The project challenges the Navy's traditional deployment of software applications by adopting a widely accepted commercial application marketplace. This marketplace will initially be hosted on aircraft carriers and will allow users on board any ship within a carrier strike group to discover and access the latest tactical widgets, applications, and services in a disconnected, intermittent or limited bandwidth communications environment. Successfully implementing the Tactical Cloud Market Place will provide the Navy a framework for rapid capability deployment at a significantly reduced cost.		1.350	0.000
<i>FY 2012 Accomplishments:</i> Initiated test planning in 1Q FY 2012. Coordinated with test facilities and integrated key product team members throughout 2Q FY 2012. Conducted initial developmental testing during 1Q FY 2013. Conduct shore based performance testing during 2Q FY 2013. Conduct operational assessment during 3Q FY 2013. Procurement decision and closeout in 4Q FY 2013.			
<i>Title:</i> Dynamic Modems (Navy) <i>Description:</i> Tests commercial-off-the-shelf Dynamic Modems as replacements for the existing Frequency Division Multiple Access modems. New modems offer the potential to double shipboard network throughput from two to four megabits per second for DDG destroyers and from 12 to 24 megabits per second for CVN aircraft carriers. These new modems are widely used in the commercial Information Technology sector and will provide the Navy with quicker dissemination and retrieval of time critical information such as targeting data. Additionally, new modems will provide forward deployed units or first responders a quick entry into shipboard networks.		1.325	0.000
<i>FY 2012 Accomplishments:</i> Initiated test planning in 1Q FY 2012. Coordinated with test facilities and integrated key product team members throughout 2Q FY 2012. Conducted system baseline testing during 1Q FY 2013. Integration and initial developmental testing during 2Q FY13. Conduct operational performance testing 3Q FY 2013. Procurement decision 4Q FY 2013.			
<i>Title:</i> Man Portable Power Generation System (Air Force) <i>Description:</i> Test a field-ready ruggedized direct methanol fuel cell system. This system will provide significant weight savings and increased safety compared to the current methods of providing and carrying energy for the dismounted operators in the field.		1.045	0.000

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense			DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 5: <i>System Development & Demonstration (SDD)</i>		R-1 ITEM NOMENCLATURE PE 0604051D8Z: <i>Defense Acquisition Challenge Program (DACP)</i>		PROJECT P051: <i>Defense Acquisition Challenge Program</i>	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2012	FY 2013	FY 2014
<i>FY 2012 Accomplishments:</i> Initiated test planning in 1Q FY 2012. Coordinated with test facilities and integrated key product team members throughout 2Q FY 2012. Received test articles in 1Q FY 2013. Conduct initial qualification and safety testing during 2Q FY 2013. Conduct operational evaluations in 3Q FY 2013. Procurement decision anticipated in 4Q FY 2013.					
<i>Title:</i> Network Electronic Warfare Capability (United States Special Operations Command (USSOCOM)) <i>Description:</i> Test a revolutionary capability that networks multiple types of Electronic Warfare (EW) equipment between different rotary wing aircraft. This project will provide multi-platform threat geo-location, real time threat management, threat tracking and playback, multi-platform sensor fusion, and coordinated threat engagement. <i>FY 2012 Accomplishments:</i> Initiated test planning in 1Q FY 2012. Coordinated with test facilities and integrated key product team members throughout 2Q FY 2012. Conduct system integration and initial testing during 2Q FY 2013. Conduct flight testing during 3Q FY 2013. Procurement decision anticipated in 4Q FY 2013.			1.261	0.000	0.000
<i>Title:</i> Advanced Polymer Family of Lightweight Ammunition (United States Special Operations Command (USSOCOM)) <i>Description:</i> Evaluates injection molded polymer cartridge cases than can improve system accuracy, reduce the rapid price fluctuations due to brass costs, and reduce the overall weight of the cartridge by 25 percent - 30 percent (e.g., approximately 2.5 pounds on 200 rounds of 7.62mm). <i>FY 2012 Accomplishments:</i> Initiated test planning in 1Q FY 2012. Coordinated with test facilities and integrated key product team members throughout 2Q FY 2012. Received Phase I test articles in 1Q FY 2013. Conduct comparative assessment and down select during 2Q FY 2013. Receive Phase II test articles and conduct limited user evaluation during 3Q FY 2013. Procurement decision anticipated in 3Q FY 2013.			1.000	0.000	0.000
<i>Title:</i> Micro Defense Automated GPS Receiver (MicroDAGR) Selective Availability Anti-Spoofing Module (SAASM) 3.7 and Targeting Application (United States Special Operations Command (USSOCOM)) <i>Description:</i> Tests a smaller, lighter, simplified Global Positioning System (GPS) receiver that is easy to use and expands the targeting capabilities for the war-fighter. The development of the MicroDAGR targeting application will provide the capability to interface with a laser range finder for fire support missions requiring a SAASM GPS for targeting. <i>FY 2012 Accomplishments:</i>			1.570	0.000	0.000

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 5: System Development & Demonstration (SDD)	R-1 ITEM NOMENCLATURE PE 0604051D8Z: Defense Acquisition Challenge Program (DACP)	PROJECT P051: Defense Acquisition Challenge Program		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
Initiated test planning in 1Q FY 2012. Coordinated with test facilities and integrated key product team members throughout 2Q FY 2012. Received test articles in 1Q FY 2013. Conduct initial developm ental testing and operational assessment during 2Q FY 2013. Procurement decision and fielding anticipated during 3Q FY 2013.				
Title: 70mm Rocket Penetrator Guidance System & Digital Rocket Launcher (United States Special Operations Command (USSOCOM)) Description: Tests a low cost, light weight, precision guided, and low collateral damage 70mm rocket and launcher that incorporates laser designated Lock on Before Launch and Lock on After Launch capability. The rocket uses a joint direct attack munitions semi-active laser seeker and a 70mm enhanced electronic delay warhead. The precision rocket will have range from 1.5Km to 8Km. FY 2012 Accomplishments: Initiated test planning in 1Q FY 2012. Coordinated with test facilities and integrated key product team members throughout 2Q FY 2012. Received test articles in 2Q FY 2013. Conduct initial developmental testing and safety assessment during 3Q FY 2013. Conduct operational assessment during 4Q FY 2013.		4.050	0.000	0.000
Title: Improved Domestic Aluminum Alloys for Protection of Armored & Tactical Vehicles (Army) Description: Qualifies both C79 and AA2060 alloys as weld-able under MIL SPECs for acquisition. These alloys offer improved ballistics, improved forging for production of complex components, and inherent stress corrosion cracking resistance, which makes these materials possible candidates for use in the Ground Combat Vehicle, the Joint Light Tactical Vehicle, USMC Amphibious Combat Vehicle, and new production M2 Bradleys and Armored Multipurpose Vehicles. FY 2012 Accomplishments: Initiated test planning in 1Q FY 2012. Coordinated with test facilities and integrated key product team members throughout 2Q FY 2012. Received test articles in 1Q FY 2013. Conduct ballistics and weld qualification during 1Q FY 2013. Conduct safety and blast testing during 2Q FY 2013. Perform user evaluations during 3Q FY 2013. Procurement decision anticipated in 4Q FY 2013.		1.050	0.000	0.000
Title: Korean Advanced Text Translator (Army) Description: Evaluates software that will improve the war-fighter's ability to collaborate and communicate with Republic of Korea coalition forces. The resulting Korean Advanced Text Translator will provide document translation (Microsoft PowerPoint, Word, Outlook) for use on the Combined Enterprise Regional Information Exchange-Korea network. FY 2012 Accomplishments:		1.669	0.000	0.000

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 5: <i>System Development & Demonstration (SDD)</i>	R-1 ITEM NOMENCLATURE PE 0604051D8Z: <i>Defense Acquisition Challenge Program (DACP)</i>	PROJECT P051: <i>Defense Acquisition Challenge Program</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
Initiated test planning in 1Q FY 2012. Coordinated with test facilities and integrated key product team members throughout 2Q FY 2012. Obtained Certification & Accreditation during in 1Q FY 2013. Perform operational assessment during 2Q FY 2013. Procurement decision anticipated in 3Q FY 2013.			
Title: Improved Mortar Manufacturing Description: Evaluates a manufacturing capability for new nickel alloy mortar tubes to provide improved weapons at lower cost. This will be achieved by applying state of the art Inconel electrochemical manufacturing technology. This technology is currently being employed in full rate production of various General Electric aircraft engines. FY 2012 Accomplishments: Initiated test planning in 1Q FY 2012. Coordinated with test facilities and integrated key product team members throughout 2Q FY 2012. Received test samples in 1Q FY 2013. Conduct subcomponent testing during 2Q FY 2013. Receive newly coated test article and initiate live fire evaluations during 3Q FY 2013.		1.140	0.000
Title: Minor Resource Projects (Less than one million dollars) Description: Defense Acquisition Challenge Program initiated the following projects in FY 2012: Embedded Training for Navy Rotary Wing School (Navy), Field Repair Solution for Rotor Blade Erosion Damage (Navy), Catapult Water Break Corrosion Inhibitor (Navy), Non-Magnetic, Non-Sparking Commercial-off-the-Shelf Underwater Explosive Ordnance Disposal Tools (Navy), Carrier Full Motion Video / Intelligence, Surveillance, and Reconnaissance Data Exploitation from Manned and Unmanned Aircraft (Navy), Landing Craft Air Cushion Scavenge Fan (Navy), M2 Small Dome Antenna for on-the-move gunfire detection systems (United States Special Operations Command), Automatic Off-Road Routing for Mission Planning/Execution (United States Special Operations Command), Deployable Shelter/Detention System (Army), Enhanced Combat Vehicle Crewman Coverall (Army), Lightweight Combat Vehicle Crewman Helmet (Army), Tactical Communication and Hearing Protective System (Army), and Universal Battery Charger (Army). FY 2012 Accomplishments: In FY 2012, Defense Acquisition Challenge Program initiated test planning, coordinated test facilities, and integrated key product team members for the above projects. In FY 2013, the projects will complete testing, receive test articles, and finalize reporting and transition plans.		8.123	0.000
Accomplishments/Planned Programs Subtotals		24.833	0.000
C. Other Program Funding Summary (\$ in Millions)			
N/A			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 5: <i>System Development & Demonstration (SDD)</i>	R-1 ITEM NOMENCLATURE PE 0604051D8Z: <i>Defense Acquisition Challenge Program (DACP)</i>	PROJECT P051: <i>Defense Acquisition Challenge Program</i>
C. Other Program Funding Summary (\$ in Millions)		
Remarks		
D. Acquisition Strategy The Acquisition Strategy for Defense Acquisition Challenge Program (DACP) is as outlined in Title 10 DACP provides opportunities for the increased introduction of innovative and cost-saving technology in acquisition programs of the DoD. DACP funding is used to fund testing of commercial and non-developmental items that could result in improvements in performance, affordability, manufacturability, or operational capability of an existing acquisition program. It is expected that, should testing be successful, cognizant acquisition program of record will procure.		
E. Performance Metrics Generic performance metrics applicable to these RDT&E initiatives includes attainment of DoD Strategic Objective 3.5.2D. The title of this objective is "Maintain a strong technical foundation within the Department's Science and Technology program" and the metrics for this objective is to transition 40 percent of completing demonstration programs per year. From program inception in 2003 until 2012, the Office of Secretary of Defense has initiated 176 projects; 117 projects have been completed to date; 74 met Service or Agency testing requirements and 61 led to procurements with technology currently in use by our war-fighters in Iraq, Afghanistan, or at U.S. training facilities. The FY 2012 DACP projects have a transition rate of approximately 83 percent for completed projects, exceeding the objective of 40 percent. In FY 2013, we anticipate the majority of our FY 2012 projects to complete successfully and transition to the war-fighter.		

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 5: <i>System Development & Demonstration (SDD)</i>				R-1 ITEM NOMENCLATURE PE 0604051D8Z: <i>Defense Acquisition Challenge Program (DACP)</i>				PROJECT P051: <i>Defense Acquisition Challenge Program</i>			
------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--	--	--	----------------------------------------------------------------------------------------------------	--	--	--	----------------------------------------------------------------------	--	--	--

Test and Evaluation (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Defense Acquisition Challenge Project	C/BA	Various DoD activities: Various DoD activities	-	24.833	May 2012	0.000		-		-		-	Continuing	Continuing	
Subtotal			0.000	24.833		0.000		0.000		0.000		0.000			
Project Cost Totals			0.000	24.833		0.000		0.000		0.000		0.000			

Remarks

DACP provides opportunities for the increased introduction of innovative and cost-saving technology in acquisition programs of the DoD. Through a competitive process, DACP funding is used to fund testing of commercial and non-developmental items that could result in improvements in performance, affordability, manufacturability, or operational capability of an existing acquisition program. It is expected that, should testing be successful, the cognizant acquisition program of record will procure.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE							
0400: Research, Development, Test & Evaluation, Defense-Wide BA 5: System Development & Demonstration (SDD)					PE 0604161D8Z: Nuclear and Conventional Physical Security/Countering Nuclear Threats							
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
Total Program Element	13.675	6.977	6.817	8.155	-	8.155	13.596	7.195	7.108	7.229	Continuing	Continuing
P163: Nuclear and Conventional Physical Security	13.675	6.977	6.817	7.107	-	7.107	6.771	7.195	7.108	7.229	Continuing	Continuing
P166: CNT Rad/Nuc Passive Defense	0.000	0.000	0.000	1.048	-	1.048	6.825	0.000	0.000	0.000	Continuing	Continuing

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

This Program Element (PE) addresses the need to defend and deter against weapons of mass destruction (WMD) threats and to safeguard personnel; prevent unauthorized access to equipment, installations, material, and documents; and to safeguard the foregoing against espionage, sabotage, damage, and theft. This program oversees advanced engineering development throughout DoD for an integrated and systemic RDT&E approach for countering nuclear threats and nuclear and conventional physical security technology and systems. The funding has been centralized in this Defense-wide PE since the early 1990s and represents a substantial portion of all DoD physical security RDT&E funding. Priorities for this PE RDT&E efforts are driven by inputs from Quadrennial Defense Review guidance, Combatant Command and Service requirements, analysis reports such as "Protecting the Force: Lessons from Fort Hood," January 2010, the Integrated Unit, Base, and Installation Protection Cost Benefits Analysis, Multi-national Work Plans established through the Nuclear Security Summit process, and DoD Directive 5210.41, Security Policy for Protecting Nuclear Weapons-directed requirements and associated security deviation reports.

Under this integrated approach, funds are used to provide system development and demonstration for the Department in seven capability areas: (1) Detection and Assessment; (2) Access Controls; (3) Installation and Transport Security; (4) Storage and Safeguards; (5) Prevention; (6) Decision Support Systems; and (7) Analytical Support. The program will develop systems that are producible, supportable, and affordable and to demonstrate system integration, interoperability, and utility prior to full-rate production. The projects under the PE become technology insertions into existing programs or advance to being a certified Commercial/Government off-the-shelf product. The PE initiatives are coordinated by the Physical Security Enterprise and Analysis Group. This group is responsible for avoiding duplication of effort and when applicable ensure systems integration and promote interoperability and sustainability.

This PE can fund travel to support the requirements of this program.

This appropriation will finance work, including manpower, performed by a government agency or by private individuals or organizations under a contractual or grant arrangement with the government who conduct research (systematic study directed toward fuller scientific knowledge or understanding of the subject studied), development (systematic use of the knowledge and understanding gained from research, for the production of useful materials, devices, systems, or methods, including the design and development of prototypes and processes) and test and evaluation efforts.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense				DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY		R-1 ITEM NOMENCLATURE			
0400: Research, Development, Test & Evaluation, Defense-Wide		PE 0604161D8Z: Nuclear and Conventional Physical Security/Countering Nuclear Threats			
BA 5: System Development & Demonstration (SDD)					
B. Program Change Summary (\$ in Millions)	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total
Previous President's Budget	7.009	6.817	6.724	-	6.724
Current President's Budget	6.977	6.817	8.155	-	8.155
Total Adjustments	-0.032	0.000	1.431	-	1.431
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-0.032	-			
• SBIR/STTR Transfer	-	-			
• Other Adjustments	-	0.000	1.431	-	1.431
Change Summary Explanation					
FY 2014 were realigned based on senior leadership decisions.					

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE				PROJECT			
0400: Research, Development, Test & Evaluation, Defense-Wide BA 5: System Development & Demonstration (SDD)					PE 0604161D8Z: Nuclear and Conventional Physical Security/Countering Nuclear Threats				P163: Nuclear and Conventional Physical Security			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
P163: Nuclear and Conventional Physical Security	13.675	6.977	6.817	7.107	-	7.107	6.771	7.195	7.108	7.229	Continuing	Continuing
Quantity of RDT&E Articles												
# FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012												
## The FY 2014 OCO Request will be submitted at a later date												
A. Mission Description and Budget Item Justification												
This Program Element (PE) addresses the need to defend and deter against weapons of mass destruction (WMD) threats and to safeguard personnel; prevent unauthorized access to equipment, installations, material, and documents; and to safeguard the foregoing against espionage, sabotage, damage, and theft. This program oversees advanced engineering development throughout DoD for an integrated and systemic RDT&E approach for countering nuclear threats and nuclear and conventional physical security technology and systems. The funding has been centralized in this Defense-wide PE since the early 1990s and represents a substantial portion of all DoD physical security RDT&E funding. Priorities for this PE RDT&E efforts are driven by inputs from Quadrennial Defense Review guidance, Combatant Command and Service requirements, analysis reports such as “Protecting the Force: Lessons from Fort Hood,” January 2010, the Integrated Unit, Base, and Installation Protection Cost Benefits Analysis, Multi-national Work Plans established through the Nuclear Security Summit process, and DoD Directive 5210.41, Security Policy for Protecting Nuclear Weapons-directed requirements and associated security deviation reports.												
Under this integrated approach, funds are used to provide system development and demonstration for the Department in seven capability areas: (1) Detection and Assessment; (2) Access Controls; (3) Installation and Transport Security; (4) Storage and Safeguards; (5) Prevention; (6) Decision Support Systems; and (7) Analytical Support. The program will develop systems that are producible, supportable, and affordable and to demonstrate system integration, interoperability, and utility prior to full-rate production. The projects under the PE become technology insertions into existing programs or advance to being a certified Commercial/Government off-the-shelf product. The PE initiatives are coordinated by the Physical Security Enterprise and Analysis Group. This group is responsible for avoiding duplication of effort and when applicable ensure systems integration and promote interoperability and sustainability.												
This PE can fund travel to support the requirements of this program.												
This appropriation will finance work, including manpower, performed by a government agency or by private individuals or organizations under a contractual or grant arrangement with the government who conduct research (systematic study directed toward fuller scientific knowledge or understanding of the subject studied), development (systematic use of the knowledge and understanding gained from research, for the production of useful materials, devices, systems, or methods, including the design and development of prototypes and processes) and test and evaluation efforts.												

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 5: System Development & Demonstration (SDD)	R-1 ITEM NOMENCLATURE PE 0604161D8Z: Nuclear and Conventional Physical Security/Countering Nuclear Threats	PROJECT P163: Nuclear and Conventional Physical Security		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
Title: Detection and Assessment Description: The ability to detect an adversary and assess their intentions is a basic physical security tenant. This capability area will design equipment to identify and warn of unauthorized access to a specified area or installation as well as equipment related to the notification and identification of explosive threats or hazards. FY 2012 Accomplishments: <ul style="list-style-type: none">• Designed Long-range imaging sensor to operate with a sonar system to identify divers at significant ranges in the underwater environment.• Designed optimal active sonar functionality in ultra-shallow water environments. FY 2013 Plans: <ul style="list-style-type: none">• Transition Long-range imaging sensor to operate with a sonar system to identify divers at significant ranges in the underwater environment to low-rate production.• Transition optimal active sonar functionality in ultra-shallow water environments to low-rate production. FY 2014 Plans: <ul style="list-style-type: none">• Conduct swimmer Land-Water Interface Detection and Tracking test and long term evaluation of reliability and nuisance and false alarm rates at an operational site• Demonstrate CONOPS from vigilant dolphin detection / localization via existing mammal marker to immediately relaying marked contact location to mammal security boat via the existing Electronic Harbor side Security System network		1.169	1.492	1.448
Title: Access Controls Description: Controlling access to safeguard personnel and their families and to prevent unauthorized access to critical infrastructure and materials is paramount. This capability area will focus on programs and processes related to the validity and verification of individuals entering or already within, a facility. FY 2012 Accomplishments: <ul style="list-style-type: none">• Conducted Behavioral Analysis table top exercise.• Continued Defense Installation Access Control spiral demonstrations in operational environments. FY 2013 Plans: <ul style="list-style-type: none">• Conduct Joint Capability Technology Demonstration for Defense Installation Access Control project to prove operational capability FY 2014 Plans:		0.354	1.551	1.505

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 5: System Development & Demonstration (SDD)		R-1 ITEM NOMENCLATURE PE 0604161D8Z: Nuclear and Conventional Physical Security/Countering Nuclear Threats		PROJECT P163: Nuclear and Conventional Physical Security
B. Accomplishments/Planned Programs (\$ in Millions)				
• Demonstrate the ability of existing sea lions to intercept human targets and attach specially developed hardware to delay and deny access to critical resources.		FY 2012	FY 2013	FY 2014
Title: Installation and Transport Security Description: Robust installation and transport security are vital to preventing a weapon of mass destruction attack or the unauthorized access to key assets such as nuclear weapons and special nuclear material. This capability area will focus on programs and equipment intended to improve the physical security profile of fixed sites and facilities, as well as critical items while in-transit. FY 2012 Accomplishments: <ul style="list-style-type: none">• Evaluated detection options and response capabilities, to include the full spectrum of non-lethal to lethal tactical weapon systems, to protect personnel and assets against the terrorist threat in a waterside security environment.• Developed persistent surveillance, intrusion detection, explosive detection, entry denial, acoustic hailing, autonomous unmanned systems, chemical, biological, radiological, nuclear, and high-explosive and associated functions. FY 2013 Plans: <ul style="list-style-type: none">• Proof of concept for detection options and response capabilities previously identified, to include the full spectrum of non-lethal to lethal tactical weapon systems, to protect personnel and assets against the terrorist threat in a waterside security environment.• Proof of concept for persistent surveillance, intrusion detection, explosive detection, entry denial, acoustic hailing, autonomous unmanned systems, chemical, biological, radiological, nuclear, and high-explosive and associated functions. FY 2014 Plans: <ul style="list-style-type: none">• Develop and demonstrate an improved electro-optical seeker that will enable the Spike system to reliably track and engage stationary and moving threat targets		1.549	0.167	0.162
Title: Storage and Safeguards Description: Properly securing critical assets to prevent access by unauthorized persons and implementing control measures that ensure access is limited to authorized persons is the foundation of physical security. This capability area will focus on equipment (e.g., locks, doors, etc.) designed to delay or stop unauthorized entry / access to a specified / localized area. FY 2012 Accomplishments: <ul style="list-style-type: none">• Conducted proof of concept for an economical magazine construction that comprehensively satisfies physical security criteria, explosive safety, operational and seismic safety standards.		1.170	0.351	0.341

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 5: <i>System Development & Demonstration (SDD)</i>	R-1 ITEM NOMENCLATURE PE 0604161D8Z: <i>Nuclear and Conventional Physical Security/Countering Nuclear Threats</i>	PROJECT P163: <i>Nuclear and Conventional Physical Security</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
<ul style="list-style-type: none"> Conducted proof of concept of a Government Services Administration-approved shipboard security solution. <p>FY 2013 Plans:</p> <ul style="list-style-type: none"> Transition economical magazine construction that comprehensively satisfies physical security criteria, explosive safety, operational and seismic safety standards to low-rate production. Transition a Government Services Administration-approved shipboard security solution to low-rate production. <p>FY 2014 Plans:</p> <ul style="list-style-type: none"> Establish fragment and blast load environment, identify potential materials to mitigate hazards, and document physical security and explosives safety requirements for Weapon Storage Containers. 				
<p>Title: Prevention</p> <p>Description: The security procedures taken to discourage an adversary from accessing weapons of mass destruction or gaining unauthorized access to critical assets are at the heart of prevention. This capability area will focus on broad spectrum, generic efforts which have the ability to influence multiple areas.</p> <p>FY 2012 Accomplishments:</p> <ul style="list-style-type: none"> Designed, organized and conducted a best practice workshop aimed at reducing the security risk at facilities by sharing experiences, organizing security exercises and guard force performance testing. Planned for the Force Protection Equipment Demonstration IX. <p>FY 2013 Plans:</p> <ul style="list-style-type: none"> Expand engagement opportunities with international partners in Nuclear Security. Produces best practice guide and workshops. <p>FY 2014 Plans:</p> <ul style="list-style-type: none"> Conduct requirements gap analysis between Global Threat Reduction Initiative and Cooperative Threat Reduction efforts for Global Nuclear Lockdown. 		1.470	0.301	0.785
<p>Title: Decision Support Systems</p> <p>Description: Decision support systems serve the management, operations, and planning levels of the DoD physical security enterprise to help to make decisions, which may be rapidly changing and not easily specified in advance. This capability area will focus on command and control equipment and projects related to the creation and enhancement of common operating pictures, and the establishment of common architectures / interface standards.</p> <p>FY 2012 Accomplishments:</p>		0.720	2.012	1.952

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 5: <i>System Development & Demonstration (SDD)</i>	R-1 ITEM NOMENCLATURE PE 0604161D8Z: <i>Nuclear and Conventional Physical Security/Countering Nuclear Threats</i>	PROJECT P163: <i>Nuclear and Conventional Physical Security</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
<ul style="list-style-type: none"> Integrated sensors, sensor systems and unmanned systems with automated fusion capabilities to populate available Common Operating Pictures (COP) with in-depth security, surveillance, and response data for fixed and semi-fixed/expeditionary elements. Provided DoD and industry the means to achieve Physical Security Equipment interoperability through standards and interface specifications. <p>FY 2013 Plans:</p> <ul style="list-style-type: none"> Advance Integration of sensors, sensor systems and unmanned systems with automated fusion capabilities to populate available Common Operating Pictures (COP) with in-depth security, surveillance, and response data for fixed and semi-fixed/expeditionary elements. Provide DoD and industry the means to achieve Physical Security Equipment interoperability through standards and interface specifications. <p>FY 2014 Plans:</p> <ul style="list-style-type: none"> Develop capability to ensure threat alert and response systems are interoperable with equipment used by the DoD and mutual aid partners in the local communities 				
<p>Title: Analytical Support</p> <p>Description: This capability area will focus on studies related to physical security topics and operational and management efforts related to day-to-day activities of the DoD Physical Security Enterprise RDT&E Program.</p> <p>FY 2012 Accomplishments:</p> <ul style="list-style-type: none"> Conducted physical security test and evaluation efforts <p>FY 2013 Plans:</p> <ul style="list-style-type: none"> Conduct physical security test and evaluation efforts <p>FY 2014 Plans:</p> <ul style="list-style-type: none"> Conduct physical security test and evaluation efforts Provide DOD and industry the means to achieve PSE interoperability 		0.545	0.943	0.914
Accomplishments/Planned Programs Subtotals		6.977	6.817	7.107
C. Other Program Funding Summary (\$ in Millions)				
N/A				
Remarks				

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 5: <i>System Development & Demonstration (SDD)</i>	R-1 ITEM NOMENCLATURE PE 0604161D8Z: <i>Nuclear and Conventional Physical Security/Countering Nuclear Threats</i>	PROJECT P163: <i>Nuclear and Conventional Physical Security</i>
<u>D. Acquisition Strategy</u> N/A		
<u>E. Performance Metrics</u> The program performance metrics are established/approved through the DoD Physical Security Enterprise and Analysis Group (PSEAG). The cost, schedule and technical progress of each project is reviewed at quarterly PSEAG. Performance variances are addressed and corrective action is implemented as necessary.		

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 5: <i>System Development & Demonstration (SDD)</i>	R-1 ITEM NOMENCLATURE PE 0604161D8Z: <i>Nuclear and Conventional Physical Security/Countering Nuclear Threats</i>	PROJECT P163: <i>Nuclear and Conventional Physical Security</i>
------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------

Product Development (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Defense Security Enterprise Architecture	Various	Various performers:Various locations	0.000	1.092		2.475		2.475		-		2.475	0.000	6.042	6.042
Intermodal Security Devices	MIPR	NAVFACESEC:Port Hueneme, CA	0.000	0.243		0.555		0.000		-		0.000	0.000	0.798	0.798
Defense Installation Access Control JCTD	Various	Various performers:Various locations	7.742	1.500		0.500		0.000		-		0.000	0.000	9.742	9.742
Identify Friend or Foe	Sub Allot	Force Protection Branch ESC/HSS:Hanscom AFB, MA	1.120	0.394		0.000		0.000		-		0.000	0.000	1.514	1.514
Countering Nuclear Threats	Various	Various Performers:Various Locations	0.627	0.000		1.882		1.764		-		1.764	0.000	4.273	4.273
Ordnance Handling Facility	MIPR	SPAWAR Atlantic:Charleston, SC	0.000	0.400		0.250		0.500		-		0.500	0.000	1.150	1.150
Live Fire T&E of Active Protection Systems to For Area Defense	MIPR	Various Performers:Various Locations	0.000	0.750		0.000		-		-		-	0.000	0.750	0.750
Integrated Base Defense	Sub Allot	PM-FPS:Ft Belvoir, VA	1.650	1.000		0.000		0.000		-		0.000	0.000	2.650	2.650
Radiological Detection System	Sub Allot	Various performers:Various locations	0.000	0.000		0.000		0.500		-		0.500	0.000	0.500	0.500
Subtotal			11.139	5.379		5.662		5.239		0.000		5.239	0.000	27.419	27.419

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2014 Office of Secretary Of Defense												DATE: April 2013			
APPROPRIATION/BUDGET ACTIVITY						R-1 ITEM NOMENCLATURE				PROJECT					
0400: Research, Development, Test & Evaluation, Defense-Wide BA 5: System Development & Demonstration (SDD)						PE 0604161D8Z: Nuclear and Conventional Physical Security/Countering Nuclear Threats				P163: Nuclear and Conventional Physical Security					
Support (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Security Equipment Integration Working Group	MIPR	SPAWAR Atlantic:Charleston, SC	0.500	0.500		0.500		0.500		-		0.500	0.000	2.000	2.000
Subtotal			0.500	0.500		0.500		0.500		0.000		0.500	0.000	2.000	2.000
Test and Evaluation (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Performance Maintainability Kit	MIPR	NAVEOD Tech Div:Indian Head, MD	0.560	0.340		0.000		0.000		-		0.000	0.000	0.900	0.900
PSE Test and Evaluation	MIPR	Various Performers:Various Locations	0.226	0.258		0.230		0.250		-		0.250	0.000	0.964	0.964
Test & Evaluation of Active Protection Systems	MIPR	SPAWAR Atlantic:Charleston, SC	0.750	-		-		-		-		-	0.000	0.750	0.750
Maritime Environment Applicability Testing	MIPR	NAVEOD Tech Division:Indian Head, MD	0.500	0.500		-		-		-		-	0.000	1.000	1.000
Hyperspectral Imaging Systems for Explosive Detection	MIPR	NAVEOD Tech Division:Indian Head, MD	0.000	0.000		0.400		1.093		-		1.093	0.000	1.493	1.493
Subtotal			2.036	1.098		0.630		1.343		0.000		1.343	0.000	5.107	5.107
Management Services (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
RDT&E Travel	TBD	Washington Headquarters	0.000	0.000		0.025		0.025		-		0.025	0.000	0.050	0.050

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2014 Office of Secretary Of Defense												DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 5: <i>System Development & Demonstration (SDD)</i>						R-1 ITEM NOMENCLATURE PE 0604161D8Z: <i>Nuclear and Conventional Physical Security/Countering Nuclear Threats</i>				PROJECT P163: <i>Nuclear and Conventional Physical Security</i>				

Management Services (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost To Complete	Total Cost	Target Value of Contract
		Services:Washington DC														
Subtotal			0.000	0.000		0.025		0.025		0.000		0.025		0.000	0.050	0.050

	All Prior Years	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	13.675	6.977	6.817	7.107	0.000	7.107	0.000	34.576	34.576

Remarks

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 5: System Development & Demonstration (SDD)					R-1 ITEM NOMENCLATURE PE 0604161D8Z: Nuclear and Conventional Physical Security/Countering Nuclear Threats				PROJECT P166: CNT Rad/Nuc Passive Defense			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013[#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
P166: CNT Rad/Nuc Passive Defense	0.000	0.000	0.000	1.048	-	1.048	6.825	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles												
[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012 ^{##} The FY 2014 OCO Request will be submitted at a later date												
A. Mission Description and Budget Item Justification This project establishes a Defense-wide Countering Nuclear Threats (CNT) Materiel development Program. The CNT acquisition strategy directly applies to a Joint requirement for CNT materiel development and addresses the materiel and sustainment gaps for general purpose Joint Forces, including the US Army 20th Support Command and Navy Visit, Board, Search, and Seizure, as well as the Technical Support Groups; NIMBLE ELDER and the US Special Operations Command where required.												
B. Accomplishments/Planned Programs (\$ in Millions)										FY 2012	FY 2013	FY 2014
Title: CNT Rad/Nuc Passive Defense										0.000	0.000	1.048
Description: Advanced Development of Joint Radiological and Nuclear passive defense systems												
FY 2014 Plans: Development of Joint Radiological and Nuclear passive defense systems (i.e. Man Portable Detection System and the Joint Personal Dosimeter)												
Accomplishments/Planned Programs Subtotals										0.000	0.000	1.048
C. Other Program Funding Summary (\$ in Millions) N/A												
Remarks												
D. Acquisition Strategy N/A												
E. Performance Metrics The program performance metrics are established/approved through the Countering Nuclear Threats Program Manager. The cost, schedule and technical progress is reviewed on a quarterly basis. Performance variances are addressed and corrective action(s) is(are) implemented as necessary.												

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2014 Office of Secretary Of Defense													DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 5: <i>System Development & Demonstration (SDD)</i>							R-1 ITEM NOMENCLATURE PE 0604161D8Z: <i>Nuclear and Conventional Physical Security/Countering Nuclear Threats</i>					PROJECT P166: <i>CNT Rad/Nuc Passive Defense</i>			

Product Development (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
CNT Rad/Nuc Passive Defense Development	TBD	TBD:TBD	0.000	0.000		0.000		1.048		-		1.048	0.000	1.048	1.048
Subtotal			0.000	0.000		0.000		1.048		0.000		1.048	0.000	1.048	1.048

	All Prior Years	FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	0.000		0.000		1.048		0.000		1.048	0.000	1.048	1.048

Remarks

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE							
0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 5: <i>System Development & Demonstration (SDD)</i>					PE 0604165D8Z: <i>Prompt Global Strike Capability Development</i>							
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013[#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
Total Program Element	475.070	174.077	110.383	65.440	-	65.440	82.590	92.004	209.846	225.248	Continuing	Continuing
P164: <i>Hypersonic Glide Experiment and Concepts Demonstration Support</i>	280.140	61.830	10.000	2.000	-	2.000	4.000	2.000	2.000	2.000	Continuing	Continuing
P166: <i>Alternate Re-Entry System/Warhead Engineering</i>	122.486	91.000	92.000	55.000	-	55.000	70.000	84.000	201.000	217.000	Continuing	Continuing
P167: <i>Test Range Development</i>	50.446	12.000	5.000	5.000	-	5.000	5.000	3.000	3.000	3.000	Continuing	Continuing
P168: <i>OSD CPGS Studies</i>	21.998	9.247	3.383	3.440	-	3.440	3.590	3.004	3.846	3.248	Continuing	Continuing

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

The level of resourcing for the Prompt Global Strike Capability Development program reflects iterative reductions from efficiencies and budget reductions, which reduces the Department's ability to develop flexible responsive solutions to emerging war fighter needs. This Program Element (PE) was established to develop and demonstrate technologies and applications that advance conventional prompt global strike (CPGS) warfighting capabilities. The program uses a national team with coordination between the Services, Agencies and national research laboratories to pursue integrated portfolio objectives leading to the acquisition and operation of a CPGS system. This program funds the design, development, and experimentation of boosters, payload delivery vehicles (PDVs), non-nuclear warheads, guidance systems, and mission planning and enabling capabilities. Program timing will be driven by the outcome of flight test events and DoD budgets. To support these development activities, the program procures modeling and simulation capabilities, command and control interfaces, test range support, and launch system infrastructure. Additionally, expert resources address strategic policy and treaty issues. Program emphasis is on demonstrating component and subsystem technology maturity with risk reduction initiatives. In FY 2013 and FY 2014, funding for the individual service initiatives has and will be contingent upon their abilities to execute and achieve satisfactory progress towards project goals as determined by the CPGS portfolio manager.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense	DATE: April 2013
-------------------------------------------------------------------------------------------------	-------------------------

APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 5: <i>System Development & Demonstration (SDD)</i>	R-1 ITEM NOMENCLATURE PE 0604165D8Z: <i>Prompt Global Strike Capability Development</i>
------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------

B. Program Change Summary (\$ in Millions)	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total
Previous President's Budget	174.830	110.383	138.701	-	138.701
Current President's Budget	174.077	110.383	65.440	-	65.440
Total Adjustments	-0.753	0.000	-73.261	-	-73.261
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-0.753	-			
• SBIR/STTR Transfer	-	-			
• Other adjustments	-	-	-2.261	-	-2.261
• Realignment due to defense priorities	-	-	-66.000	-	-66.000
• Rephased to out-years	-	-	-5.000	-	-5.000

Change Summary Explanation

Other Adjustments- Reduction of -\$2.261 is part of the Department of Defense reform agenda, a zero-based review of the organization, to align resources to the most critical priorities and eliminate lower priority functions.

Realignment of -\$66.000 is due to Defense Priorities - Reduction per Department of Defense priorities to focus on Research and Development of intermediate range concepts.

Rephased To Out Years - Funding was reduced in FY14 based on other program requirements and rephased to FY15 and FY16.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE				PROJECT			
0400: Research, Development, Test & Evaluation, Defense-Wide BA 5: System Development & Demonstration (SDD)					PE 0604165D8Z: Prompt Global Strike Capability Development				P164: Hypersonic Glide Experiment and Concepts Demonstration Support			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
P164: Hypersonic Glide Experiment and Concepts Demonstration Support	280.140	61.830	10.000	2.000	-	2.000	4.000	2.000	2.000	2.000	Continuing	Continuing
Quantity of RDT&E Articles												

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

This Program Element (PE) was established to develop and demonstrate technologies and applications that advance conventional prompt global strike (CPGS) warfighting capabilities. The program uses a national team with coordination between the Services, Agencies and national research laboratories to pursue integrated portfolio objectives leading to the acquisition and operation of a CPGS system. This program funds the design, development, and experimentation of boosters, payload delivery vehicles (PDVs), non-nuclear warheads, guidance systems, and mission planning and enabling capabilities. Program timing will be driven by the outcome of flight test events and DoD budgets. To support these development activities, the program procures modeling and simulation capabilities, command and control interfaces, test range support, and launch system infrastructure. Additionally, expert resources address strategic policy and treaty issues. Program emphasis is on demonstrating component and subsystem technology maturity with risk reduction initiatives. In FY 2013 and FY 2014, funding for the individual service initiatives has and will be contingent upon their abilities to execute and achieve satisfactory progress towards project goals as determined by the CPGS portfolio manager.

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2012	FY 2013	FY 2014
Title: Hypersonic Glide Experiments and Concept Demonstration Development/Support	61.830	10.000	2.000
<p>Description: This sub-project develops technologies and applications that could lead to a system with the following characteristics: effects on targets in a very short-period of time from execution order; non-ballistic flight over the majority of the flight path; positive control from launch to impact; adequate cross-range/ maneuverability to avoid overflight issues; controlled stage drop over Broad Ocean Area (BOA), and provides for in-flight target updates. The technologies developed will have cross-service and cross-concept applicability and will be developed through close coordination among DoD components. This activity will support both ground and flight tests, and provide all national data to the competitive acquisition program.</p> <p>The objectives of this sub-project are to:</p> <ul style="list-style-type: none"> - Assess boost-glide technologies in light of ground and flight test events and associated modeling and simulation. -Analyze the military utility of multiple, 3-axis stabilized vehicles performance with respect to thermal protection materials, aerodynamics and control surfaces, navigation, guidance, control (NG&C), boosters and weapons performance. -Assess the feasibility of producing an affordable solution to fill the CPGS capability gap. 			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense			DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 5: <i>System Development & Demonstration (SDD)</i>		R-1 ITEM NOMENCLATURE PE 0604165D8Z: <i>Prompt Global Strike Capability Development</i>		PROJECT P164: <i>Hypersonic Glide Experiment and Concepts Demonstration Support</i>	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2012	FY 2013	FY 2014
<p>-Continue systems definition/engineering/development of integrated weaponized payload delivery vehicles and subsystems in order to identify and reduce risks and mature technologies for a global range competitive acquisition program.</p> <p>FY 2012 Accomplishments:</p> <ul style="list-style-type: none"> - Prepared Air Force service inputs and support OSD lead CPGS Materiel Development Decision (MDD) milestone - Restructured program from a weaponized PDV demonstration to a risk reduction/technology maturation/test campaign program - Completed the manufacturing and accept delivery of PDV aeroshells for KEP arena and sled tests, complete planning, build and conduct KEP arena and sled tests to characterize weapon performance - Conducted KEP arena and sled pre and post tests analysis - Collaborated with national CPGS team to plan, develop and perform subsystems ground and subscale flight tests for evaluation and analysis of military utility - Conducted system engineering studies to characterize effectiveness of updated weapons concepts, vehicles survivability against foreign systems and flight paths to optimized vehicles and boosters performance - Continued to lead national team in risk reduction and technology maturation efforts for CPGS non-nuclear KEP, Penetrator and other warhead concepts - Continued modification of launch test pad for future flight tests - Conducted post flight test reviews and data analysis, and validate if significant risk reduction was achieved utilizing updated aerodynamic, guidance, and control modeling - Prepared and conducted the segment and System delta PDR to the AF CSM demonstration. - Disseminated post flights and ground tests data/analysis to CPGS national community, including the Army AHW program office, DARPA HTV program office, Navy SSP, and OSD/SW DWA Manager. - Completed the manufacture and accept delivery of aeroshells for KEP sled tests, complete build and conduct KEP sled tests - Supported aero and thermal ground facility tests and future Flight Demo designs. - Completed Engineering Review Board (ERB) HTV-2 flight 2 anomaly investigation and developed approaches for remediation. The remediation efforts will culminate in the Integrated Hypersonics (IH) baseline flight test, which will provide critical data that is only available from full-scale flight testing to refine models and data sets gained from ground tests needed for the design of next-generation hypersonic vehicles. - Completed planning for IH program. The goal of the IH program is to develop, mature, and test next- generation technologies needed for global-range, maneuverable, hypersonic flight at Mach 20 and above for missions ranging from space access to survivable, time-critical transport to conventional prompt global strike. <p>FY 2013 Plans:</p> <ul style="list-style-type: none"> - Conduct trade studies to evaluate system alternatives, affordability, end-to-end system concepts that will study a weaponized integrated system complete with system architecture and industrial manufacturing readiness. 					

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 5: <i>System Development & Demonstration (SDD)</i>	R-1 ITEM NOMENCLATURE PE 0604165D8Z: <i>Prompt Global Strike Capability Development</i>	PROJECT P164: <i>Hypersonic Glide Experiment and Concepts Demonstration Support</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
<ul style="list-style-type: none"> - Continue risk reduction and technology maturation efforts through ground tests to improve modeling and simulation capabilities and technology readiness to subsystems. - Develop Technology Development Strategy and System Engineering documentation incorporating CPGS community data, trade studies and on-going risk reduction/technology development efforts. - Complete KEP sled test analysis and disseminate test data/analysis to CPGS community. - Conduct KEP sled test, including fabrication of warhead, surrogate aeroshell, knife blade assembly, and sled assembly. Conduct post-test analysis and model validation. - Implement improvements in highly coupled hypersonic toolsets incorporating assessed uncertainties of key technologies from recent CPGS testing activities. - Refine hypersonic boost glide knowledge base and designs through enhanced developmental testing in the areas of aerodynamics, aerothermodynamics, guidance, navigation, and control, instrumentation, vehicle recovery, and propulsion. - Improve high temperature materials base for hypersonic flight and re-entry vehicles applications through improved manufacturing, modeling, and ground based testing. - Improve flight test range asset coordination including options for large scale space based telemetry collection. - Analyze alternative launch systems for enhanced long range hypersonic flight. - Refine flight test regime for next generation long range hypersonic boost glide technology demonstrations. <p>FY 2014 Plans:</p> <ul style="list-style-type: none"> - Complete enhanced developmental testing in the areas of aerodynamics, aerothermodynamics, guidance, navigation, and control, instrumentation, vehicle recovery, and propulsion. - Conduct planning of flight tests in coordination with other Services to validate knowledge base garnered from enhanced developmental testing. - Complete trade studies to evaluate system alternatives, affordability, end-to-end system concepts and industrial manufacturing readiness. - Continue risk reduction and technology maturation efforts through ground tests to improve modeling and simulation capabilities and technology readiness to subsystems. - Complete Technology Development Strategy and System Engineering documentations incorporating CPGS community data, trade studies and on-going risk reduction/technology development efforts. 			
Accomplishments/Planned Programs Subtotals		61.830	10.000
C. Other Program Funding Summary (\$ in Millions)			
N/A			
Remarks			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 5: <i>System Development & Demonstration (SDD)</i>	R-1 ITEM NOMENCLATURE PE 0604165D8Z: <i>Prompt Global Strike Capability Development</i>	PROJECT P164: <i>Hypersonic Glide Experiment and Concepts Demonstration Support</i>
D. Acquisition Strategy N/A		
E. Performance Metrics N/A		

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2014 Office of Secretary Of Defense												DATE: April 2013			
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 5: System Development & Demonstration (SDD)						R-1 ITEM NOMENCLATURE PE 0604165D8Z: Prompt Global Strike Capability Development				PROJECT P164: Hypersonic Glide Experiment and Concepts Demonstration Support					
Support (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Hypersonic Glide Experiments and Concept Demonstration Development/Support	Allot	SPACE AND MISSILE CENTER:LOS ANGELES, CA	280.140	61.830		10.000		2.000		-		2.000	Continuing	Continuing	
Subtotal			280.140	61.830		10.000		2.000		0.000		2.000			
			All Prior Years	FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			280.140	61.830		10.000		2.000		0.000		2.000			
Remarks															

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2014 Office of Secretary Of Defense			DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 5: <i>System Development & Demonstration (SDD)</i>	R-1 ITEM NOMENCLATURE PE 0604165D8Z: <i>Prompt Global Strike Capability Development</i>	PROJECT P164: <i>Hypersonic Glide Experiment and Concepts Demonstration Support</i>	

	FY 2012				FY 2013				FY 2014				FY 2015				FY 2016				FY 2017				FY 2018			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
USAF Kep Sled Test 1																												
USAF Kep Sled Test 2																												
All Services Ground Tests																												

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2014 Office of Secretary Of Defense			DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 5: <i>System Development & Demonstration (SDD)</i>	R-1 ITEM NOMENCLATURE PE 0604165D8Z: <i>Prompt Global Strike Capability Development</i>	PROJECT P164: <i>Hypersonic Glide Experiment and Concepts Demonstration Support</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
USAF Kep Sled Test 1	4	2012	1	2013
USAF Kep Sled Test 2	1	2013	1	2014
All Services Ground Tests	1	2012	4	2014

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 5: System Development & Demonstration (SDD)					R-1 ITEM NOMENCLATURE PE 0604165D8Z: Prompt Global Strike Capability Development				PROJECT P166: Alternate Re-Entry System/Warhead Engineering			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
P166: Alternate Re-Entry System/Warhead Engineering	122.486	91.000	92.000	55.000	-	55.000	70.000	84.000	201.000	217.000	Continuing	Continuing
Quantity of RDT&E Articles												

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

This Program Element (PE) was established to develop and demonstrate technologies and applications that advance conventional prompt global strike (CPGS) warfighting capabilities. The program uses a national team with coordination between the Services, Agencies and national research laboratories to pursue integrated portfolio objectives leading to the acquisition and operation of a CPGS system. This program funds the design, development, and experimentation of boosters, payload delivery vehicles (PDVs), non-nuclear warheads, guidance systems, and mission planning and enabling capabilities. Program timing will be driven by the outcome of flight test events and DoD budgets. To support these development activities, the program procures modeling and simulation capabilities, command and control interfaces, test range support, and launch system infrastructure. Additionally, expert resources address strategic policy and treaty issues. Program emphasis is on demonstrating component and subsystem technology maturity with risk reduction initiatives. In FY 2013 and FY 2014, funding for the individual service initiatives has and will be contingent upon their abilities to execute and achieve satisfactory progress towards project goals as determined by the CPGS portfolio manager.

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2012	FY 2013	FY 2014
Title: Alternative Re-Entry System/Warhead Engineering and Delivery Vehicle Options/Development	91.000	92.000	55.000
Description: This sub-project will test and evaluate alternative booster and delivery vehicle options and will assess the feasibility of producing an affordable alternate solution to fill the CPGS capability gap. It will mature technologies that could lead to advanced systems with the following characteristics: effects on targets in a very short-period of time from execution order; non-ballistic flight over the majority of the flight path; positive control from launch to impact; adequate cross-range/maneuverability to avoid over flight issues; and controlled stage drop over BOA. The technologies developed will have cross-service and cross-concept applicability and will be developed through close coordination among DoD components. This activity will support both ground and flight tests, and provide all national data to the competitive acquisition program.			
FY 2012 Accomplishments: <ul style="list-style-type: none"> - Completed Flight Test 1A meeting all Flight Test objectives including first time demonstration of a boost glide hypersonic system at a CPGS relevant range; first successful use of an advanced carbon-carbon thermal protection system for an intermediate range hypersonic flight. - Completed mission data reporting and analysis from Advanced Hypersonic Weapon (AHW) Flight Test 1A; documented predicted boost and glide performance, actual performance, range and collection activities, remaining uncertainties, and 			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense			DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 5: <i>System Development & Demonstration (SDD)</i>		R-1 ITEM NOMENCLATURE PE 0604165D8Z: <i>Prompt Global Strike Capability Development</i>		PROJECT P166: <i>Alternate Re-Entry System/Warhead Engineering</i>	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2012	FY 2013	FY 2014
<p>application of data to modeling for full range of design capabilities/missions. Hosted a post-test Engineering workshop to brief and disseminate post Flight Test 1A test data/analysis to CPGS national community and Defense-Wide Account Manager.</p> <ul style="list-style-type: none"> - Performed ground testing of possible Thermal Protection System (TPS) materials and glide vehicle configurations; assessed TPS materials and Material Manufacturing Demonstrations to support selected materials. - Developed and implemented improvements to Flight Test 1A dynamic inversion autopilot. - Developed an alternate Hypersonic Glide Body configuration with direct applicability to the intermediate and/or long range mission. - Developed and coordinated major milestones for the next flight test, Flight Test 2. - Supported initial range planning activities for Flight Test 2. <p>FY 2013 Plans:</p> <ul style="list-style-type: none"> - Conduct System Requirements Review for Flight Test 2 and relevance for all CPGS concepts. - Conduct Integrated Baseline Review and Integrated Master Schedule development for Flight Test 2. - Conduct Preliminary and Critical Design Reviews in preparation for Flight Test 2. - Complete design, manufacturing, and testing of components; conduct preliminary bench top integration. - Participate in the analysis of FY 2012 ground tests and their application to CPGS modeling advancements. - Initiate work associated with PDV items at risk, in accordance with previous tests. - Mature Flight Control Systems and electronics to be made available to all acquisition program competitors. - Expand systems engineering parameters for performance and cost assessments for all concepts. - Exercise Command, Control, and Communications processes with proven NG&C components to perform hardware-in-the-loop parallel simulation of Navy CPGS system using AHW Flight 2 as surrogate. <p>FY 2014 Plans:</p> <ul style="list-style-type: none"> - Complete manufacturing and testing of Hypersonic Glide Body and Booster to be used in Flight Test 2. - Conduct pre-shipment and pre-launch reviews. - Deploy to range, conduct pre-launch testing and training, and execute Flight Test 2. - Begin Flight Test Data analysis and distribution to the CPGS community for use across projects. - Continue ground testing and development of advanced thermal protection materials and concepts. - Expand systems engineering. 					
Accomplishments/Planned Programs Subtotals			91.000	92.000	55.000
C. Other Program Funding Summary (\$ in Millions)					
N/A					
Remarks					

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 5: System Development & Demonstration (SDD)	R-1 ITEM NOMENCLATURE PE 0604165D8Z: Prompt Global Strike Capability Development	PROJECT P166: Alternate Re-Entry System/Warhead Engineering
D. Acquisition Strategy N/A		
E. Performance Metrics N/A		

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 5: <i>System Development & Demonstration (SDD)</i>	R-1 ITEM NOMENCLATURE PE 0604165D8Z: <i>Prompt Global Strike Capability Development</i>	PROJECT P166: <i>Alternate Re-Entry System/Warhead Engineering</i>
------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------	------------------------------------------------------------------------------

Support (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Alternative Reentry System/Warhead Engineering and Delivery Vehicle Options/ Development	Allot	SPACE AND MISSILE DEFENSE CENTER/ NAVY STRATEGIC SYSTEMS PROGRAM:HUNTSVILLE, AL/ WASHINGTON DC	122.486	91.000		92.000		55.000		-		55.000	Continuing	Continuing	
Subtotal			122.486	91.000		92.000		55.000		0.000		55.000			
Project Cost Totals			122.486	91.000		92.000		55.000		0.000		55.000			

Remarks

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2014 Office of Secretary Of Defense										DATE: April 2013			
APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE					PROJECT			
0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i>					PE 0604165D8Z: <i>Prompt Global Strike</i>					P166: <i>Alternate Re-Entry System/Warhead</i>			
BA 5: <i>System Development & Demonstration (SDD)</i>					<i>Capability Development</i>					<i>Engineering</i>			

	FY 2012				FY 2013				FY 2014				FY 2015				FY 2016				FY 2017				FY 2018			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Army AHW Flight Test 1A																												
All Services Ground Tests																												
Army AHW Flight Test 2																												
Navy SSP CPS Variant Flight Test 1																												

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2014 Office of Secretary Of Defense			DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 5: <i>System Development & Demonstration (SDD)</i>	R-1 ITEM NOMENCLATURE PE 0604165D8Z: <i>Prompt Global Strike Capability Development</i>	PROJECT P166: <i>Alternate Re-Entry System/Warhead Engineering</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Army AHW Flight Test 1A	1	2012	1	2012
All Services Ground Tests	1	2012	4	2014
Army AHW Flight Test 2	3	2012	4	2015
Navy SSP CPS Variant Flight Test 1	3	2013	4	2016

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE				PROJECT			
0400: Research, Development, Test & Evaluation, Defense-Wide BA 5: System Development & Demonstration (SDD)					PE 0604165D8Z: Prompt Global Strike Capability Development				P167: Test Range Development			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
P167: Test Range Development	50.446	12.000	5.000	5.000	-	5.000	5.000	3.000	3.000	3.000	Continuing	Continuing
Quantity of RDT&E Articles												
# FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012												
## The FY 2014 OCO Request will be submitted at a later date												
A. Mission Description and Budget Item Justification												
This Program Element (PE) was established to develop and demonstrate technologies and applications that advance conventional prompt global strike (CPGS) warfighting capabilities. The program uses a national team with coordination between the Services, Agencies and national research laboratories to pursue integrated portfolio objectives leading to the acquisition and operation of a CPGS system. This program funds the design, development, and experimentation of boosters, payload delivery vehicles (PDVs), non-nuclear warheads, guidance systems, and mission planning and enabling capabilities. Program timing will be driven by the outcome of flight test events and DoD budgets. To support these development activities, the program procures modeling and simulation capabilities, command and control interfaces, test range support, and launch system infrastructure. Additionally, expert resources address strategic policy and treaty issues. Program emphasis is on demonstrating component and subsystem technology maturity with risk reduction initiatives. In FY 2013 and FY 2014, funding for the individual service initiatives has and will be contingent upon their abilities to execute and achieve satisfactory progress towards project goals as determined by the CPGS portfolio manager.												
B. Accomplishments/Planned Programs (\$ in Millions)										FY 2012	FY 2013	FY 2014
Title: Test Range Development										12.000	5.000	5.000
Description: This sub-project will complete design, assembly and delivery of power/telemetry subsystems; assemble and integrate components to check command/control and verify range safety functions.												
FY 2012 Accomplishments:												
- Completed design, assembly and delivery of selected sensors, power/telemetry subsystems; assemble and integrate components to check command/control and verify range safety functions in support of Flight Test 1-A.												
- Performed range assets to support technology demonstrations, including ships and aircraft to receive in-flight telemetry data transmitted by the PDV.												
FY 2013 Plans:												
- Improve telemetry collection and infrastructure in prep for DOTE/IOTE testing of contractor developed system concepts.												
- Assist test range infrastructure for long term use												
FY 2014 Plans:												
- Improve telemetry collection and infrastructure in prep for DOTE/IOTE testing of contractor developed system concepts.												
- Assist test range infrastructure for long term use,												

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 5: <i>System Development & Demonstration (SDD)</i>		R-1 ITEM NOMENCLATURE PE 0604165D8Z: <i>Prompt Global Strike Capability Development</i>	PROJECT P167: <i>Test Range Development</i>
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
-Collaboration with Missile Defense, Ballistic Missile, and Space programs for test range capability modernization.			
Accomplishments/Planned Programs Subtotals		12.000	5.000
C. Other Program Funding Summary (\$ in Millions) N/A			
Remarks			
D. Acquisition Strategy N/A			
E. Performance Metrics N/A			

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2014 Office of Secretary Of Defense												DATE: April 2013			
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 5: <i>System Development & Demonstration (SDD)</i>						R-1 ITEM NOMENCLATURE PE 0604165D8Z: <i>Prompt Global Strike Capability Development</i>						PROJECT P167: <i>Test Range Development</i>			
Support (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Test Range Development	Allot	SPACE AND MISSILE CENTER:LOS ANGELES, CA	50.446	12.000		5.000		5.000		-		5.000	Continuing	Continuing	
Subtotal			50.446	12.000		5.000		5.000		0.000		5.000			
			All Prior Years	FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			50.446	12.000		5.000		5.000		0.000		5.000			
Remarks															

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE				PROJECT			
0400: Research, Development, Test & Evaluation, Defense-Wide BA 5: System Development & Demonstration (SDD)					PE 0604165D8Z: Prompt Global Strike Capability Development				P168: OSD CPGS Studies			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
P168: OSD CPGS Studies	21.998	9.247	3.383	3.440	-	3.440	3.590	3.004	3.846	3.248	Continuing	Continuing
Quantity of RDT&E Articles												
# FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012												
## The FY 2014 OCO Request will be submitted at a later date												
A. Mission Description and Budget Item Justification												
This Program Element (PE) was established to develop and demonstrate technologies and applications that advance conventional prompt global strike (CPGS) warfighting capabilities. The program uses a national team with coordination between the Services, Agencies and national research laboratories to pursue integrated portfolio objectives leading to the acquisition and operation of a CPGS system. This program funds the design, development, and experimentation of boosters, payload delivery vehicles (PDVs), non-nuclear warheads, guidance systems, and mission planning and enabling capabilities. Program timing will be driven by the outcome of flight test events and DoD budgets. To support these development activities, the program procures modeling and simulation capabilities, command and control interfaces, test range support, and launch system infrastructure. Additionally, expert resources address strategic policy and treaty issues. Program emphasis is on demonstrating component and subsystem technology maturity with risk reduction initiatives. In FY 2013 and FY 2014, funding for the individual service initiatives has and will be contingent upon their abilities to execute and achieve satisfactory progress towards project goals as determined by the CPGS portfolio manager.												
B. Accomplishments/Planned Programs (\$ in Millions)										FY 2012	FY 2013	FY 2014
Title: OSD CPGS Studies										9.247	3.383	3.440
Description: This sub-project supports emergent CPGS study efforts. In addition, it also supports application of the Prompt Global Strike Analysis of Alternatives results, requirements development, CPGS basing alternatives, analysis and defining of mission enabling technologies, and measures to avoid conventional missile launch ambiguity. Finally, it supports administrative activities associated with the management and execution of this PE.												
FY 2012 Accomplishments:												
- Performed end-to-end modeling & simulation of CPGS concepts (including alternate CONUS and Sea-Based options) and design of acquisition program strategy (and post acquisition activities).												
- Completed the study of strategic policy compliance to include CPGS basing alternatives and measures to avoid misinterpretation of intent; policy compliance, and operational requirements validation.												
FY 2013 Plans:												
- Command and control overlay study in parallel with AHW Flight-2												
- Conduct CPGS concept assessment of alternative technologies and associated costs												
- Booster system integration studies												

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 5: <i>System Development & Demonstration (SDD)</i>		R-1 ITEM NOMENCLATURE PE 0604165D8Z: <i>Prompt Global Strike Capability Development</i>	PROJECT P168: <i>OSD CPGS Studies</i>
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
<ul style="list-style-type: none"> - Warhead fusing studies - Continue thermal modeling FY 2014 Plans: <ul style="list-style-type: none"> - Booster system integration studies - Warhead fusing studies - Continue thermal modeling 			
Accomplishments/Planned Programs Subtotals		9.247	3.383
C. Other Program Funding Summary (\$ in Millions)			
N/A			
Remarks			
D. Acquisition Strategy			
N/A			
E. Performance Metrics			
N/A			

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2014 Office of Secretary Of Defense												DATE: April 2013			
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 5: <i>System Development & Demonstration (SDD)</i>						R-1 ITEM NOMENCLATURE PE 0604165D8Z: <i>Prompt Global Strike Capability Development</i>						PROJECT P168: <i>OSD CPGS Studies</i>			
Support (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
OSD CPGS Studies	Allot	OFFICE OF THE SECRETARY OF DEFENSE:WASHINGTON, DC	21.998	9.247		3.383		3.440		-		3.440	Continuing	Continuing	
Subtotal			21.998	9.247		3.383		3.440		0.000		3.440			
			All Prior Years	FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			21.998	9.247		3.383		3.440		0.000		3.440			
Remarks															

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE							
0400: Research, Development, Test & Evaluation, Defense-Wide BA 5: System Development & Demonstration (SDD)					PE 0604709D8Z: Joint Robotics EMD							
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
Total Program Element	-	2.705	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
609: Joint Robotics EMD	-	2.705	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

(U) This Program Element (PE) was established in response to Congressional guidance to consolidate DOD robotic programs on unmanned ground systems and related robotic technologies in order to increase focus of the Services' robotic programs on operational requirements. Technologies in the PE support the continued development of technologies in Budget Activity 3 and 4 (PEs 0603711D8Z and 0603709D8Z) for technology transitions and transformations and closing war fighter requirement capability gaps. By exercising its oversight role through a technology advisory board, O-6 Council and Senior Steering Group (Flag level), Joint Ground Robotics applies this PE to enable coordination between the Services and places emphasis on interoperability and commonality among unmanned ground systems. This PE supports the effort to overcome technology barriers in thrust areas of unmanned ground system technologies to include Autonomous & Tactical Behaviors, Manipulation Technologies, Collaborative Operations, Interoperability, Man-portable Unmanned Ground System Technologies, and Technology Transition/Transformation. The purpose is to further the development and fielding of affordable and effective mobile ground robotic systems, develop and transition technologies necessary to meet evolving user requirements, and serve as a catalyst for insertion of robotic systems and technologies into the force structure. Through application of funds against the thrust areas of unmanned ground system technologies, this PE supports the integration of technologies into representative models or prototype systems in a high fidelity and realistic operating environment and expedites technology transition from the laboratory to operational use. Emphasis is on proving component and subsystem maturity prior to integration in major and complex systems and may involve risk reduction initiatives. Within this PE, funded efforts will continue the delivery of advanced technology needs directed at enhancing the war fighters' capabilities identified during concept development, operational assessments and field feedback of current unmanned systems.

B. Program Change Summary (\$ in Millions)	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total
Previous President's Budget	2.715	0.000	0.000	-	0.000
Current President's Budget	2.705	0.000	0.000	-	0.000
Total Adjustments	-0.010	0.000	0.000	-	0.000
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-0.010	-			
• SBIR/STTR Transfer	-	-			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense									DATE: April 2013			
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 5: System Development & Demonstration (SDD)					R-1 ITEM NOMENCLATURE PE 0604709D8Z: Joint Robotics EMD				PROJECT 609: Joint Robotics EMD			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
609: Joint Robotics EMD	-	2.705	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles												
# FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012												
## The FY 2014 OCO Request will be submitted at a later date												
A. Mission Description and Budget Item Justification												
This Program Element (PE) was established in response to Congressional guidance to consolidate DoD unmanned ground systems and related robotic technologies in order to increase focus of the Services' robotic programs on operational requirements. Technologies in this PE supported the continued development of technologies in Budget Activity 3 and 4 (PEs 0603711D8Z and 0603709D8Z) to fulfill Warfighter requirement capability gaps. By exercising its oversight role through a Technology Advisory Board, O-6 Council and Senior Steering Group (Flag level), the Joint Ground Robotics Enterprise applied this PE to enable coordination between the Services and places emphasis on interoperability and commonality among unmanned ground systems. This PE supported the effort to overcome technology barriers in thrust areas of unmanned ground system technologies to include: Navigation; Perception; Vision/Sensors; Manipulation; Command, Communication & Control; Mission/Platform Specific; Interoperability; and Outreach & Harmonization. The purpose is to further the development and fielding of affordable and effective mobile ground robotic systems, develop and transition technologies necessary to meet evolving user requirements, and serve as a catalyst for insertion of robotic systems and technologies into the force structure. Through application of funds against the thrust areas of unmanned ground system technologies, this PE supported the integration of technologies into representative models or prototype systems in a high fidelity and realistic operating environment and expedites technology transition from the laboratory to operational use. Emphasis is on proving component and subsystem maturity prior to integration in major and complex systems and may involve risk reduction initiatives. Within this PE, funded efforts continue the delivery of advanced technology needs directed at enhancing the Warfighters' capabilities identified during concept development, operational assessments and theater feedback of current unmanned systems.												
B. Accomplishments/Planned Programs (\$ in Millions)									FY 2012	FY 2013	FY 2014	
Title: Manipulation									1.315	0.000	0.000	
Description: Incorporation of new or existing technologies to enable a greater range of robotic manipulation, support the development of mobile manipulation, and improve manipulator performance. Development of these technologies will enable unmanned systems to conduct highly dexterous tasks that today are accomplished manually, but currently place war fighters in extremely vulnerable and dangerous situations.												
FY 2012 Accomplishments:												
1) Highly Dexterous Manipulators for Explosive Ordnance Disposal Robots												
- Development and completed integration of Haptic feedback												
- System integration (arm, end effector interface and end effector) and system testing												
- Dexterous hardware support												

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 5: <i>System Development & Demonstration (SDD)</i>	R-1 ITEM NOMENCLATURE PE 0604709D8Z: <i>Joint Robotics EMD</i>	PROJECT 609: <i>Joint Robotics EMD</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
<ul style="list-style-type: none"> - Make improvements to autonomous system and the OCU based on lessons learned during LTA 1 and LOE 1 - Conduct LTA 2. - Perform a four week LOE for Marines to assess the net military utility and determine the poetential for deploying for an Extended Evaluation. 			
Title: Mission/Platform Specific Description: Development of a technology to address the requirements of a particular mission or to be integrated with a specific platform. FY 2012 Accomplishments: <ul style="list-style-type: none"> 1) Cargo Unmanned Ground Vehicle - Finalized system build for second MTRV as UGV - Conducted second Limited User Assessment - Conducted Limited Objective Experiment for Logistics Mission 		0.000	0.000
Title: Navigation Description: Development of reliable motion planning, path planning, obstacle detection/obstacle avoidance, characterization, and decision analysis capabilities based on the perceived environment and specific missions outlined for the robot. FY 2012 Accomplishments: <ul style="list-style-type: none"> 1) Collision Prediction Utilizing Traversability - Advanced module development and hardware upgraded - Phase 2 validation and tests concluded - Technology demonstration and End User Support 		0.407	0.000
Title: Perception Description: Development of post-processing software technologies (proprioceptive and/or exetroceptive) enhanced unmanned ground vehicle perception capabilities for navigation, manipulation, and general unmanned ground vehicle situational awareness in a wide range of environments and conditions. FY 2012 Accomplishments: <ul style="list-style-type: none"> 1) Long Range Obstacle Detection - Finalized sensor processing algorithm development - Finalized prototype system development - Completed system integration onto UGV platform 		0.983	0.000

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 5: <i>System Development & Demonstration (SDD)</i>				R-1 ITEM NOMENCLATURE PE 0604709D8Z: <i>Joint Robotics EMD</i>				PROJECT 609: <i>Joint Robotics EMD</i>			

B. Accomplishments/Planned Programs (\$ in Millions)										FY 2012	FY 2013	FY 2014
<ul style="list-style-type: none"> - Conducted performance verification testing - Conducted final demonstration - Compiled/delivered final report 												
Accomplishments/Planned Programs Subtotals										2.705	0.000	0.000

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
• 0603709D8Z: <i>Joint Robotics Program</i>	10.932	0.000	0.000		0.000	0.000	0.000	0.000		Continuing	Continuing
• 0603711D8Z: <i>Joint Robotics Program/Autonomous Systems</i>	9.481	0.000	0.000		0.000	0.000	0.000	0.000		Continuing	Continuing
Remarks											
D. Acquisition Strategy N/A											
E. Performance Metrics											
<ol style="list-style-type: none"> 1. Technologies were funded & developed were reviewed by Joint Capability Area focused working groups and the Joint Staff Functional Capabilities Boards to determine progress, transition plans, and relevance of each project. 2. Project plans were submitted, evaluated and analyzed by the Joint Robotics Ground Enterprise (JGRE) management and technical staff for risk and progress. 3. Project progress toward goals and milestones were assessed during mid-year and end-of-year reviews. 4. Technologies developed by the JGRE were tracked and documented using the DOD Technical Readiness Level (TRL) scale for developing TRL 3 or 4 technologies to TRL 6 and adhering to the integrated baselines with regard to cost and schedule. 											

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2014 Office of Secretary Of Defense												DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 5: <i>System Development & Demonstration (SDD)</i>						R-1 ITEM NOMENCLATURE PE 0604709D8Z: <i>Joint Robotics EMD</i>				PROJECT 609: <i>Joint Robotics EMD</i>				

Support (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Joint Robotics Programs	MIPR	Various:Various	-	2.705		0.000		-		-		-	Continuing	Continuing	
Subtotal			0.000	2.705		0.000		0.000		0.000		0.000			

	All Prior Years	FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	2.705		0.000		0.000		0.000		0.000			

Remarks

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2014 Office of Secretary Of Defense

DATE: April 2013

APPROPRIATION/BUDGET ACTIVITY

0400: *Research, Development, Test & Evaluation, Defense-Wide*
BA 5: *System Development & Demonstration (SDD)*

R-1 ITEM NOMENCLATURE

PE 0604709D8Z: *Joint Robotics EMD*

PROJECT

609: *Joint Robotics EMD*

	FY 2012				FY 2013				FY 2014				FY 2015				FY 2016				FY 2017				FY 2018			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
3D Visualization for EOD Robots																												
Advanced Hydraulic Actuator																												
Remote Checkpoint																												
Autonomous Navigation for Small UGVs																												
Human Presence and Detection																												
Cargo UGV																												
Man-Portable ISR																												
Collision Prediction Utilizing Transversability Models for Dynamic Environments																												
Highly Dexterous Manipulator for EOD Operators																												
Long Range Vision for Obstacle Detection																												

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2014 Office of Secretary Of Defense			DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 5: <i>System Development & Demonstration (SDD)</i>	R-1 ITEM NOMENCLATURE PE 0604709D8Z: <i>Joint Robotics EMD</i>	PROJECT 609: <i>Joint Robotics EMD</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
3D Visualization for EOD Robots	1	2012	3	2012
Advanced Hydraulic Actuator	1	2012	2	2012
Remote Checkpoint	1	2012	4	2012
Autonomous Navigation for Small UGVs	1	2012	3	2012
Human Presence and Detection	1	2012	1	2012
Cargo UGV	1	2012	4	2012
Man-Portable ISR	1	2012	3	2012
Collision Prediction Utilizing Transversability Models for Dynamic Environments	1	2012	3	2012
Highly Dexterous Manipulator for EOD Operators	1	2012	1	2013
Long Range Vision for Obstacle Detection	1	2012	1	2013

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense	DATE: April 2013
-------------------------------------------------------------------------------------------------	-------------------------

APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE							
0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 5: <i>System Development & Demonstration (SDD)</i>					PE 0604771D8Z: <i>Joint Tactical Information Distribution System (JTIDS)</i>							
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
Total Program Element	-	16.775	20.688	19.475	-	19.475	20.498	18.168	17.983	18.333	Continuing	Continuing
771: <i>Link-16 Tactical Data Link (TDL) Transformation</i>	-	16.775	20.688	19.475	-	19.475	20.498	18.168	17.983	18.333	Continuing	Continuing
Quantity of RDT&E Articles												

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

This budget line was transferred from DoD Chief Information Officer management oversight to that of the Under Secretary of Defense (Acquisition, Technology and Logistics) as part of the disestablishment of the Assistant Secretary of Defense for Networks and Information Integration (ASD(NII)) and the associated transfer to USD (AT&L) of the Deputy Assistant Secretary of Defense for Communications, Command and Control and Cyber (DASD C3 & Cyber.) Transfer of this DASD to USD(AT&L) conveys the critical technical, systems engineering and program management oversight division of the former ASD(NII) to AT&L where engineering and acquisition expertise is resident. It capitalizes on each organization's performance and reduces technical and operational risk in the Department's acquisition processes by incorporating recognized, solid experience in the application of best practices to the development and fielding of net-centric capabilities which support major systems and weapons deployment. Reduced FY12 and outyear JTIDS funding resulted in the postponement of critical efforts to the FY13 and beyond time-frame.

The Common Joint Tactical Information funding line responds to the Department's requirement for joint and combined network-enabled tactical data link (TDL) capabilities and for communications which meet net-centric standards to ensure interoperability and seamless integration with joint communication systems. It will be used to assess and promote competition across TDLs DoD-wide and to provide acquisition oversight of TDL-related activities such as CDL waveforms, Joint Aerial Layer Network (JALN) narrowband TDL gateways, Multifunction Advanced Data Link (MADL) and datalink roadmaps to guide future investments. This funding line provides resources for acquisition support and management oversight of critical command, control, communications (C3) and non-intelligence space capabilities as the Department migrates to netcentric operations. Funds will be used to provide technical, systems engineering and acquisition management oversight of programs, projects and activities to maximize the Department's return on investment in information technology resources and to effect a comprehensive approach for assessing and procuring critical information systems from initial design, through development to capability delivery in support of improved weapons systems performance and military operations. Resources will be allocated for architecture design and development, portfolio management, enterprise-wide systems engineering and operational impact analyses related to C3 and non-intelligence space systems. They will also be used to provide expertise required for exercising technical direction over design, performance and cost parameters of key systems and their dependencies. The goal of this funding is to eliminate redundancy, reduce time to the field, evaluate projects and concepts for adherence to net-centric guidelines, minimize performance and operational risk of developing and fielding complex major systems which rely on networks and supporting applications, ensure program dependencies are documented and included in acquisition decisions and address interoperability requirements, gaps and best value technical solutions. Typical deliverables associated with the instantiation of net-centric capabilities for these mission areas include network and vulnerability assessments, migration plans, investment strategies, roadmaps and technical guidance documentation.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense	DATE: April 2013
-------------------------------------------------------------------------------------------------	-------------------------

APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 5: <i>System Development & Demonstration (SDD)</i>	R-1 ITEM NOMENCLATURE PE 0604771D8Z: <i>Joint Tactical Information Distribution System (JTIDS)</i>
------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------

B. Program Change Summary (\$ in Millions)	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total
Previous President's Budget	16.775	20.688	17.296	-	17.296
Current President's Budget	16.775	20.688	19.475	-	19.475
Total Adjustments	0.000	0.000	2.179	-	2.179
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments	-	-	3.608	-	3.608
• Other FY14 Adjustments	-	-	-1.429	-	-1.429

Change Summary Explanation

1. FY 2014 increase is consistent with continuing the successful delivery of technical system engineering and acquisition management oversight of the Department's joint and combined network-enabled tactical data link capabilities and communications to ensure interoperability and integration with joint communication systems.

2. Reductions taken to support other program priorities within the USD(AT&L).

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2012	FY 2013	FY 2014
Title: Common Joint Tactical Information Initiatives	16.775	20.688	19.475
FY 2012 Accomplishments:			
– Advanced Ground/Air/Space Assessment: Performed technical assessments for the Resilient Basis for Satellite Communications in Joint Operations study. This provided end-to-end performance metrics concerning satellite communications (SATCOM) systems in scintillated and anti-jam conditions for different military campaigns and scenarios. Likewise performed a requirements trade and platform integration assessment for eXtended Data Rate (XDR) terminals and a technical evaluation of viable SATCOM options in 2016 and 2028 in degraded environments due to cyber/kinetic issues.			
– SATCOM Analysis and Optimization: Provided performance, cost, and risk analysis of ongoing SATCOM programs such as UFO, DSCS, WGS, MUOS, AEHF and EPS. Identified risk mitigation approaches.			
– Integrated Master Schedule Environment (IMSE): Significantly increased IMSE capability to include command and control, as well as major defense acquisition programs for supporting acquisition events such as IPT/OIPT/DAES reviews and to evaluate the impact on capability deliveries based on key acquisition milestones, test events and production decisions.			

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 5: <i>System Development & Demonstration (SDD)</i>		R-1 ITEM NOMENCLATURE PE 0604771D8Z: <i>Joint Tactical Information Distribution System (JTIDS)</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
<ul style="list-style-type: none"> – Ground/Air/Space Network Performance: Assessed aerial layer waveforms (Link 16, TTNT, CDL) for lowering cost and complexity in implementation and to harmonize tactical datalinks and ISR networks. Provided technical risk assessments for waveform implementation (WNW, SRW, SINCGARS, HNW) and ground force IP routing network architectures. – QCDI Model Extension: updated the model's typical data rates to a range, distribution, and/or agent based time variant representation to account for variations among users within a class. – Aerial Networks Roadmaps: Developed roadmaps to guide the evolution of aerial networks so that DoD takes full advantage of 5th generation fighters and the force multiplier effects of networking aircraft. Address air-air high capability transport and air-air tactical and air-ground/air-space domains. – Ground Networking Roadmaps: Developed roadmaps to guide the evolution of ground networking radios and waveforms. Addressed lower echelon and brigade/backbone domains. – SATCOM Common Systems Roadmap: Developed roadmaps to guide the evolution of SATCOM common systems for a more resilient gateway infrastructure with lower operating costs and the ability to reprovision resources within minutes vice days and hours. Address gateway evolution and resource management domains. – C2 Capability Planning, Technical Development and Reference Model: Established tracking mechanisms to assess C2 data implementation cost and progress and funded secure data tagging to support Joint C2 and Adaptive Planning and Execution (APEX). Conducted technical reviews to refine implementation approaches for C2 net-centric data services and strategies. Established APEX-based capabilities-based and technical reference architectures. – Tactical Exchange Data Service JCTD: Executed this JCTD to expand the DoD net-centric data strategy implementation into the tactical and operational levels. – C2 Studies and Analyses: Developed plan of action and milestones to implement JC2 capability AoA recommendations. – C2 Capability Planning and Implementation Analysis: Developed a plan of action and milestones to implement the Joint C2 Modernization Plan. – C2 Research: Sponsored the 17th annual International Command and Control Research and Technology Symposium (ICCRTS) meeting that brought together members of the technical and operational C2 communities from government, academia, and industry to create and disseminate knowledge relevant to the theme of 'Agile C2.' The state of the art of Agile C2 systems engineering and practices were studied including concepts, principles, processes, and metrics to meet the unique challenges associated with the provision of a robust secure networked C2 infrastructure. – Space Control and C2 Space Portfolio: Provided technical expertise, systems engineering to support acquisition and planning decisions, cost and schedule variance discovery and internal reviews; Drafted Enterprise Strategy & Roadmap for Space Control; Developed Space C2 Data strategy. – Space Situational Awareness: Provided technical expertise, systems engineering to support acquisition and planning decisions, cost and schedule variance discovery and internal reviews; Conducted technical analysis of Space Fence Program; Conducted and published Cascading Debris Analysis and strategy report; Completed Space Situational Awareness Cooperation Strategy and Analysis. 				

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 5: <i>System Development & Demonstration (SDD)</i>		R-1 ITEM NOMENCLATURE PE 0604771D8Z: <i>Joint Tactical Information Distribution System (JTIDS)</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
<ul style="list-style-type: none"> – Strategic Space Environment: Provided analysis in support of decisions affecting DoD and IC space portfolios. – OCX Deep Dives: Conducted technical analysis on the replacement for the GPS Ground command and control System, OCX, and recommended technical approaches for developing this capability and its associated should cost estimates. – Environmental Monitoring: Developed a “Day without Weather” Phase II analysis to examine the impacts to military operations given the loss of various Environmental Monitoring/METOC capabilities; completed DoD inputs into Federal Plan for Meteorological Services and Supporting Research; developed Space Weather S&T Strategy; developed DMSP Follow-on Strategy & Integrated Schedule. – Space Access: Provided technical expertise, systems engineering to support acquisition and planning decisions; Developed Space S&T Test Strategy; developed DoD Space Access Strategy/Roadmap; conducted technical assessment of alternative propulsion capabilities. – PNT Mission Assurance (MA): Provided analysis, assessments and policy formulation towards the development, acquisition, procurement, deployment/fielding, and operation of all DoD GPS PNT and NAVWAR systems. – Rapid Acquisition of Capabilities for Cyberspace Operations: In response to Section 933 of the FY 2011 NDAA, developed processes for rapid acquisition of capabilities for cyberspace operations. Described these processes and the proposed Cyber Investment Management Board (CIMB) in the Section 933Report to Congress which was submitted to Congress in March 2012. <p>FY 2013 Plans:</p> <ul style="list-style-type: none"> – Joint Tactical Network Center: Provide comprehensive technical assessments of waveform enhancement strategies for SRW, WNW, MUOS and TTNT. Analyze requirements of new waveforms, achievable throughput, scalability, anti-jam, LIP/LPD and spectral efficiency performance characteristics. Evaluate software communications architectures for relevance and support for waveform portability. – Beyond Line of Sight (BLOS) Analysis and Systems Engineering: Provide architectural guidance and technical analysis for BLOS communications in contested and denied environments consisting of a combination of SATCOM and aerial communications. Assess communications performance in anti-jam, anti-access area denial environments. Improve ability to predict performance of network architectures and technologies and assess performance of directional apertures. – Protected SATCOM AoA Technical Expertise: Provide analytic framework for assessing protected SATCOM options in support of AoAs and for use in Satellite Emulation Tools for modeling AEHF performance. – Aerial Networks Roadmaps and Systems Engineering: Develop and maintain roadmaps to guide the evolution of aerial networks so that DoD takes full advantage of 5th generation fighters and the force multiplier effects of networking aircraft. Maintain roadmaps for air-air high capability transport and air-air tactical domains. Develop roadmaps to address air-ground/air-space domain. Evaluate Army, Navy, Air Force system architectures for alignment with aerial networks roadmaps. Develop detailed risk reduction and technology maturation investment plans to accelerate fielding of advanced TDLs to 5th generation fighters. – JTRS Waveform Assessments: Assess waveforms (WNW, SRW, SINCGARS, HNW) for implementation and provide recommendations for ground force IP routing network architectures and interoperability with coalition partners. Provide technical 				

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 5: <i>System Development & Demonstration (SDD)</i>		R-1 ITEM NOMENCLATURE PE 0604771D8Z: <i>Joint Tactical Information Distribution System (JTIDS)</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
<p>risk analyses and test review recommendations for lowering cost and complexity and for ensuring tactical data link and ISR networks harmonization.</p> <ul style="list-style-type: none"> – MIDS-JTRS TTNT: Provide program assessments to evaluate cost, schedule and technical progress for developing the MIDS-J radio. Assess efforts to insert the TTNT version 7 waveform into this radio. Assess TTNT software development, target performance characteristics and test plans to verify performance. Evaluate the acquisition strategy and core material to inform MDA decision making. – Ground Networking Roadmaps: Develop and maintain roadmaps to guide the evolution of ground networking radios and waveforms. Maintain roadmaps for lower echelon and brigade/backbone domains. Develop roadmap to address ground to space domain. Analyze Army and Marine system architectures for brigade and MEB networks to align with roadmaps. – MUOS AoA Support: Conduct MUOS follow-on study to determine potential courses of action for replacing the MUOS system in 2025. Develop study plan, architectural alternatives, detailed blue force demand profiles, threat laydowns and cost models as well as desired requirements for future narrowband access waveforms and trade-off impacts on cost/performance of future terminals. – Maritime Networks: Develop roadmaps to guide the evolution of maritime radios, waveforms and networks. Address LOS ship-ship, ship-air and ship-space domains. Identify essential components, enabling technologies, program technology insertion opportunities and key investment decisions to achieve affordability and performance objectives. – Airborne Maritime Fixed (AMF) JTRS: Assess the AMF program to include the risk of vendor selected radios. Conduct independent technical reviews and recommend program performance improvement options to meet cost, schedule and performance objectives. Provide a technical assessment of the network effects of a WNW airborne node. – MUOS System End-to-End Integration: Develop comprehensive systems engineering, test and terminal certification plans. Assess military standard/specifications and interface control documents for configuration management. Engineer the system to minimize efforts required to certify new MUOS end user terminals. – SATCOM Common Systems Roadmap: Maintain roadmaps to guide the evolution of SATCOM common systems for a more resilient gateway infrastructure with lower operating costs and the ability to reprovision resources within minutes vice days and hours. Address gateway evolution and resource management domains. Develop a plan for integrating teleport, STEP and service gateway RF heads. - ISR SATCOM Requirements: Begin transition of ISR communications from leased commercial SATCOM to MILSATCOM assets. Assess and quantify ISR satellite communications demand and throughput requirements. Develop a business case and transition plan, in coordination with USD(I), for investments in Military Ka-band capable terminals to enable transition from OCO funded leased SATCOM to the WGS military satellite constellation. – Quantitative Capability Delivery Increments (QCDI)/FLOWNET: Develop and implement updates to QCDI and FlowNET models to include NxN demand and conduct analyses of future end-to-end networks residing in surface, aerial and space layers. – Network Integration Exercise (NIE) Technical Assessments: Conduct analyses of the technical maturity, performance and interoperability of products and systems undergoing evaluation in the Army's NIE. Evaluate the validity of formal test data from 				

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 5: <i>System Development & Demonstration (SDD)</i>		R-1 ITEM NOMENCLATURE PE 0604771D8Z: <i>Joint Tactical Information Distribution System (JTIDS)</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
<p>DoD sources and assess whether the data produce an accurate portrayal of the product and system's capability. Recommend prioritized courses of action with emphasis on best cost/performance delivery to the warfighter.</p> <p>– Cyber Investment Management: Synchronize and coordinate cyberspace acquisition activities, conduct quantitative assessments, and ensure cyberspace investments align with Department priorities, required capabilities and evolving cyber threats. Provide support of the Cyber Investment Management Board and develop implementation guidance and associated direction.</p> <p>– Joint C2 Portfolio Management: Support development, integration and test activities across the services, agencies and COCOMs and deliver the FY15-19 version of the Joint C2 Sustainment and Modernization Plan.</p> <p>– Adaptive Planning and Execution (APEX): Provide management oversight of APEX acquisition activities and authoritative data sources as the APEX technical integrator. Update the APEX technical architecture to include logistics and intelligence planning. Update APEX data architecture and standards and develop technical and systems standards for APEX framework for application across DoD.</p> <p>– C2 Data: Provide technical expertise for ensuring C2 data are visible, accessible, understandable, trustable and interoperable. Update the C2 data model and standards (C2 Core) for component implementation. Update the C2 Authoritative Data Source roadmap and develop a C2 data architecture.</p> <p>– Joint C2 Architecture: Provide the technical expertise necessary to update the Joint C2 Objective Architecture and FY15 Joint C2 Transition Architecture.</p> <p>– C2 Technical Analysis: Provide technical analysis for the development of C2 Capability Delivery Increments to guide the evolution of joint and service C2 programs and functional requirements. Synchronize C2 development efforts with Defense Intelligence Information Enterprise efforts, develop initial C2 CDI roadmap and update the C2 CDI roadmap with linkages to ISR programs for intelligence-operations information sharing.</p> <p>– C2 Research: C2 Theory is significantly ahead of the practice and more effort needs to be made to "operationalize" the theory within DoD. This will be done by embracing the CJCS Mission Command leadership philosophy, with C2 Agility as the enabling framework for understanding and managing C2, as well as for implementing robust Mission Command. As a result, closer ties will be formed among the C2 research, analysis and operational communities and to enhance the state of C2 practice significantly.</p> <p>– Friendly Force Tracking/ Combat Identification: Assess and provide recommendations for achieving Mode 5 IFF IOC in 2014 and FOC in 2020. Finalize US/ NATO Mode 5 IFF releasability policy. Provide technical support to NATO C3B Capability Panel on Combat Identification. Ensure that NATO Standardized Agreement (STANAG) 4193 incorporates changes necessary for compatibility / interoperability with DoD Mode 5 technical standards.</p> <p>– Space Situational Awareness: Conduct Geo SSA architectural analysis in support of space surveillance telescope decisions and technical assessment of Alternative Sources of GEO SSA. Conduct technical analysis on emerging and existing technologies and capabilities that could be used to implement the GEO SSA strategy. Develop technology roadmaps and investment strategies. SST Technical Assessment Analysis & Assessment of DoD Use of Foreign/Non-traditional SSA Sensors; implement DoD SSA data strategy.</p>				

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 5: <i>System Development & Demonstration (SDD)</i>		R-1 ITEM NOMENCLATURE PE 0604771D8Z: <i>Joint Tactical Information Distribution System (JTIDS)</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
<ul style="list-style-type: none"> – Space Control/Space C2: Conduct Space Protection Architectural Analysis; Implement Enterprise Strategy & Roadmap for Space Control Mission area through 2025. – Space Access: Conduct net centric review/technical assessment of Spacelift Range; Develop Space Ranges Roadmap & Enterprise Strategy for capabilities through 2025 Conduct technical assessment and net centric review of DoD Satellite Operations (SATOPS) enterprise. – Environmental Monitoring: Develop DoD inputs for annual Federal Plan for Meteorological Services and Supporting Research; Lead METOC Data Denial Implementation team; Conduct analysis in support of Defense Weather AoA; conduct assessment of USG weather satellite common ground system compliance with DoD Data Denial requirements; DoD Lead on Antarctic treaty activities at McMurdo Station, Antarctica; develop METOC data strategy; develop DoD National Space Weather Strategy. – Non-Intelligence Space Programs Technical Assessments: Conduct non-intelligence space program reviews on net-centric attributes to include data strategies, systems engineering, risks and mitigations. Support milestone decisions for weather satellite follow-on, JMS, Launch Vehicle New Entrants, AFSCN, SST and SSBS follow-on activities. – PNT Technical Assessments: Conduct reviews of all phases of the GPS enterprise programs to increase the likelihood of a successful MGUE MS B in FY14 so that DoD is compliant with congressional mandates. Assess high risk areas and develop mitigation strategies for cost effective delivery of capabilities. Provide a roadmap for better synchronization of PNT programs and capabilities. <p>FY 2014 Plans:</p> <ul style="list-style-type: none"> – C4ISR Acquisition: Provide technical assessments and programmatic recommendations across C4ISR functional areas to address interoperability gaps and work early in the systems engineering and development processes to minimize gaps as systems are delivered and updated. – ACDI/FLOWNET: Conduct an analysis in an approved A2AD scenario to understand investments in communications capabilities and ensure synchronization of the space, aerial, surface and terminal segments in order to provide communications in degraded communications environments. Conduct detailed analysis on Army TBCT tactical networks as well as extensions into airborne network structures to validate quantitatively the performance and projected benefits of different waveforms and networks. – Onboard Processing of ISR Sensor Data: Assess how communications link demand can be reduced through onboard processing of ISR sensor data to include storage, compression and automated filtering. Quantify benefits that could be achieved relative to reduced spectrum demand or commercial SATCOM leases, terminal upgrades and MILSATCOM constellation upgrade costs. – MUOS Follow On System AoA: Based on the results of FY13 activities, conduct an AoA to initiate development of investment and acquisition strategies and consider trade space segment versus terminal costs and the impact on end-to-end performance. Determine requirements for future narrowband access waveforms and trade-off impacts on cost/performance of future terminals. Analyze MUOS follow on alternatives in A2AD scenarios against sophisticated jamming adversaries. 				

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 5: <i>System Development & Demonstration (SDD)</i>		R-1 ITEM NOMENCLATURE PE 0604771D8Z: <i>Joint Tactical Information Distribution System (JTIDS)</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
<ul style="list-style-type: none"> – Tactical Network Cyber Vulnerability Assessments: Perform cyber vulnerability assessments on control systems for WIN-T Inc 3, AEHF, WGS, MUOS, Teleport and key technologies with wide use across tactical networks. Review system design documents, control plans, remote management control ports and methods. Recommend corrective actions to specific communications and networks programs to address cyber vulnerabilities and to inform milestone decisions. – Dismounted Tactical Edge Mobile Applications: Characterize current performance (bandwidth, latency, jitter, persistence) of disadvantages intermittent low bandwidth tactical links based on measured SRW and narrowband SATCOM performance. – Ground/Air/Space integrated Networks Performance Assessment: Facilitate the development and analysis of waveform capabilities. Evaluate new waveform technologies, wireless communications waveform development and management. Perform technical assessments of onboard processing on UAS systems to reduce demand for communications link bandwidth and identify accelerated methods to achieve certified test data for non-developmental products. – C2 Portfolio: Update the C2 Strategic Plan (FY14-19) based on results of the next QDR and Chairman's Joint Force 2020. Update the DoD C2 Implementation Plan (FY14-19) to achieve goals and objectives of the DoD C2 Strategic Plan. – C2 Research: Provide conceptual foundation, metrics and empirical evidence to operationalize Agile C2. Provide technical support to US participation in NATO and other international C2 research efforts. – Acquisition Management: Provide technical assistance in developing IT related acquisition policy, including updates to DoD Series 5000 necessitated by changes in statute, regulation and management direction. – Cyber Investment Management: Synchronize and coordinate cyberspace acquisition activities, conduct quantitative assessments, and ensure cyberspace investments align with Department priorities, required capabilities and evolving cyber threats. Provide support of the Cyber Investment Management Board and develop implementation guidance and associated direction. – Space Access: EELV New Entrant Strategy/Technical Assessment & Cost Benefit Analysis/Potential AoA for EELV follow-on; implement National Security Space Access & Space Range Roadmap; conduct SATOPS Modernization AoA; provide technical Oversight/AFSCN Modernization Implementation; conduct AFSCN Event Driven Net Centric Review/Technical Assessment. – Environmental Monitoring: Develop DoD inputs for annual Federal Plan for Meteorological Services and Supporting Research; Lead METOC Data Denial Implementation team; Develop METOC/Weather Enterprise Strategy and Roadmap implementing results of Defense Weather Analysis of Alternatives (AoA); conduct assessment of USG weather satellite common ground system compliance with DoD Data Denial requirements; DoD Lead on Antarctic treaty activities at McMurdo Station, Antarctica; implement METOC data strategy; implement DoD National Space Weather Strategy – Space Control/Space C2/SSA: Complete GEO SSA Architectural/Cost-Benefit Analysis; conduct Analysis & Assessment of DoD Use of Foreign/Non-traditional SSA Sensors; Develop & publish Policy for use of civil and international sources of SSA data in military operations; conduct Joint Space Operations Center (JSpOC) Mission System (JMS) NCR/Technical Assessment; conduct CCS NCR/Technical Assessment; implement Space Protection Architectural analysis/Cost Benefit Analysis recommendations; Update Enterprise Strategy & Roadmap for Space Control Mission Area. 				

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 5: <i>System Development & Demonstration (SDD)</i>		R-1 ITEM NOMENCLATURE PE 0604771D8Z: <i>Joint Tactical Information Distribution System (JTIDS)</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
<ul style="list-style-type: none"> – Non-Intelligence Space Programs Technical Assessments: Conduct non-intelligence space program reviews on net-centric attributes to include data strategies, systems engineering, risks and mitigations. Support milestone decisions for programs including weather satellite follow-on, JMS, Launch Vehicle New Entrants, AFSCN, SST and SSBS follow-on activities. – PNT Programs Technical Assessments: Conduct deep dive technical analyses to understand all phases of the GPS enterprise programs. Review PNT programs for data strategies, systems engineering, risks and mitigations in support of milestone decisions. – PNT Portfolio Management: Implement PNT Assurance Investment Strategy and Roadmap. Implement NAVWAR Investment Strategy and Roadmap as well as material in support of major program milestones and internal OSD reviews. – PNT NATO and Allied Interoperability: Ensure PNT capabilities are interoperable and supportable with other relevant commercial, civil and military Allied systems. Chair NATO Navigation Warfare (NAVWAR) working group, oversee foreign military sales and other technical interchange with allies regarding PNT, GPS and NAVWAR technologies. Provide technical expertise for bilateral and multilateral activities in NATO NC3B. – PNT Strategy: Develop enterprise level acquisition strategies & policies in relation to PNT. Oversee implementation and compliance of the GPS Security Policy and develop international agreements to ensure US forces maintain global access. 				
Accomplishments/Planned Programs Subtotals		16.775	20.688	19.475
D. Other Program Funding Summary (\$ in Millions) N/A				
Remarks				
E. Acquisition Strategy In executing JTDL tasking, existing cost-plus contracts will be utilized. -Driven reviews in support of the JCIDS, acquisition and PPBE processes.				
F. Performance Metrics Enterprise-Wide Alignment: Accelerate DoD information age transformation to increase the effectiveness and efficiency of the warfighting, intelligence and business missions. Measures: - Timely development and issuance of policy and guidance - Instantiation of enterprise-wide system engineering for the Global Information Grid across DoD Portfolio Management: Provide for the timely and effective delivery of key Net-Centric capabilities through portfolio management Measures:				

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 5: System Development & Demonstration (SDD)		R-1 ITEM NOMENCLATURE PE 0604771D8Z: Joint Tactical Information Distribution System (JTIDS)
<ul style="list-style-type: none">- Key milestones completed for major net-centric acquisitions- Number of major systems through net-centric event		

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2014 Office of Secretary Of Defense												DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 5: <i>System Development & Demonstration (SDD)</i>						R-1 ITEM NOMENCLATURE PE 0604771D8Z: <i>Joint Tactical Information Distribution System (JTIDS)</i>				PROJECT 771: <i>Link-16 Tactical Data Link (TDL) Transformation</i>				

Support (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total					
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
TBD	TBD	TBD:TBD	-	16.775		20.688		19.475		-		19.475		19.475	Continuing	Continuing	
Subtotal			0.000	16.775		20.688		19.475		0.000		19.475					

	All Prior Years	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	16.775	20.688	19.475	0.000	19.475			

Remarks

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense	DATE: April 2013
-------------------------------------------------------------------------------------------------	-------------------------

APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE							
0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 5: <i>System Development & Demonstration (SDD)</i>					PE 0605022D8Z: <i>Defense Exportability Program</i>							
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
Total Program Element	-	1.915	1.859	3.763	-	3.763	3.786	3.821	3.849	3.855	Continuing	Continuing
P013: <i>Defense Exportability Features (DEF) Program</i>	-	1.915	1.859	3.763	-	3.763	3.786	3.821	3.849	3.855	Continuing	Continuing

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

The Defense Exportability Features (DEF) Program is a result of a USD(AT&L) sponsored legislative proposal for authorities to better prepare warfighting systems for non-US use. The program funds will be replenished through non-recurring cost recoupment in future Foreign Military Sales (FMS) cases, Cooperative Program MOUs, or direct commercial sales contracts for sale/transfer of DoD systems benefiting from exportability investments. This program funds activities to support identification of major defense acquisition programs for possible export, and the planning for design and incorporation of exportability features during research and development of these programs. Features include, but are not limited to, technology and engineering design activity such as capability differentials, anti-tamper, system assurance, and software assurance. Activities include the development of program protection strategies for the program; the design and incorporation of exportability features into the system; implementation of exportability requirements onto contracts; and research, development, test, and evaluation activities.

Defense exportability features plays a critically important role in United States Government/DoD efforts to build partnership capacity. Funds support building joint and coalition environments by enabling the export of DoD systems to a wide range of partner nations, resulting in improved security and interoperability. In addition to the operational benefits, by providing these resources up front, then collecting 'fair share' non-recurring cost recoupment, the United States and partner nations will save significant resources by more efficiently designing and producing exportable U.S. systems.

Funding is increased in FY14 to expand the number of systems included in the Defense Exportability Pilot Program that are used to define and implement DEF 'best practice' program management, system engineering, and program protection measures in the DoD acquisition process. Failure to consider export variant designs early in the acquisition process results in increased costs, delayed delivery, and higher risk of sensitive technology compromise due to ad-hoc sales late in production. Early development of export variants including systems design approaches to integrate adequate domestic and exportable anti-tamper (AT) protection and differential capability (DC) requirements to lower production costs, increase quality and timely deliveries to allies and friends, and enhance US industry share of the global marketplace.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense	DATE: April 2013
-------------------------------------------------------------------------------------------------	-------------------------

APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 5: <i>System Development & Demonstration (SDD)</i>	R-1 ITEM NOMENCLATURE PE 0605022D8Z: <i>Defense Exportability Program</i>
------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------

B. Program Change Summary (\$ in Millions)	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total
Previous President's Budget	1.916	1.859	1.863	-	1.863
Current President's Budget	1.915	1.859	3.763	-	3.763
Total Adjustments	-0.001	0.000	1.900	-	1.900
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments	-0.001	-	1.900	-	1.900

Change Summary Explanation

Internal program adjustment to incorporate exportability features during research and development of programs.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE				PROJECT			
0400: Research, Development, Test & Evaluation, Defense-Wide BA 5: System Development & Demonstration (SDD)					PE 0605022D8Z: Defense Exportability Program				P013: Defense Exportability Features (DEF) Program			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
P013: Defense Exportability Features (DEF) Program	-	1.915	1.859	3.763	-	3.763	3.786	3.821	3.849	3.855	Continuing	Continuing
Quantity of RDT&E Articles												

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

The Defense Exportability Features (DEF) Program is a result of a USD(AT&L) sponsored legislative proposal for authorities to better prepare warfighting systems for non-US use. The program funds will be replenished through non-recurring cost recoupment in future Foreign Military Sales (FMS) cases, Cooperative Program MOUs, or direct commercial sales contracts for sale/transfer of DoD systems benefiting from exportability investments. This program funds activities to support identification of major defense acquisition programs for possible export, and the planning for design and incorporation of exportability features during research and development of these programs. Features include, but are not limited to, technology and engineering design activity such as capability differentials, anti-tamper, system assurance, and software assurance. Activities include the development of program protection strategies for the program; the design and incorporation of exportability features into the system; implementation of exportability requirements onto contracts; and research, development, test, and evaluation activities.

Defense exportability features plays a critically important role in United States Government/DoD efforts to build partnership capacity. Funds support building joint and coalition environments by enabling the export of DoD systems to a wide range of partner nations, resulting in improved security and interoperability. In addition to the operational benefits, by providing these resources up front, then collecting 'fair share' non-recurring cost recoupment, the United States and partner nations will save significant resources by more efficiently designing and producing exportable U.S. systems. Incorporation of defense exportability features in initial designs can help control costs throughout the product life cycle.

Funding is increased in FY14 to expand the number of systems included in the Defense Exportability Pilot Program that are used to define and implement DEF 'best practice' program management, system engineering, and program protection measures in the DoD acquisition process. Failure to consider export variant designs early in the acquisition process results in increased costs, delayed delivery, and higher risk of sensitive technology compromise due to ad-hoc sales late in production. Early development of export variants including systems design approaches to integrate adequate domestic and exportable anti-tamper (AT) protection and differential capability (DC) requirements to lower production costs, increase quality and timely deliveries to allies and friends, and enhance US industry share of the global marketplace.

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2012	FY 2013	FY 2014
Title: Defense Exportability Features (DEF) Program	1.915	1.859	3.763
FY 2012 Accomplishments: Designated the following seven systems as DEF pilot programs:			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 5: <i>System Development & Demonstration (SDD)</i>	R-1 ITEM NOMENCLATURE PE 0605022D8Z: <i>Defense Exportability Program</i>	PROJECT P013: <i>Defense Exportability Features (DEF) Program</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
<ul style="list-style-type: none"> - Indirect Fires Protection Capability (US Army) - Ground Combat Vehicle (US Army) - Common Infrared Countermeasures (US Army) - Three-Dimensional Expeditionary Long-Range Radar (US Air Force) - Army Integrated Air and Missile Defense (US Army) - MQ-4C Triton formerly Broad Area Maritime Surveillance (US Navy) - Common Joint Proximity Height of Burst Fusing (US Army) <p>Initiated DEF feasibility studies for the following four systems:</p> <ul style="list-style-type: none"> - Three-Dimensional Expeditionary Long-Range Radar (US Air Force) - Army Integrated Air and Missile Defense (US Army) - MQ-4C Triton formerly Broad Area Maritime Surveillance (US Navy) - Common Joint Proximity Height of Burst Fusing (US Army) <p>Drafted and submitted the annual report to Congress on the DEF program.</p> <p>FY 2013 Plans:</p> <p>Designate the following eight systems as DEF pilot programs:</p> <ul style="list-style-type: none"> - Armed Aerial Scout Helicopter (US Army) - Small Diameter Bomb II (US Air Force) - MQ-9 Reaper Unmanned Aircraft System (US Air Force) - Joint Air-to-Surface Standoff Missile (US Air Force) - Next Generation Jammer (US Navy) - Air and Missile Defense Radar (US Navy) - P-8A Poseidon Multi-Mission Maritime Aircraft (US Navy) - E-2D Advanced Hawkeye (US Navy) <p>Initiate and/or continue DEF feasibility studies for the following seven systems:</p> <ul style="list-style-type: none"> - MQ-4C Triton formerly Broad Area Maritime Surveillance (US Navy) - Army Integrated Air and Missile Defense (US Army) - Three-Dimensional Expeditionary Long-Range Radar (US Air Force) - Common Joint Proximity Height of Burst Fusing (US Army) - Common Infrared Countermeasures (US Army) - Small Diameter Bomb II (US Air Force) 			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 5: <i>System Development & Demonstration (SDD)</i>	R-1 ITEM NOMENCLATURE PE 0605022D8Z: <i>Defense Exportability Program</i>	PROJECT P013: <i>Defense Exportability Features (DEF) Program</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
<ul style="list-style-type: none"> - Next Generation Jammer (US Navy) - Review major defense acquisition programs for exportability as part of the major milestone review process, including the Next Generation Jammer, Three Dimensional Expeditionary Long Range Radar, and Common Infrared Countermeasures and ensure exportability requirements are included in development contracts. - Draft a legislative proposal that authorizes DOD to recoup the DEF investment in program protection through future foreign military sales. - Manage and track the completion of the contractor feasibility studies for exportability. - Draft and submit the annual report to Congress on the program. <p>FY 2014 Plans:</p> <ul style="list-style-type: none"> - Funding is increased in FY14 to expand the number of systems included in the Defense Exportability Pilot Program that are used to define and implement DEF 'best practice' program management, system engineering, and program protection measures in the DoD acquisition process. <p>Initiate contracts for DEF feasibility studies on the following seven systems:</p> <ul style="list-style-type: none"> - Air and Missile Defense Radar (US Navy) - Armed Aerial Scout Helicopter (US Army) - Ground Combat Vehicle (US Army) - Indirect Fires Protection Capability (US Army) - P-8A Poseidon Multi-Mission Maritime Aircraft (US Navy) - E-2D Advanced Hawkeye(US Navy) - Joint Air-to-Surface Standoff Missile (US Air Force) <ul style="list-style-type: none"> -- Review of major defense acquisition programs for exportability as part of the major milestone review process. - Identify Service leads and subject matter experts, to provide support to programs, prior to Milestone B, to develop plans for exportability features. - Implement DOD procedures for the recoupment of the DEF investment in program protection through future foreign military sales. - Manage and track the completion of the contractor feasibility studies for exportability. - Draft and submit the annual report to Congress on the program. 			
Accomplishments/Planned Programs Subtotals		1.915	1.859
			3.763

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 5: <i>System Development & Demonstration (SDD)</i>	R-1 ITEM NOMENCLATURE PE 0605022D8Z: <i>Defense Exportability Program</i>	PROJECT P013: <i>Defense Exportability Features (DEF) Program</i>
C. Other Program Funding Summary (\$ in Millions) N/A		
Remarks		
D. Acquisition Strategy N/A		
E. Performance Metrics TBD		

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 5: <i>System Development & Demonstration (SDD)</i>	R-1 ITEM NOMENCLATURE PE 0605022D8Z: <i>Defense Exportability Program</i>	PROJECT P013: <i>Defense Exportability Features (DEF) Program</i>
------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------	-----------------------------------------------------------------------------

Product Development (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Broad Area Maritime Surveillance (BAMS) Defense Exportability Features (DEF) Program	SS/CS	Northrop Grumman:Bethpage, NY	-	0.400		0.400		0.200		-		0.200	0.000	1.000	
Army Integrated Air and Missile Defense (AIAMD) DEF	SS/CS	Northrop Grumman:Huntsville, AL	-	0.500		0.200		0.100		-		0.100	0.000	0.800	
Three Dimensional Expeditionary Long-Range Radar (3DELRR) DEF	C/CS	Northrop Grumman :Lithicum, MD	-	0.150		-		-		-		-	0.000	0.150	
Three Dimensional Expeditionary Long-Range Radar (3DELRR) DEF	C/CS	Lockheed Martin:Syracuse, NY	-	0.150		-		-		-		-	0.000	0.150	
Three Dimensional Expeditionary Long-Range Radar (3DELRR) DEF	C/CS	Raytheon:Sudbury, MA	-	0.150		-		-		-		-	0.000	0.150	
Height of Burst Fusing (HOBf) DEF	MIPR	Picatinny Arsenal:NJ	-	0.506		0.250		0.400		-		0.400	0.000	1.156	
Pending DEF Pilot Programs	Various	Various:Various	-	0.001		0.009		0.058		-		0.058	Continuing	Continuing	
Common Infrared Countermeasures (CIRCM) DEF	C/CS	TBD - Competitive Contract Award:TBD	-	-		0.400		0.200		-		0.200	Continuing	Continuing	
Small Diameter Bomb II (SDB II) DEF	SS/CS	Raytheon:Phoenix, AZ	-	-		0.300		0.200		-		0.200	Continuing	Continuing	
Next Generation Jammer (NGJ) DEF	C/CS	TBD - Competitive Contract Award:TBD	-	-		0.200		0.400		-		0.400	Continuing	Continuing	
Air and Missile Defense Radar (AMDR) DEF	C/CS	TBD - Competitive Contract Award:TBD	-	-		-		0.400		-		0.400	Continuing	Continuing	
Armed Aerial Scout (AAS) Helicopter DEF	C/CS	TBD - Competitive Contract Award:TBD	-	-		-		0.200		-		0.200	Continuing	Continuing	
Ground Combat Vehicle (GCV) DEF	C/CS	TBD - Competitive Contract Award:TBD	-	-		-		0.200		-		0.200	Continuing	Continuing	

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2014 Office of Secretary Of Defense												DATE: April 2013			
APPROPRIATION/BUDGET ACTIVITY						R-1 ITEM NOMENCLATURE				PROJECT					
0400: Research, Development, Test & Evaluation, Defense-Wide BA 5: System Development & Demonstration (SDD)						PE 0605022D8Z: Defense Exportability Program				P013: Defense Exportability Features (DEF) Program					
Product Development (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Three Dimensional Expeditionary Long-Range Radar (3DELRR) DEF	C/CS	TBD - Competitive EMD Contract Award:TBD	-	-		-		0.400		-		0.400	Continuing	Continuing	
Indirect Fires Protection Capability Increment 2 (IFPC Inc 2) DEF	C/CS	TBD - Competitive EMD Contract Award:TBD	-	-		-		0.200		-		0.200	Continuing	Continuing	
P-8A Poseidon DEF	MIPR	Naval Air Systems Command:Patuxent River, MD	-	-		-		0.200		-		0.200	Continuing	Continuing	
E-2D Advanced Hawkeye DEF	MIPR	Naval Air Systems Command:Patuxent River, MD	-	-		-		0.200		-		0.200	Continuing	Continuing	
Joint Air to Surface Standoff Missile (JASSM) DEF	MIPR	Air Force Material Command:Wright-Patterson AFB, OH	-	-		-		0.200		-		0.200	Continuing	Continuing	
Subtotal			0.000	1.857		1.759		3.558		0.000		3.558			
Support (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
DEF Contractor Support	C/FFP	LMI:McLean, VA	-	0.008		0.050		0.155		-		0.155	Continuing	Continuing	
Subtotal			0.000	0.008		0.050		0.155		0.000		0.155			
Management Services (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Height of Burst Fusing DEF	MIPR	Picatinny Arsenal:NJ	-	0.050		0.050		0.050		-		0.050	0.000	0.150	
Subtotal			0.000	0.050		0.050		0.050		0.000		0.050	0.000	0.150	

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2014 Office of Secretary Of Defense										DATE: April 2013			
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 5: System Development & Demonstration (SDD)					R-1 ITEM NOMENCLATURE PE 0605022D8Z: Defense Exportability Program					PROJECT P013: Defense Exportability Features (DEF) Program			
	All Prior Years	FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	1.915		1.859		3.763		0.000		3.763			

Remarks

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY

0400: *Research, Development, Test & Evaluation, Defense-Wide*
BA 5: *System Development & Demonstration (SDD)*

R-1 ITEM NOMENCLATURE

PE 0605027D8Z: *OUSD(C) IT Development Initiative*

COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013[#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
Total Program Element	9.656	4.845	7.010	6.788	-	6.788	6.500	6.000	3.000	0.000	Continuing	Continuing
927: <i>Next Generation Resource Management System</i>	9.656	4.845	7.010	6.788	-	6.788	6.500	6.000	3.000	0.000	Continuing	Continuing

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

As the Department of Defense strategic, operational and tactical plans and objectives transforms the war fighter with new capabilities and doctrine, the budgeting and accountability of funds used to pursue the Department objectives will become more complicated and detailed for senior leader to make decisions with supporting rationale for the taxpayer. Incorporating information technology toward current and emerging business processes manifesting into a state-of-the art system of systems will result in increasing efficiencies, timely diagnostics, and reducing lifecycle costs to maintain, sustain and repair.

This initiative exploits emerging technology, processes, trends, capabilities, and techniques to incorporate state-of-the-art information technology enabling the ability, agility, and level of fidelity to collect, process, administrate and report resource management data and to automate business processes within a more robust analytical environment within the Office of the Under Secretary of Defense (Comptroller) OUSD(C).

B. Program Change Summary (\$ in Millions)

	<u>FY 2012</u>	<u>FY 2013</u>	<u>FY 2014 Base</u>	<u>FY 2014 OCO</u>	<u>FY 2014 Total</u>
Previous President's Budget	4.846	7.010	5.023	-	5.023
Current President's Budget	4.845	7.010	6.788	-	6.788
Total Adjustments	-0.001	0.000	1.765	-	1.765
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Program Adjustment	-	-	-0.032	-	-0.032
• WHS Reserve	-0.001	-	-	-	-
• Other Adjustments	-	-	1.797	-	1.797

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 5: System Development & Demonstration (SDD)		R-1 ITEM NOMENCLATURE PE 0605027D8Z: OUSD(C) IT Development Initiative
Change Summary Explanation Baseline Adjustment of-\$0.0320 in FY 2014 for higher Priorities. WHS Reserve of -\$0.001 in FY 2012. Other adjustmenet of +\$1.797 in FY 2014.		

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE				PROJECT			
0400: Research, Development, Test & Evaluation, Defense-Wide BA 5: System Development & Demonstration (SDD)					PE 0605027D8Z: OUSD(C) IT Development Initiative				927: Next Generation Resource Management System			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
927: Next Generation Resource Management System	9.656	4.845	7.010	6.788	-	6.788	6.500	6.000	3.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles												

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

The Department's budget focuses on institutionalizing and financing our capabilities to fight the wars we are in today and the scenarios we are most likely to face in the years ahead, while at the same time mitigating risk and providing for contingency operations. It also includes a fundamental overhaul of the DoD's approach to procurement, acquisition, and contracting. As such, the complex details of budgeting and tracking of funds become increasingly critical to senior leader decision making and to provide accountability to the taxpayer. Incorporating information technology toward current and emerging business processes manifesting into a state-of-the art system of systems will result in increasing efficiencies, timely diagnostics, and reducing lifecycle costs to maintain, sustain and repair.

Today, the Office of the Under Secretary of Defense Comptroller OUSD(C) and the Cost Analysis and Program Evaluation (CAPE) uses various distinct automated systems (Comptroller Information System (CIS), PBD Wizard, Program Resource Collection Process (PRCP), Supplemental Resource Collection Process (SRCP), Budget Exhibits Generator and Standard Data Collection System (SDCS) to formulate, justify, and execute DoD budgets. These six or more systems interact with at least several computer-based systems controlled by external organizations and agencies. These systems manage very similar financial information, yet each uses its own scheme for representing information. Much of the information managed by these systems is redundant. Cross-system data representations and redundancies make it difficult to exchange and to reconcile information. The capabilities provided by Comptroller systems, in some cases, fail to deliver services needed by its users, or fail to operate in ways that complement current and emerging business practices. They fail to give executives information in a comprehensible form, making it difficult to draw conclusions. Data disparities and functional redundancy make these systems more costly to keep than they need to be.

There is a critical need for the development of a state-of-the-art information technology system to modernize and replace multiple, antiquated legacy systems and processes used to formulate, justify, present and defend the entire Department of Defense Budget in the Office of the Under Secretary of Defense (Comptroller) (OUSD(C)) to meet Title 10 and Title 31 mission and reporting requirements. The Comptroller's plan for mitigating the deficiencies and capability gaps associated with current systems is development of the Next Generation Resource Management System.

This initiative exploits emerging technology, processes, trends, capabilities, and techniques to incorporate state-of-the-art information technology enabling the ability, agility, and level of fidelity to collect, process, administer and report resource management data and to automate business processes within a more robust analytical environment within the Office of the Under Secretary of Defense (Comptroller) OUSD(C). Funded efforts will improve the timeliness of resource management reviews and decisions for senior leaders and Congress.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 5: <i>System Development & Demonstration (SDD)</i>	R-1 ITEM NOMENCLATURE PE 0605027D8Z: <i>OUSD(C) IT Development Initiative</i>	PROJECT 927: <i>Next Generation Resource Management System</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
Title: Next Generation Resource Management System		4.845	7.010
Description: Plan, develop, test and evaluate the system components (i.e. unified database, expert system, cross domain security, enterprise service bus, applications, services) and supportability requirements in modernizing the budget formulation, programming execution and reporting capabilities for the Department of Defense. Activities will include, but not be limited to, the preparation of all documentation required for Clinger-Cohen Compliance and acquisition regulations, developing requests for proposals, and oversight and management of contracts and deliverables.			6.788
FY 2012 Accomplishments: Established Program Management Office 1Q FY 2012-4Q FY 2012. Continued work on Acquisition documentation 1Q FY 2012-4Q FY 2012. Conducted Analysis of financial flow on information. Initiated Business Processing Reengineering.			
FY 2013 Plans: Continue Program Management Office 1QFY 2013-4Q FY2013. Continue work on Acquisition documentation 1Q FY 2013-4Q FY 2013. Conduct market research to assess optimal means to exploit emerging technology, processes, trends, capabilities and techniques to incorporate state-of-the art capabilities in the information technology industry 2QFY2013 - 3QFY2013. IRB Submission 3QFY2013. RFP Release 3Q FY2013. Contract Award 4QFY2013.			
FY 2014 Plans: Continue Program Management Office 1QFY 2014-4Q FY2014. Continue work on Acquisition documentation 1Q FY 2013-4Q FY 2013. Demonstrate prototype systems that includes a unified data warehouse, user friendly business logic architecture for programming and budgeting capabilities, analytics and reports, an expert knowledge-based system incorporating user friendly language interface, cross-domain security capability, and design and demonstration of high uality user interface that promotes learning and productivity. Two prototype increments to be initiated. 1QFY2014-3QFY2015			
Accomplishments/Planned Programs Subtotals		4.845	7.010
			6.788
C. Other Program Funding Summary (\$ in Millions)			
N/A			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 5: <i>System Development & Demonstration (SDD)</i>	R-1 ITEM NOMENCLATURE PE 0605027D8Z: <i>OUSD(C) IT Development Initiative</i>	PROJECT 927: <i>Next Generation Resource Management System</i>
C. Other Program Funding Summary (\$ in Millions)		
Remarks		
D. Acquisition Strategy		
Business Process Reengineering 1QFY2013 Analysis of the Alternatives (AoA) Revisions - 1Q FY 2013 Acquisition documentation - 1QFY2012 - 4 QFY2014 Conduct Market Investigation 2Q FY 2013-3Q FY 2013 Finalize market investigation - 3QFY2013 Contract Award 4Q FY 2013 for demonstration and incremental releases Incremental designs review: 3QFY2014 - 3Q FY 2017 Verification proposed system and upgrades: 3Q FY 2014- 3QFY2017 Once infrastructure in place, competitive contracts in the out years for individual services/applications.		
E. Performance Metrics		
N/A		

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2014 Office of Secretary Of Defense												DATE: April 2013			
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 5: <i>System Development & Demonstration (SDD)</i>						R-1 ITEM NOMENCLATURE PE 0605027D8Z: <i>OUSD(C) IT Development Initiative</i>						PROJECT 927: <i>Next Generation Resource Management System</i>			
Product Development (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Next Generation Resource Management System	MIPR	Defense Logistics Agency:Mark Center	8.756	-		4.010	Aug 2013	4.788	Aug 2014	-		4.788	10.000	27.554	27.554
Subtotal			8.756	0.000		4.010		4.788		0.000		4.788	10.000	27.554	27.554
Support (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Next Generation Resource Management System	MIPR	Defense Logistics Agency:Mark Center	0.900	4.845	Jan 2012	3.000	Jan 2013	2.000	Jan 2014	-		2.000	5.500	16.245	16.245
Subtotal			0.900	4.845		3.000		2.000		0.000		2.000	5.500	16.245	16.245
			All Prior Years	FY 2012	FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total	Cost To Complete	Total Cost	Target Value of Contract	
Project Cost Totals			9.656	4.845		7.010		6.788		0.000		6.788	15.500	43.799	43.799
Remarks															

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE							
0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 5: <i>System Development & Demonstration (SDD)</i>					PE 0605075D8Z: <i>DCMO Policy and Integration</i>							
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013[#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
Total Program Element	-	27.594	25.269	22.297	-	22.297	25.135	21.932	22.187	22.618	Continuing	Continuing
075: <i>DCMO Policy and Integration</i>	-	27.594	25.269	22.297	-	22.297	25.135	21.932	22.187	22.618	Continuing	Continuing
Quantity of RDT&E Articles												

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

The Deputy Chief Management Officer (DCMO), a position created by the National Defense Authorization Act for 2008, is the Principal Staff Assistant (PSA) and advisor to the Secretary and Deputy Secretary of Defense for matters relating to management and improvement of integrated DoD business operations. The Office of the DCMO (ODCMO) was created to integrate business processes and over 2,400 business systems costing approximately \$7B / year to acquire, modernize and operate. Following FY 2012 disestablishment of the Business Transformation Agency (BTA), the ODCMO conducts research and development of the Business Enterprise Architecture (BEA) for the Department's Business Mission Area (BMA). The BEA, along with data standards development and war fighter support, provides the foundation for several Departmental priorities to include Financial Auditability and directed efficiencies.

<u>B. Program Change Summary (\$ in Millions)</u>	<u>FY 2012</u>	<u>FY 2013</u>	<u>FY 2014 Base</u>	<u>FY 2014 OCO</u>	<u>FY 2014 Total</u>
Previous President's Budget	41.529	25.269	22.672	-	22.672
Current President's Budget	27.594	25.269	22.297	-	22.297
Total Adjustments	-13.935	0.000	-0.375	-	-0.375
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-13.935	-			
• SBIR/STTR Transfer	-	-			
• Economic Adjustment	-	-	-0.144	-	-0.144
• efficiencies	-	-	-0.231	-	-0.231

Change Summary Explanation

In FY 2014, the decrease is a result of efficiencies. Efforts were made to centralize and consolidate contracting services and realize contracting efficiencies to improve acquisition planning and oversight.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013				
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 5: System Development & Demonstration (SDD)		R-1 ITEM NOMENCLATURE PE 0605075D8Z: DCMO Policy and Integration				
In FY 2012 the funding was reprogrammed for civilian pay moved from RDT&E to O&M.						
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014		
Title: DCMO Policy and Integration		27.594	25.269	22.297		
FY 2012 Accomplishments: Development and employment of Integrated Semantic Business Enterprise Architecture (BEA) • Continued to extend the BEA and its supporting development and maintenance tools into the Semantic Web technical domain. • Used the BEA to guide and constrain investment in Information Technology (IT) business systems and inform business process re-engineering(BPR)/process improvement opportunities. End to End (E2E Process) • Refined, improved, re-engineered and represented in the BEA, the end-to-end processes that represent integrated DoD business operations. • Focused on defining detailed E2E processes for Procure-to-Pay (P2P) and Hire-to-Retire (H2R). Tools Development •The evaluation and oversaw development and testing of tools to build, analyze and execute the BEA throughout the Business Mission Area. Enterprise Information Webs (EIWs) • Conducted dedicated research and system engineering to design EIW Proof of Delivery (PoDs) pilots to establish the Initial Operational Capability (IOC) of Human Resource Enterprise Information Web (HR EIW) capability. • Matured integration requirements and maintained fidelity of existing systems to work and to develop new Capabilities through PoDs that translate these results to executable Enterprise Transition Plans (ETPs). • Continued the development and established baseline standards for Business Intelligence (BI) standards and services which will access authoritative data sources from anywhere in the Department and present business information to DoD and external customers consistent with performance data standards modeled in the BEA. BEA Ontologies/Standards • Through systems engineering and incremental strategy of developing the BEA, managed Enterprise data standards to include standards of the Standard Financial Information Structure (SFIS) and Common Human Resources Information System (CHRIS) to support efficient and interoperable business systems. EIW Acquisition						

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 5: <i>System Development & Demonstration (SDD)</i>		R-1 ITEM NOMENCLATURE PE 0605075D8Z: <i>DCMO Policy and Integration</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
<ul style="list-style-type: none"> • Provided technical support to Defense Acquisition System/Business Capability Life Cycle (DAS/BCL) and Investment Review Boards (IRBs). • Continued, development and integration to support acquisition oversight requirements of Major Automated Information System (MAIS). <p>Acquisition Accountability Office for Afghanistan (AAOA)</p> <ul style="list-style-type: none"> • Oversaw and guided, establishment of complete visibility of business operations to achieve accountability and built a comprehensive common operating picture (COP) with tracking system traceability for all DoD funds obligated in-theater, electronically capturing DoD approved and funded requirements, obligations, disbursements. <p>Adaptive Logistics Network (ALN)</p> <p>Guided establishment of repeatable processes and metrics that operationalize US Africa Command (AFRICOM) logistics strategy by developing a Logistics Clearinghouse and Geographic Information Systems (GIS) Access Tool Proof-of-Concept (Phase I). Efforts will improve logistics coordination among DoD, US Government Agencies and International Partners and will leverage existing logistics capabilities of the international logistics response community.</p> <p>FY 2013 Plans:</p> <p>Development and employment of Integrated Semantic Business Enterprise Architecture (BEA)</p> <ul style="list-style-type: none"> • Continue evolution of the BEA to meet the 2012 NDAA direction to effectively guide, constrain and permit implementation of interoperable defense business system solutions. • Evaluate adherence to the Defense Business Systems Investment Management Process and oversee the development of the BEA, as well as the development and testing of tools and methods to build, analyze and execute the BEA throughout the Business Mission Area. <p>End to End (E2E Process)</p> <ul style="list-style-type: none"> • Complete mapping Procure-to-Pay (P2P) process mapping; continue Hire-to-Retire (H2R) process mapping; begin mapping Budget-to-Report (B2R) as directed by the Defense Business Systems Management Committee (DBSMC). • Provide evaluation and test of tools to support management of core business mission process and data teams to the BEA build team in the construction of End to End processes. • Deploy and baseline the automated Federation and Semantic compliance with the Semantic BEA. <p>Enterprise Information Webs (EIWs)</p> <ul style="list-style-type: none"> • Utilize the IOC of HR EIW capability to serve as the basis for future EIW releases. • Through the Semantic BEA, continue to manage Enterprise Data standards to include the existing standards and new 				

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 5: <i>System Development & Demonstration (SDD)</i>		R-1 ITEM NOMENCLATURE PE 0605075D8Z: <i>DCMO Policy and Integration</i>		
C. Accomplishments/Planned Programs (\$ in Millions) standards such as the Procurement Data Standard (PDS), etc. Tools Development <ul style="list-style-type: none"> • Establish a robust program for “Equipping the Workforce” to enable the implementation of BEA methods and processes across the Department. This includes the training, tools and services to ensure success. • Develop and deploy services and support for automated BEA and architecture compliance using federation technologies for enabling compliance. • Expand the role of the BEA to validate and apply viable semantic capabilities to serve the ODCMO and DoD Enterprise and Federal reporting requirements. • Develop, coordinate and promulgate policies in support of DoD business operations which will uniformly ensure efficiency and consistency. • Use the BEA to guide and constrain investment in IT business systems, to maintain fidelity of existing systems, and to develop new capabilities that translate these results to an executable ETP. • Coordinate coupling between BEA and ETP business systems' development and deployment milestones. • Provide resources and tools to update milestones, measure guidance, related templates and workbooks to be included in the ETP and reports to Congress. BEA Ontologies/Standards Enable innovation through utilization of technology to support more and better business operations for the Department. Innovations will support the full spectrum of operations to include people, processes and technology. <ul style="list-style-type: none"> • Be the technology strategic thought leadership for the DCMO. These efforts include the articulation of business strategy, metrics and outreach to business stakeholders, civilian and commercial thought leaders. • Collaborate with DoD Chief Information Officer (CIO) for DoD Architecture Framework (DoDAF) implementation methods and standards, IT Consolidation and required DoD IT infrastructure to support business operations. • Provide input to analyze progress against business system milestones and document analysis in the Congressional Report on Defense Business Operations. • Encourage the evolution of architecture and data standards in support of DoD requirements and processes for engagement with international Standards bodies such as World Wide Web Consortium (W3C) and Object Management Group (OMG). • Support the DoD/Veterans Affairs (VA) Joint Program Office for iEHR for BPR and architecture development and the use of technical standards. • Enable deployment of Enterprise Resource Planning (ERP) tools consistent with evolving BEA direction and guidance. • Assess and respond to DoD Component CIO Evaluation Scorecard. • Provide input to support Acquisition Oversight requirements of MAIS. 		FY 2012	FY 2013	FY 2014

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 5: <i>System Development & Demonstration (SDD)</i>		R-1 ITEM NOMENCLATURE PE 0605075D8Z: <i>DCMO Policy and Integration</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
<ul style="list-style-type: none"> Collaborate with the Federal Chief Technology Officer (CTO) and (CIO) in support of Federal Reporting and Performance Initiatives. Support IT Business Acquisition Oversight by providing technical standards and real time support to Infrastructure IRBs. <p>Acquisition Accountability Office for Afghanistan (AAOA)</p> <ul style="list-style-type: none"> Focus areas for AAOA and ALN will be a continuation of identifying business process gaps and supporting the institutionalization of process improvements. Key activities would include oversight in capturing lessons learned and supporting Joint Staff, Services and OSD offices in developing new processes, policies and other pertinent Doctrine, Organization, Training, Materiel, Leadership, Personnel and Facilities (DOTMLPF) issues. <p>FY 2014 Plans:</p> <p>Development and employment of Integrated Semantic Business Enterprise Architecture (BEA)</p> <ul style="list-style-type: none"> Continue evolution of the BEA to meet the 2012 NDAA direction to effectively guide, constrain and permit implementation of interoperable defense business system solutions. <p>Tools Development</p> <ul style="list-style-type: none"> Evaluate adherence to Defense Business Systems Investment Management Process and oversee development of the BEA, as well as development and testing of tools and methods to build, analyze and execute the BEA throughout the Business Mission Area. <p>End to End (E2E Process)</p> <ul style="list-style-type: none"> Complete Hire-to-Retire (H2R) process mapping; continue Budget-to-Report (B2R) process mapping; begin follow-on E2E mapping as directed by the Defense Business Council (DBC). Deploy and baseline the automated Semantic BEA. <p>Enterprise Information Webs (EIWs)</p> <ul style="list-style-type: none"> Continue to build EIW capabilities based on stakeholder needs. Continue open source code of EIW federation engine and support the open source community to maintain and improve code. Evolve Investment Review Board data analytics capability with additional authoritative data sources and views. Apply EIW framework to additional OSD and COCOM data analytic use cases. Manage and maintain baseline capability and research additional optimizations and functions as required by emergent analytic use cases. Manage Enterprise Data standards to include the existing standards and new standards such as the PDS, etc. Support automated BEA and architecture compliance using semantic technologies as the basis for compliance. 				

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 5: <i>System Development & Demonstration (SDD)</i>		R-1 ITEM NOMENCLATURE PE 0605075D8Z: <i>DCMO Policy and Integration</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
<ul style="list-style-type: none"> • Establish Semantic BEA as a central function in the ODCMO and DoD Enterprise and Federal reporting. • Develop, coordinate and promulgate policies in support of DoD business operations which will uniformly ensure efficiency and consistency in business operations. • . Use the BEA to guide and constrain investment in IT business systems, to maintain fidelity of existing systems, and to develop new capabilities that translate these results to an executable ETP." • Coordinate coupling between BEA and ETP business systems' development and deployment milestones. • Provide resources and tools to update milestones, measure guidance, related templates and workbooks to be included in the ETP and reports to Congress. • Enable innovation through the utilization of technology to support more and better business operations for the Department. Innovations will support the full spectrum of operations to include people, processes and technology. Be the technology strategic thought leadership for the DCMO. These efforts include the articulation of business strategy, metrics and the outreach to business stakeholders and civilian and commercial thought leaders. • Collaborate with DoD CIO for DoD Architecture Framework (DoDAF) implementation methods and standards, IT Consolidation and required DoD IT infrastructure to support business operations. • Provide input to analyze progress against business system milestones and document analysis in the Congressional Report on Defense Business Operations. <p>BEA Ontologies/Standards</p> <ul style="list-style-type: none"> • Encourage evolution of architecture and data standards in support of DoD requirements and processes for engagement with international Standards bodies such as World Wide Web Consortium (W3C) and Object Management Group (OMG). • Support the DoD/Veterans Affairs (VA) Joint Program Office for iEHR (Electronic Health Record) BPR and architecture development and the use of technical standards. • Enable deployment of Enterprise Resource Planning (ERP) tools consistent with evolving BEA direction and guidance. • Assess and respond to DoD Component CIO Evaluation Scorecard. • Provide input to support Acquisition Oversight requirements of MAIS. • Collaborate with the Federal CTO and CIO in support of Federal Reporting and Performance Initiatives. • Support IT Business Acquisition Oversight by providing technical standards and real time support to the IRB. <p>Acquisition Accountability Office for Afghanistan (AAOA)</p> <ul style="list-style-type: none"> • RDT&E funding required to provide services that include all phases of planning, design, development, testing, 				

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 5: <i>System Development & Demonstration (SDD)</i>	R-1 ITEM NOMENCLATURE PE 0605075D8Z: <i>DCMO Policy and Integration</i>			
C. Accomplishments/Planned Programs (\$ in Millions) production fielding, acquisition and management of logistics and DoD business systems related to AAOA and ALN in FY 14 will be completed. Future AOAA and ALN accomplishments in FY 14 will require O&M funding in order to sustain and maintain all concepts of operations, roles and responsibilities. Acquisition Support <ul style="list-style-type: none"> • Provide input to support Acquisition Oversight requirements of MAIS DBS. • Develop, coordinate and promulgate policies in support of DoD business operations which will uniformly ensure efficiency and consistency in business operations. • Provide input to analyze progress of delivery of business system capability against assigned portfolios for both Functional Strategies and Organizational Execution Plans. 		FY 2012	FY 2013	FY 2014
Accomplishments/Planned Programs Subtotals		27.594	25.269	22.297
D. Other Program Funding Summary (\$ in Millions) N/A Remarks E. Acquisition Strategy N/A F. Performance Metrics This is a new DCMO Metric. Incorporate Principal Staff Assistant (PSA) identified functional strategy goals, objectives, and outcomes into new releases of the BEA as directed by the Defense Business Council. This metric based on the Section 2222 of Title 10, USC. DCMO requirement for managing a single IRB for Business Mission Area which resulted in the requirement for PSAs to develop Functional Strategies. DCMO FY 12 Goals N/A. FY 13 Goals will include 80% of PSA Functional Strategy Goals, Objectives and Outcomes. FY 14 Goals will include 90% of PSA Functional Strategy Goals, Objectives and Outcomes.				

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 5: <i>System Development & Demonstration (SDD)</i>	R-1 ITEM NOMENCLATURE PE 0605075D8Z: <i>DCMO Policy and Integration</i>	PROJECT 075: <i>DCMO Policy and Integration</i>
------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------	-----------------------------------------------------------

Management Services (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
BEA and Planning, IMIE-Operation of Federal information Systems / Services ,Resource information management system, Enterprise information Warehouse,	Option/CPFF	SAIC: Alexandria VA	0.000	27.594	Jan 2012	25.269	Jan 2013	22.297	Feb 2014	-		22.297	22.297	97.457	22.297
Subtotal			0.000	27.594		25.269		22.297		0.000		22.297	22.297	97.457	22.297

Remarks

Most of the contracts fall into this category

	All Prior Years	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	27.594	25.269	22.297	0.000	22.297	22.297	97.457	22.297

Remarks

DCMO

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE							
0400: Research, Development, Test & Evaluation, Defense-Wide BA 5: System Development & Demonstration (SDD)					PE 0605210D8Z: Defense-Wide Electronic Procurement Capabilities							
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
Total Program Element	-	14.408	10.238	6.184	-	6.184	11.178	10.900	9.738	9.927	Continuing	Continuing
P*021: Defense-Wide Electronic Procurement Capabilities-Contingency	-	9.761	10.238	6.184	-	6.184	11.178	10.900	9.738	9.927	Continuing	Continuing
P*022: SPOT -ES Contingency	-	4.647	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

Defense-wide Electronic Procurement Capabilities is designed to provide an avenue for the development of increased ebusiness capabilities critical to meet the enterprise-wide needs of the procurement community. The requirement for increased ebusiness capabilities may result from statute, regulation or internal control requirements. This program provides opportunities for the introduction of innovative, time-saving, and cost-saving technologies into procurement processes across the Department. This RDT&E PE provides resources to conduct software development and testing on new or modified ebusiness applications to ensure mature system development, integration and demonstration of production representative systems and capabilities.

B. Program Change Summary (\$ in Millions)	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total
Previous President's Budget	14.408	10.238	9.196	-	9.196
Current President's Budget	14.408	10.238	6.184	-	6.184
Total Adjustments	0.000	0.000	-3.012	-	-3.012
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• PB14 Adjustments (Efficiency Reductions)	-	-	-3.012	-	-3.012

Change Summary Explanation

Efficiency Reductions were taken at 2% per year for PB14 along with additional PB14 adjustments to a total of 3.012M from the original President's Budget.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE				PROJECT			
0400: Research, Development, Test & Evaluation, Defense-Wide BA 5: System Development & Demonstration (SDD)					PE 0605210D8Z: Defense-Wide Electronic Procurement Capabilities				P*021: Defense-Wide Electronic Procurement Capabilities- Contingency			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
P*021: Defense-Wide Electronic Procurement Capabilities- Contingency	-	9.761	10.238	6.184	-	6.184	11.178	10.900	9.738	9.927	Continuing	Continuing
Quantity of RDT&E Articles												
# FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012												
## The FY 2014 OCO Request will be submitted at a later date												
A. Mission Description and Budget Item Justification												
Defense-wide Electronic Procurement Capabilities is designed to provide an avenue for the development of increased ebusiness capabilities critical to meet the enterprise-wide needs of the procurement community. The requirement for increased ebusiness capabilities may result from statute, regulation or internal control requirements. This program provides opportunities for the introduction of innovative, time-saving, and cost-saving technologies into procurement processes across the Department. This RDT&E PE provides resources to conduct software development and testing on new or modified ebusiness applications to ensure mature system development, integration and demonstration of production representative systems and capabilities.												
B. Accomplishments/Planned Programs (\$ in Millions)										FY 2012	FY 2013	FY 2014
Title: Defense-Wide Electronic Procurement Capabilities- Contingency										9.761	10.238	6.184
FY 2012 Accomplishments:												
Funding was used to develop an initial end to end paperless reconciliation process for Government Furnished Property (GFP), funding the changes for five systems. A data standard was developed for warranty information and an enterprise repository established. Modification of Contract systems are underway to enable data to be sent to personnel and readiness systems to account for logical and physical access to DoD systems. Implemented a fraud and misuse data mining detection capability for purchase cards for the AF and ODAs, with the Army deployment underway. These funds also supported development of contingency contracting and financial management business tools for the warfighter that are currently in an immature development stage, or do not exist including JCCS, 3in1 and cASM.												
FY 2013 Plans:												
Continued funding will be used to develop an end to end paperless reconciliation process for Government Furnished Property (GFP); develop a data standard for warranty information; ensure that contract systems are modified to send data to personnel and readiness systems to account for logical and physical access to DoD systems; and to fully implement a fraud and misuse data mining detection capability for purchase cards in DoD. These funds will also support development of contingency contracting and												

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 5: <i>System Development & Demonstration (SDD)</i>	R-1 ITEM NOMENCLATURE PE 0605210D8Z: <i>Defense-Wide Electronic Procurement Capabilities</i>	PROJECT P*021: <i>Defense-Wide Electronic Procurement Capabilities- Contingency</i>		
B. Accomplishments/Planned Programs (\$ in Millions) financial management business tools for the warfighter that are currently in an immature development stage, or do not exist and to implement initiatives/tools in theater. FY 2014 Plans: Continued funding will be used to continue development of an end to end paperless reconciliation process for Government Furnished Property (GFP); continued development of a data standard for warranty information; ensure that contract systems are modified to send data to personnel and readiness systems to account for logical and physical access to DoD systems; and to implement a fraud and misuse data mining detection capability for purchase cards in DoD. These funds will also be used to develop an initial end to end purchase request data standard process (including intergovernmental transactions). Additionally, these funds will support development of contingency contracting and financial management business tools for the warfighter that are currently in an immature development stage, or do not exist and to implement initiatives/tools in theater. Efficiency Reductions were taken at 2% per year for PB14 along with additional PB14 adjustments to a total of 3.012M from the original President's Budget.		FY 2012	FY 2013	FY 2014
Accomplishments/Planned Programs Subtotals		9.761	10.238	6.184
C. Other Program Funding Summary (\$ in Millions) N/A Remarks D. Acquisition Strategy N/A E. Performance Metrics NA				

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 5: System Development & Demonstration (SDD)	R-1 ITEM NOMENCLATURE PE 0605210D8Z: Defense-Wide Electronic Procurement Capabilities	PROJECT P*021: Defense-Wide Electronic Procurement Capabilities- Contingency
--------------------------------------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------

Product Development (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Contract Business Systems Development	Various	DLA, DCMA, JITC, NAVSEA:WPAFB/ Ft Belvoir	0.000	8.996		9.347		5.221		-		5.221	Continuing	Continuing	
Subtotal			0.000	8.996		9.347		5.221		0.000		5.221			

Test and Evaluation (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Interoperability Testing	Various	DLA, DCMA, JITC, NAVSEA:WPAFB/ Ft Belvoir	0.000	0.765		0.891		0.963		-		0.963	Continuing	Continuing	
Subtotal			0.000	0.765		0.891		0.963		0.000		0.963			

			All Prior Years	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			0.000	9.761	10.238	6.184	0.000	6.184			

Remarks

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 5: System Development & Demonstration (SDD)					R-1 ITEM NOMENCLATURE PE 0605210D8Z: Defense-Wide Electronic Procurement Capabilities				PROJECT P*022: SPOT -ES Contingency			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
P*022: SPOT -ES Contingency	-	4.647	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles												
# FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012												
## The FY 2014 OCO Request will be submitted at a later date												
A. Mission Description and Budget Item Justification												
The Synchronized Pre-Deployment and Operational Tracker - Enterprise Suite (SPOT-ES) is the joint enterprise suite of products employed for the management, tracking and visibility of contracted capability and contractors authorized to accompany U.S. forces in support of overseas contingency operations (OCO), humanitarian assistance and disaster relief efforts both domestic and abroad.												
SPOT-ES assists the Combatant Commander (CCDR) in maintaining awareness of the nature, extent, and potential risks and capabilities associated with the contracted support in contingency, humanitarian or peacekeeping operations, or military exercises designated by the CCDR. As such, SPOT- ES: Serves as the central repository for up-to-date status and reporting on contingency contractor personnel; provides by-name accountability of DoD-funded contingency contractor personnel and other personnel as directed by Public Law, USD (AT&L), or by the CCDR; tracks contract capability information for all DoD-funded contracts supporting contingencies or designated military exercises; contains contract information necessary to establish and maintain accountability and visibility of contractors and contract capabilities for operational contract support.												
B. Accomplishments/Planned Programs (\$ in Millions)										FY 2012	FY 2013	FY 2014
Title: SPOT-ES Contingency										4.647	0.000	0.000
FY 2012 Accomplishments: Provided logistics support in accordance with the warfighter's requirements - the right materiel delivered when and where needed to integrate Operational Contractor Support (OCS) into the planning process. Enhanced accountability and visibility of contractors supporting contingency operations - account for and track all contractor personnel during their full in-theater term of service. Updated SPOT Business Rules to include Theater Business Clearance requirements.												
Continue development of solutions to user-identified capability gaps; implement an N-tier database solution allowing a quicker data processing response time; Implement improved user interface for SPOT-ES that reduces required page views; Continue development and demonstration of a cross-domain solution for SPOT NIPR/SIPR; Continue implementation of biometrics integration with SPOT-ES; deliver enhanced user interface and key integrations with contract identity systems.												
FY 2013 Plans:												

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 5: <i>System Development & Demonstration (SDD)</i>		R-1 ITEM NOMENCLATURE PE 0605210D8Z: <i>Defense-Wide Electronic Procurement Capabilities</i>	PROJECT P*022: <i>SPOT -ES Contingency</i>
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
The SPOT program was transferred from OSD to DHRA/DMDC beginning in FY 2013.			
Accomplishments/Planned Programs Subtotals		4.647	0.000
C. Other Program Funding Summary (\$ in Millions) N/A			
Remarks			
D. Acquisition Strategy The SPOT Program Management Office plans to award A competitive contract in FY 2012. The Execution Approach is comprised of product development efforts including biometrics implementation; software update release; focus on user interface and integration with contract/identity systems; hosting SPOT for (NIPR and SIPR). Program costs include Program Management Government labor; Program Management technical and acquisition support; and test & evaluation support.			
E. Performance Metrics There are a several metrics in-place to monitor the performance of the SPOT-ES system. A comparison between JAMMS scans by individuals and those same individuals registered in SPOT provides a compliance metric. Feedback surveys are used to determine customer satisfaction and user interface issues. Helpdesk metrics are used to determine and usability issues.			

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 5: <i>System Development & Demonstration (SDD)</i>	R-1 ITEM NOMENCLATURE PE 0605210D8Z: <i>Defense-Wide Electronic Procurement Capabilities</i>	PROJECT P*022: <i>SPOT -ES Contingency</i>
------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------	------------------------------------------------------

Product Development (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Defense-Wide Electronic Procurement Capabilities	Allot	TBD:Arlington, VA	-	4.647		-		-		-		-	Continuing	Continuing	
Subtotal			0.000	4.647		0.000		0.000		0.000		0.000			
			All Prior Years	FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			0.000	4.647		0.000		0.000		0.000		0.000			

Remarks

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE							
0400: Research, Development, Test & Evaluation, Defense-Wide BA 5: System Development & Demonstration (SDD)					PE 0305304D8Z: DoD Enterprise Energy Information Management (EEIM)							
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
Total Program Element	-	0.000	3.556	3.302	-	3.302	3.104	2.911	3.006	3.064	Continuing	Continuing
304: Enterprise Energy Information Management	-	0.000	1.956	1.956	-	1.956	1.955	1.953	1.955	1.955	Continuing	Continuing
305: Real Property Accountability	-	0.000	1.600	1.346	-	1.346	1.149	0.958	1.051	1.109	Continuing	Continuing

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

A key part of DoD's strategy to meet its energy goals is to develop an energy information management environment that will enable the Services and OSD to track energy production and usage across the real property portfolio. Information on energy usage is critical for day-to-day management and accountability, troubleshooting building systems, and planning for capital investments. These funds will support the development and procurement of an enterprise-wide energy data warehouse that will be integrated with existing and future real property systems. AT&L has already conducted a comprehensive requirements analysis for this prospective warehouse using funds provided through the now-disestablished Business Transformation Agency. We have defined a standard set of energy information management requirements and are now assessing and planning which information management technologies (future and current) will best support them. Funding is required to keep this project on track and ensure that the DoD-wide energy management data environment becomes a reality.

B. Program Change Summary (\$ in Millions)	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total
Previous President's Budget	0.000	3.556	3.356	-	3.356
Current President's Budget	0.000	3.556	3.302	-	3.302
Total Adjustments	0.000	0.000	-0.054	-	-0.054
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments	-	-	-0.054	-	-0.054

Change Summary Explanation

The revised funding levels for FY14 are due to the need to address high priority programs within AT&L as determined by senior leadership.

PE 0305304D8Z: DoD Enterprise Energy Information Management (EEIM...

Office of Secretary Of Defense

UNCLASSIFIED

Page 1 of 6

R-1 Line #134

Volume 3 - 655

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 5: <i>System Development & Demonstration (SDD)</i>					R-1 ITEM NOMENCLATURE PE 0305304D8Z: <i>DoD Enterprise Energy Information Management (EEIM)</i>				PROJECT 304: <i>Enterprise Energy Information Management</i>			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013[#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
304: <i>Enterprise Energy Information Management</i>	-	0.000	1.956	1.956	-	1.956	1.955	1.953	1.955	1.955	Continuing	Continuing
Quantity of RDT&E Articles												
[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012 ^{##} The FY 2014 OCO Request will be submitted at a later date												
A. Mission Description and Budget Item Justification A key part of DoD's strategy to meet its energy goals is to develop an energy information management environment that will enable the Services and OSD to track energy production and usage across the real property portfolio. Information on energy usage is critical for day-to-day management and accountability, troubleshooting building systems, and planning for capital investments. These funds will support the development and procurement of an enterprise-wide energy data warehouse that will be integrated with existing and future real property systems. AT&L has already conducted a comprehensive requirements analysis for this prospective warehouse using funds provided through the now-disestablished Business Transformation Agency. We have defined a standard set of energy information management requirements and are now assessing and planning which information management technologies (future and current) will best support them. AT&L funding is required to keep this project on track and ensure that the DoD-wide energy management data environment becomes a reality.												
B. Accomplishments/Planned Programs (\$ in Millions)									FY 2012	FY 2013	FY 2014	
Title: Enterprise Energy Information Management									0.000	1.956	1.956	
FY 2013 Plans: Funds will support the development and procurement of an enterprise-wide energy data warehouse that will be integrated with existing and future real property systems.												
FY 2014 Plans: Funds will support the development and procurement of an enterprise-wide energy data warehouse that will be integrated with existing and future real property systems.												
Accomplishments/Planned Programs Subtotals									0.000	1.956	1.956	
C. Other Program Funding Summary (\$ in Millions) N/A												
Remarks												
D. Acquisition Strategy N/A												

PE 0305304D8Z: *DoD Enterprise Energy Information Management (EEIM...*

Office of Secretary Of Defense

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 5: <i>System Development & Demonstration (SDD)</i>	R-1 ITEM NOMENCLATURE PE 0305304D8Z: <i>DoD Enterprise Energy Information Management (EEIM)</i>	PROJECT 304: <i>Enterprise Energy Information Management</i>

E. Performance Metrics

N/A

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 5: System Development & Demonstration (SDD)	R-1 ITEM NOMENCLATURE PE 0305304D8Z: DoD Enterprise Energy Information Management (EEIM)	PROJECT 304: Enterprise Energy Information Management
--------------------------------------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------	-----------------------------------------------------------------

Support (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Tech Support Contract	TBD	SAIC:Crystal City , VA	-	0.000		1.324		1.324		-		1.324	Continuing	Continuing	
TRANSCOM	TBD	TBD:TBD	-	-		0.266		0.266		-		0.266	Continuing	Continuing	
IVEV	TBD	TBD:TBD	-	-		0.366		0.366		-		0.366	Continuing	Continuing	
Subtotal			0.000	0.000		1.956		1.956		0.000		1.956			
			All Prior Years	FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			0.000	0.000		1.956		1.956		0.000		1.956			

Remarks

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 5: <i>System Development & Demonstration (SDD)</i>					R-1 ITEM NOMENCLATURE PE 0305304D8Z: <i>DoD Enterprise Energy Information Management (EEIM)</i>				PROJECT 305: <i>Real Property Accountability</i>			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013[#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
305: <i>Real Property Accountability</i>	-	0.000	1.600	1.346	-	1.346	1.149	0.958	1.051	1.109	Continuing	Continuing
Quantity of RDT&E Articles												
[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012 ^{##} The FY 2014 OCO Request will be submitted at a later date												
A. Mission Description and Budget Item Justification												
The Real Property inventory fulfills requirements of Executive Order for DOD to be audit ready by 2017. New policies are in place, but business systems must be modified to support data requirements. Without funding the components will return to services agency centric processes that do not allow for total DOD accountability.												
B. Accomplishments/Planned Programs (\$ in Millions)										FY 2012	FY 2013	FY 2014
Title: Real Property Accountability										0.000	1.600	1.346
FY 2013 Plans: Funds will support the development and procurement of an enterprise-wide energy data warehouse that will be integrated with existing and future real property systems.												
FY 2014 Plans: Funds will support the development and procurement of an enterprise-wide energy data warehouse that will be integrated with existing and future real property systems.												
Accomplishments/Planned Programs Subtotals										0.000	1.600	1.346
C. Other Program Funding Summary (\$ in Millions) N/A												
Remarks												
D. Acquisition Strategy N/A												
E. Performance Metrics N/A												

PE 0305304D8Z: *DoD Enterprise Energy Information Management (EEIM...*

Office of Secretary Of Defense

UNCLASSIFIED

Page 5 of 6

R-1 Line #134

Volume 3 - 659

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 5: System Development & Demonstration (SDD)	R-1 ITEM NOMENCLATURE PE 0305304D8Z: DoD Enterprise Energy Information Management (EEIM)	PROJECT 305: Real Property Accountability
--------------------------------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------	-----------------------------------------------------

Support (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Tech Support Contract	TBD	SAIC:Crystal City, VA	-	0.000		1.100		1.100		-		1.100	Continuing	Continuing	
TRANSCOM	TBD	TBD:TBD	-	-		0.500		0.246		-		0.246	Continuing	Continuing	
Subtotal			0.000	0.000		1.600		1.346		0.000		1.346			
Project Cost Totals			0.000	0.000		1.600		1.346		0.000		1.346			

Remarks

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense	DATE: April 2013
-------------------------------------------------------------------------------------------------	-------------------------

APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE							
0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>					PE 0604774D8Z: <i>Defense Readiness Reporting System (DRRS)</i>							
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
Total Program Element	-	6.598	6.383	6.393	-	6.393	6.393	6.427	6.450	6.575	Continuing	Continuing
774: <i>Defense Readiness Reporting System (DRRS)</i>	-	6.598	6.383	6.393	-	6.393	6.393	6.427	6.450	6.575	Continuing	Continuing

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

This funding supports Defense Planning Guidance (DPG) directing the Department of Defense (DoD) components to develop guidelines and procedures for a comprehensive readiness reporting system that evaluates readiness on the basis of the actual missions and capabilities assigned to the forces. The Defense Readiness Reporting System (DRRS) establishes a capabilities-based, adaptive, near real-time readiness information system for the DoD. This system is being designed to measure the readiness of military forces and supporting infrastructure to meet missions and goals assigned by the Secretary of Defense. DRRS also hosts information and applications used to support Joint Forces Command (JFCOM), Transportation Command (TRANSCOM), Special Operations Command (SOCOM) and Strategic Command (STRATCOM) in their roles as the Joint Force Providers.

The transformation of readiness reporting into a new comprehensive readiness system presents a number of significant challenges. First, there are thousands of new potential reporting entities to include in DRRS, such as Combatant Commands, Joint Task Forces, Services, Active and Reserve component units, installations, depots, ports, and major elements of the industrial base. These entities must not only define and implement reporting based on specific readiness metrics, but they must make their readiness status continuously available in near real time to DRRS. Second, the current National Military Strategy (NMS) makes substantially more complex demands on readiness reporting. Instead of basing readiness on traditional MTW-based scenarios, the NMS asks us to contemplate readiness for an entire range of operational forms, and to design DRRS to assess global readiness impact based on our integrated ability to project and sustain a mix of constructed forces in simultaneous engagements. Finally, Operation Iraqi Freedom (OIF) and Operation Enduring Freedom (OEF) sourcing challenges mean that force managers need applications that will query the entire Department for suitable, available organizations to meet current needs. The need for these applications and the underlying data are a top priority for the DRRS project.

The realization of DRRS requires integrating a host of key technologies in order to achieve an information system that supports distributed, collaborative, and dynamic readiness reporting in addition to continuous tool-based assessment. The primary technical goal is the creation of a highly reliable and securely integrated readiness data environment to leverage and extend current readiness information systems. This system is based on intelligent agents, dynamic databases, semantic middleware, and publish/subscribe concepts; providing a logically uniform view into the multiple databases and information sources that feed DRRS. Crucially, through this type of advanced information environment, we dramatically expand the range of readiness queries that DRRS can be able to handle. This environment supports a suite of analysis tools that allow users to explore the consequences of readiness deficiencies in terms of the ability to generate forces and assess transportation feasibility as it pertains to specific scenarios. These tools and tool suites harness the power of the information environment to make possible the kind of quick-turnaround, excursion-driven readiness assessment that is at the heart of DRRS.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense	DATE: April 2013
-------------------------------------------------------------------------------------------------	-------------------------

APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>	R-1 ITEM NOMENCLATURE PE 0604774D8Z: <i>Defense Readiness Reporting System (DRRS)</i>
--------------------------------------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------

B. Program Change Summary (\$ in Millions)	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total
Previous President's Budget	6.600	6.383	6.393	-	6.393
Current President's Budget	6.598	6.383	6.393	-	6.393
Total Adjustments	-0.002	0.000	0.000	-	0.000
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-0.002	-			
• SBIR/STTR Transfer	-	-			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 6: RDT&E Management Support					R-1 ITEM NOMENCLATURE PE 0604774D8Z: Defense Readiness Reporting System (DRRS)				PROJECT 774: Defense Readiness Reporting System (DRRS)			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
774: Defense Readiness Reporting System (DRRS)	-	6.598	6.383	6.393	-	6.393	6.393	6.427	6.450	6.575	Continuing	Continuing
Quantity of RDT&E Articles												

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

This funding supports Defense Planning Guidance (DPG) directing the Department of Defense (DoD) components to develop guidelines and procedures for a comprehensive readiness reporting system that evaluates readiness on the basis of the actual missions and capabilities assigned to the forces. The Defense Readiness Reporting System (DRRS) establishes a capabilities-based, adaptive, near real-time readiness information system for the DoD. This system is being designed to measure the readiness of military forces and supporting infrastructure to meet missions and goals assigned by the Secretary of Defense. DRRS also hosts information and applications used to support Joint Forces Command (JFCOM), Transportation Command (TRANSCOM), Special Operations Command (SOCOM) and Strategic Command (STRATCOM) in their roles as the Joint Force Providers.

The transformation of readiness reporting into a new comprehensive readiness system presents a number of significant challenges. First, there are thousands of new potential reporting entities to include in DRRS, such as Active and Reserve component units, agencies, Combatant Commanders, installations, depots, ports, and major elements of the industrial base. These new entities must not only define and implement reporting based on specific readiness metrics, but they must make their readiness status continuously available in near real time to DRRS. Second, the current National Military Strategy makes substantially more complex demands on readiness reporting. Instead of basing readiness on traditional MTW-based scenarios, the NMS asks us to contemplate readiness for an entire range of operational forms, and to design DRRS to assess global readiness impact based on our integrated ability to project and sustain a mix of constructed forces in simultaneous engagements. Finally, OIF/OEF sourcing challenges mean that force managers need applications that will query the entire Department for suitable, available organizations to meet current needs. The need for these applications and the underlying data are a top priority for the DRRS project.

The realization of DRRS will require integrating a host of key technologies in order to achieve an information system that will support massive-scale distributed, collaborative dynamic readiness reporting and continuous tool-based assessment. The primary technical goal is the creation of a high-reliability, secure integrated readiness data environment that will leverage and extend current readiness information systems. This system will be based on intelligent agents, dynamic databases, semantic middleware, and publish/subscribe concepts; and will provide a logically uniform view into the multiple databases and information sources that will feed DRRS. Crucially, through this type of advanced information environment, we will dramatically expand the range of readiness queries that DRRS will be able to handle. Coupled to this data environment will be a set of high-speed scenario-oriented tools that support ad hoc queries and drilldown, and an advanced workflow system that can assemble existing and new scenario and assessment tools into high-level task-specific query processes. These tools and tool suites will harness the power of the information environment to make possible the kind of quickturnaround, excursion-driven readiness assessment that is at the heart of DRRS.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>	R-1 ITEM NOMENCLATURE PE 0604774D8Z: <i>Defense Readiness Reporting System (DRRS)</i>	PROJECT 774: <i>Defense Readiness Reporting System (DRRS)</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
Title: 774 Defense Readiness Reporting System		6.598	6.383
<p>Description: DRRS is the primary means by which Defense components (Combatant Commands, Services, Agencies and their subordinate elements and units) report their readiness. The system measures readiness of the Department's components to execute the full range of missions assigned by the Secretary of Defense.</p> <p>The Defense Readiness Reporting System (DRRS) establishes a capabilities-based, adaptive, near real-time readiness information system for DoD. DRRS measures the readiness of military forces and supporting infrastructure to meet missions and goals assigned by the Secretary of Defense. The realization of DRRS required integrating a host of key technologies to achieve an information system that supports distributed, collaborative, and dynamic readiness reporting in addition to continuous tool-based assessment. The primary technical goal was the creation of a highly reliable and securely integrated readiness data environment to leverage and extend current readiness information systems. DRRS contains readiness metrics and supporting data for forces and support organizations.</p> <p>FY 2012 Accomplishments:</p> <ul style="list-style-type: none"> • Validated Organizational Server • Data quality improvement • Data latency improvement • Developed and integrated with Interagency readiness and preparedness systems outside DoD. • Completed SORTS transition to DRRS • Integrated the Language Readiness Index into DRRS <p>FY 2013 Plans:</p> <ul style="list-style-type: none"> • Continue Software lifecycle support • Continue to assist the Services using DRRS to support their Component Commanders and the Combatant CCommanders • Continue refinement of data architecture • Data quality improvement • Data latency improvement with the use of Dashboards • Continue development and integration with Interagency readiness and preparedness systems outside DoD. • Expand readiness reporting capability and integration with coalition forces and allies. • Complete the development and fielding of the Global Visibility Tool to support Global Force Management <p>FY 2014 Plans:</p> <ul style="list-style-type: none"> • Achieve Full Operational Capability (FOC) • Continue Software lifecycle support 			
			6.393

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>	R-1 ITEM NOMENCLATURE PE 0604774D8Z: <i>Defense Readiness Reporting System (DRRS)</i>	PROJECT 774: <i>Defense Readiness Reporting System (DRRS)</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
<ul style="list-style-type: none"> • Continue to assist the Services using DRRS to support their Component Cmdrs and the CoCOMS • Continue refinement of data architecture • Data quality improvement • Data latency improvement with the use of Dashboards • Continue development and integration with Interagency readiness and preparedness systems outside DoD. • Expand readiness reporting capability and integration with coalition forces and allies. • Complete Joint Interoperability Testing through the Joint Interoperability Test Command (JITC) 			
Accomplishments/Planned Programs Subtotals		6.598	6.383
C. Other Program Funding Summary (\$ in Millions) N/A Remarks D. Acquisition Strategy N/A E. Performance Metrics <ul style="list-style-type: none"> • Readiness Transformation - Accurate and timely Mission Readiness Assessment and Reporting • Capability Readiness Reporting and Assessment - Operational commonality of mission based capability readiness reporting and assessment • DRRS Operational Performance - Single integrated Readiness IMS capability for the Department • Achieving Reliable Data Architecture and Interoperability - Seamless integration with the departments readiness architecture and compatible with emerging adaptive planning systems • Transition to one readiness reporting system for DoD. 			

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense	DATE: April 2013
-------------------------------------------------------------------------------------------------	-------------------------

APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE							
0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>					PE 0604875D8Z: <i>Joint Systems Architecture Development</i>							
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
Total Program Element	-	4.545	3.845	2.479	-	2.479	5.217	6.464	5.936	6.051	Continuing	Continuing
P876: <i>Portfolio Systems Acquisition (PSA)</i>	-	4.545	3.845	2.479	-	2.479	5.217	6.464	5.936	6.051	Continuing	Continuing

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

The level of resourcing for the Joint System Architecture Development (JSAD) program reflects iterative reductions from efficiencies and budget reductions, which reduces the Department's ability to develop flexible responsive solutions to emerging war fighter needs. The Quadrennial Defense Review (QDR) and acquisition reform initiatives call for top down, national security strategy-driven capabilities-based planning. Department of Defense (DoD) Instruction 5000.02 and Chairman of the Joint Chiefs of Staff Instruction 3170.01 promulgate capabilities-based requirements and acquisition processes. The JSAD program enables collaborative efforts to achieve these goals. These efforts include providing support to conduct warfighting capability-based analysis; performing assessments of joint capability areas and joint integrating concepts; developing and supporting needed sets of system and system-related data; creating integrated roadmaps to support acquisition investment decisions; and performing assessments of major defense acquisition programs and major automated information systems in a capability area context. Activities in the JSAD project are divided into three areas: (1) capability-based analysis; (2) roadmaps; and (3) support tools and guidance. Capability-based analysis provides analysis of the different technology, functionality, and integration impacts of systems on warfighting capability. Acquisition roadmaps guide systems development and associated investment plans. JSAD support tools and guidance initiatives develop systems data, and tools, exploit modeling and simulation and architecture efforts to improve DoDs overall assessment capability. These efforts guide the development and improve the testing and fielding of integrated systems of systems in order to achieve Joint mission capabilities. The QDR also lays out the need for an institutional reorientation or shift in emphasis from organization-specific to enterprise-wide approaches. This means: (1) horizontal integration within the Department and unity of effort through greater interagency collaboration; (2) engaging in a coordinated and portfolio-based approach to planning, programming, budgeting and execution; and (3) significant reforms at the governance, management and execution levels. To accomplish this direction, there needs to be a focused goal and concerted emphasis on shifting from systems acquisition to capabilities-based portfolio management (or portfolio systems acquisition). This program enables collaborative efforts to implement the QDR direction outlined above in order to achieve portfolio systems acquisition goals. The program is broken up into two focus areas (Portfolio Management and Reform Initiatives) and consolidates work previously performed under various other Program Elements.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense	DATE: April 2013
-------------------------------------------------------------------------------------------------	-------------------------

APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>	R-1 ITEM NOMENCLATURE PE 0604875D8Z: <i>Joint Systems Architecture Development</i>
--------------------------------------------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------

B. Program Change Summary (\$ in Millions)	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total
Previous President's Budget	4.570	3.845	4.102	-	4.102
Current President's Budget	4.545	3.845	2.479	-	2.479
Total Adjustments	-0.025	0.000	-1.623	-	-1.623
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments	-0.025	-	-1.623	-	-1.623

Change Summary Explanation

Funding was reduced based on other program requirements.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE				PROJECT			
0400: Research, Development, Test & Evaluation, Defense-Wide BA 6: RDT&E Management Support					PE 0604875D8Z: Joint Systems Architecture Development				P876: Portfolio Systems Acquisition (PSA)			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
P876: Portfolio Systems Acquisition (PSA)	-	4.545	3.845	2.479	-	2.479	5.217	6.464	5.936	6.051	Continuing	Continuing
Quantity of RDT&E Articles												

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

The Departments 2005 Quadrennial Defense Review (QDR) laid out the need for an institutional reorientation or shift in emphasis from organization-specific to enterprise-wide approaches. This meant: (1) horizontal integration within the Department and unity of effort through greater interagency collaboration; (2) engaging in a coordinated and portfolio-based approach to planning, programming, budgeting and execution; and (3) significant reforms at the governance, management and execution levels. The Department's 2010 QDR report further addressed reforming how we buy, noting that the conventional acquisition process is too long and too cumbersome to fit the needs of the many systems that require continuous changes and upgrades—a challenge that will become only more pressing over time. The Department will improve how it matches requirements with mature technologies, maintains disciplined systems engineering approaches. To accomplish this direction, there needed to be a focused goal and concerted emphasis on shifting from acquisition of individual systems to portfolio management (or portfolio systems acquisition). This program enables collaborative efforts to implement the QDR direction outlined above and to achieve portfolio systems acquisition goals and to develop and implement acquisition reform initiatives. The program is broken up into two focus areas (Portfolio Management and Reform Initiatives) and consolidates work previously performed under various other Program Elements.

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2012	FY 2013	FY 2014
Title: Portfolio Systems Acquisition Initiatives	4.545	3.845	2.479
FY 2012 Accomplishments: -Conducted assessments of Capability Portfolios and warfare areas to reduce duplication and identify opportunities for cost savings. -Continued implementation support of program management initiatives. -Conducted analyses and support implementation of acquisition reform initiatives (e.g., WSARA, IMPROVE). -Performed "reliability by design" analyses and support to programs. -Participated in Unmanned Systems portfolio reviews. -Provided analytical support to the Unmanned Aircraft Systems Task Force, Airspace Integration IPT, and in reviews of Unmanned Systems program execution. -Performed a review of the Integrated Air and Missile Defense portfolio and provide analytical support for the IAMD Roadmap to include planning and scoping, assessment of attainment of recommendations, and liaison with JS, Services, and Agencies for implementation of recommendations			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>	R-1 ITEM NOMENCLATURE PE 0604875D8Z: <i>Joint Systems Architecture Development</i>	PROJECT P876: <i>Portfolio Systems Acquisition (PSA)</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
<ul style="list-style-type: none"> -Provided support/liaison to Warfighter Improvement Process (WIP) -Provided support to Missile Defense Executive Board (MBEB) via the Air and Missile Defense Standing Committee (AMD SC) -Conducted system support and analyses of rotary wing aviation programs including Future Vertical Lift. -Assessed progress of enhanced DoD fuze enabling technologies. -Maintained the Conventional Munitions Database. -Prepared Counter Weapons of Mass Destruction roadmap and provided technical and analytical support for CWMD System of Systems work -Articulated DoD courses of action and views on homeland defense implementation and compliance issues in multiple bilateral and multilateral fora. -Provided analytical support to the Homeland Defense Coordinator function within OUSD(AT&L) -Supported development of US/UK Ground Moving Target Indicator (GMTI) collector interoperability. <p>FY 2013 Plans:</p> <ul style="list-style-type: none"> -Conduct assessments of Capability Portfolios and warfare areas to reduce duplication and identify opportunities for cost savings. -Conduct analyses and support implementation of acquisition efficiencies. -Provide technical expertise in support of warfare area portfolios. -Assess progress of program management initiatives and implement new initiatives. -Expand "reliability by design" analyses and support to programs. -Articulate DoD courses of action and views on homeland defense implementation and compliance issues in multiple bilateral and multilateral fora. <p>FY 2014 Plans:</p> <ul style="list-style-type: none"> -Provide analytical support to the Homeland Defense Coordinator function within OUSD(AT&L). -Prepare roadmaps to guide investments in critical areas (e.g., future vertical lift and IAMD). -Continue analytical support for the IAMD portfolio. -Continue participation in WIP-Next -Continue support to AMD SC 				
Accomplishments/Planned Programs Subtotals		4.545	3.845	2.479
C. Other Program Funding Summary (\$ in Millions)				
N/A				
Remarks				

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>	R-1 ITEM NOMENCLATURE PE 0604875D8Z: <i>Joint Systems Architecture Development</i>	PROJECT P876: <i>Portfolio Systems Acquisition (PSA)</i>
<u>D. Acquisition Strategy</u> Not Applicable		
<u>E. Performance Metrics</u> Not Applicable		

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE							
0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>					PE 0604940D8Z: <i>Central Test and Evaluation Investment Program (CTEIP)</i>							
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013[#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
Total Program Element	-	156.249	144.109	240.213	-	240.213	256.141	241.813	209.550	180.311	Continuing	Continuing
940: <i>Central Test and Evaluation Investment Program (CTEIP)</i>	-	156.249	144.109	240.213	-	240.213	256.141	241.813	209.550	180.311	Continuing	Continuing
Quantity of RDT&E Articles												

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

Since its inception in FY 1990, this program element has been used to fund the development of critically needed, high priority Test and Evaluation (T&E) capabilities for joint/multi-Service requirements. The Central Test and Evaluation Investment Program (CTEIP) uses a corporate investment approach to combine Service, Defense, and other government agencies T&E needs, maximize opportunities for joint efforts, and avoid unwarranted duplication of test capabilities. CTEIP focuses investments on projects that will have high productivity returns on investment. Projects under the CTEIP Program Element (PE) support two basic tasks: investments to improve the test capabilities base (Joint Improvement and Modernization (JIM) projects) and development of near-term solutions to test capability shortfalls in support of ongoing operational test programs (Resource Enhancement Project (REP)).

The JIM funds critically needed T&E investments in the major functional areas of: air combat; armament and munitions; Command, Control Communication, Computer and Intelligence (C4I) and networks; common range instrumentation; electronic combat; land combat; sea combat; space combat; target systems; and test environments. Examples of project subject matter include: highly accurate time-space-position information, network enhanced telemetry, miniaturized flight safety systems, realistic urban test environments, ground testing for hypersonic systems and satellites, and end-to-end testing of infrared countermeasure systems. CTEIP continues as the focal point for fostering common architectures throughout the test and training communities to enhance the sharing of resources and links between test and training ranges.

CTEIP has provided special focus to institutionalize the use of modeling and simulation (M&S) as a practical test tool; to link ranges through internetting to enhance inter-range and inter-Service cooperation and resource sharing; and, to ensure development and acquisition of common instrumentation necessary for a more efficient test infrastructure.

Analyses of alternative solutions are conducted for each investment project to validate T&E requirements, to define integrated support systems, and to determine overall cost effectiveness of the proposed test investments. The use of Department of Defense (DoD)-wide criteria for requirement validation, prioritization, and risk assessment ensures an effective test resource investment program.

The REP funds development of near-term solutions for critical ongoing operational tests supporting decisions on major, high priority defense acquisition programs. These unanticipated operational test (OT) capability requirements arise from several sources such as a new threat system identified during OT planning, acquisition of foreign military assets that are critical in determining weapon system operational effectiveness, short timelines between system design maturity and scheduled OT, and

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense	DATE: April 2013
-------------------------------------------------------------------------------------------------	-------------------------

APPROPRIATION/BUDGET ACTIVITY

0400: *Research, Development, Test & Evaluation, Defense-Wide*
 BA 6: *RDT&E Management Support*

R-1 ITEM NOMENCLATURE

PE 0604940D8Z: *Central Test and Evaluation Investment Program (CTEIP)*

emerging technologies and test requirements resulting from operational concept changes mandated by Congress or Director, Operational Test & Evaluation (DOT&E), or system-of-systems testing. Funding these activities under the CTEIP provides the opportunity to coordinate and integrate these near-term test requirements with the total DoD test and evaluation investment planning, and ensures their availability and legacy for other programs that may have similar testing requirements.

This Research Category 6.4 PE includes special studies, analyses, and strategic planning related to test capabilities and infrastructure, and supports the development and application of proven technologies to provide major test and evaluation capabilities required to meet DoD component weapon system test requirements.

B. Program Change Summary (\$ in Millions)	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total
Previous President's Budget	156.297	144.109	140.097	-	140.097
Current President's Budget	156.249	144.109	240.213	-	240.213
Total Adjustments	-0.048	0.000	100.116	-	100.116
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-0.048	-			
• SBIR/STTR Transfer	-	-			
• Efficiency Savings: Realignment of Test Capability Development with Requirements	-	-	-2.284	-	-2.284
• Program Adj: Electronic Warfare Test Capability	-	-	102.400	-	102.400

Change Summary Explanation

- Efficiency Savings: Fiscal Guidance of baseline program adjusted to realign funds for higher priorities within DOD.
- Electronic Warfare Test Capability: Test infrastructure upgrades required for testing next generations of Electronic Warfare Systems.

C. Accomplishments/Planned Programs (\$ in Millions)

	FY 2012	FY 2013	FY 2014
Title: Central Test and Evaluation Investment Program	156.249	144.109	240.213
FY 2012 Accomplishments:			
JIM Projects:			
- Completed requirements development and planning, and initiated concept development and preliminary design of a Joint Urban Test Capability to provide urban environment test capabilities.			

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>		R-1 ITEM NOMENCLATURE PE 0604940D8Z: <i>Central Test and Evaluation Investment Program (CTEIP)</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
<ul style="list-style-type: none"> - Completed requirements development and planning, and concept development and preliminary design, and initiated system development of the Joint Unmanned Aerial Systems (UAS) Mission Environment project to develop a capability for testing UAS in simulated system of systems environments. - Completed requirements development and planning, and concept development and preliminary design, and initiated system development for the Next Generation Electronic Warfare Environment Generator Build A project to provide a multiple jammer characterization system for dynamic stimulation and measurement of multiple jamming and radar signals. - Completed requirements development and planning and initiated concept development and preliminary design for the Next Generation Electronic Warfare Environment Generator Build B project to provide electronic warfare simulation capabilities for testing future Electronic Attack and Electronic Support Measures systems. - Completed an analysis of the benefits of developing test capabilities for Autonomous Systems. - Completed an analysis of tri-service signals library needs to support development of a controlled density open air environment for testing of C4ISR systems. - Continued requirements, development, and planning for the Multi-Level Secure (MLS) Joint/Coalition Network Environment project to develop a standardized, DoD multi-level secure and cross-domain data management T&E network architecture. - Continued systems development of the Advanced Radar Environment Simulator, under the Joint Installed Systems Test Facility Product Improvements project, to provide improved installed systems capabilities needed to support next generation aircraft testing. - Continued concept development and preliminary design of the Subminiature Flight Safety System project to provide a subminiature, low-cost flight termination system with time-space-position information and data link capabilities. - Continued concept development and preliminary design for the Integrated Network Enhanced Telemetry project Block I capability to develop a network-enhanced aeronautical telemetry capability for T&E ranges and facilities. - Continued system development for the Missile Warning System and Flares segment of the Joint Distributed Infrared Countermeasures (IRCM) Ground Test System project to provide an end-to-end ground test system enabling complete testing of IRCM systems. - Continued systems development of the Joint C4ISR Interoperability Test and Evaluation Capability project to develop a capability to test increasingly complex multi-discipline data fusion concepts. Continued development of Spiral 3 capability by integrating the principal protocols of the Joint Intelligence Networks and the Net Ready Key Performance Parameter (KPP). - Continued system development for the Objective Helicopter Icing Spray System project to provide an enhanced capability to perform in-flight icing and rain testing for low-speed air vehicles. - Continued system development for the Space Threat Assessment Testbed project to provide a capability to conduct subsystem and system level combined natural and man-made space environmental effects ground testing of critical space assets. - Continued systems development for the Common Range Integrated Instrumentation System project to develop a common range instrumentation system to address next generation range data requirements. 				

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>		R-1 ITEM NOMENCLATURE PE 0604940D8Z: <i>Central Test and Evaluation Investment Program (CTEIP)</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
<ul style="list-style-type: none"> - Continued threat system simulator development efforts to improve integration, reduce potential duplication, and ensure that accurate, cost-effective representations of threat systems were available to support testing. - Continued requirements development and planning for the Advanced Range Tracking and Imaging System project to provide an integrated next generation suite of optical tracking mounts needed to increase performance, reduce costs, and effectively deliver secure reliable optical throughput. - Initiated the Next Generation Range Control and Data Distribution project to enhance and modernize range control and data distribution systems at the Pacific Missile Range Facility (PMRF). <p>Resource Enhancement Project:</p> <ul style="list-style-type: none"> - Completed design and development, and began Defense Threat Reduction Activity certification testing, of the MILSATCOM Atmospheric Scintillation Simulator project. - Completed the delivery of the Lightweight Alternative Power Source project. - Completed the delivery of the Distributed Timing Instrumentation Environment project. - Continued system fabrication and began testing of the Multi-Spectral Sea and Land Target Simulator project. - Continued the development of the Threat Model Assessment Program of Operational Test and Evaluation project. - Continued optical component design of the J-31 Radar Missile Gun System project. - Continued development of the Ground Mounted Seeker Simulator project to provide additional missile seekers to the Missile on the Mountain facility. - Continued development of Force on Force Real Time Casualty Assessment Test Instrumentation II (FOF-TI II) to provide force-on-force evaluations of the Lightweight Armored Vehicle Anti-Tank Modernization program. - Continued development of Precision Target Signatures-Reflective Performance Mover (PTS-RPM) to develop low cost, radar cross section representative, movable targets. - Continued development of Hostile Fire Indicator Site (HFIS) to enhance existing Hostile Fire Indicator test site with key upgrades to fully facilitate HFI testing of warning systems. - Initiated development of Mobile Flight Mission Simulator (mFMS) Advanced Electronic Attack (AEA) to provide realistic electronic attack capabilities into PATRIOT Flight Mission Simulators. - Initiated development of C2 and Urban Background Environment Simulator (CUBES) to incorporate modern signal processor advances for Installed System Test Facility communications jamming purposes. <p>FY 2013 Plans:</p> <p>JIM Projects:</p> <ul style="list-style-type: none"> - Complete systems development of the Joint C4ISR Interoperability Test and Evaluation Capability project to develop a capability to test increasingly complex multi-discipline data fusion concepts. Complete development of Spiral 3 capability by integrating the principal protocols of the Joint Intelligence Networks and the Net Ready Key Performance Parameter (KPP). 				

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>		R-1 ITEM NOMENCLATURE PE 0604940D8Z: <i>Central Test and Evaluation Investment Program (CTEIP)</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
<ul style="list-style-type: none"> - Complete systems development of the Advanced Radar Environment Simulator, under the Joint Installed Systems Test Facility Product Improvements project, to provide improved installed systems capabilities needed to support next generation aircraft testing. - Complete system development for the Space Threat Assessment Testbed project to provide a capability to conduct subsystem and system level combined natural and man-made space environmental effects ground testing of critical space assets. - Complete concept development and preliminary design and initiate systems development for the Multi-Level Secure (MLS) Joint/Coalition Network Environment project to develop a standardized, DoD multi-level secure and cross-domain data management T&E network architecture. - Complete concept development and preliminary design and initiate systems development for the Next Generation Electronic Warfare Environment Generator Build B project to provide electronic warfare simulation capabilities for testing future Electronic Attack and Electronic Support Measures systems. - Complete concept development and preliminary design and initiate system development for the Integrated Network Enhanced Telemetry project Block I capability to develop a network-enhanced aeronautical telemetry capability for T&E ranges and facilities. - Complete requirements development and planning and initiate concept development and preliminary design for the Advanced Range Tracking and Imaging System project to provide an integrated next generation suite of optical tracking mounts needed to increase performance, reduce costs, and effectively deliver secure reliable optical throughput. - Continue concept development and preliminary design of a Joint Urban Test Capability to provide urban environment test capabilities. - Continue systems development of the Joint Unmanned Aerial Systems (UAS) Mission Environment project to develop a capability for testing UAS in simulated system of systems environments. - Continue system development for the Next Generation Electronic Warfare Environment Generator Build A project to provide a multiple jammer characterization system for dynamic stimulation and measurement of multiple jamming and radar signals. - Continue system development for the Objective Helicopter Icing Spray System project to provide an enhanced capability to perform in-flight icing and rain testing for low-speed air vehicles. - Continue systems development for the Common Range Integrated Instrumentation System project to develop a common range instrumentation system to address next generation range data requirements. - Continue threat system simulator development efforts to improve integration, reduce potential duplication, and ensure that accurate, cost-effective representations of threat systems are available to support testing. - Continue system development for the Missile Warning System and Flares segment of the Joint Distributed Infrared Countermeasures (IRCM) Ground Test System project to provide an end-to-end ground test system enabling complete testing of IRCM systems. - Continue the Next Generation Range Control and Data Distribution project to enhance and modernize range control and data distribution systems at the Pacific Missile Range Facility (PMRF). 				

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>		R-1 ITEM NOMENCLATURE PE 0604940D8Z: <i>Central Test and Evaluation Investment Program (CTEIP)</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
<ul style="list-style-type: none"> - Initiate systems development of the Subminiature Flight Safety System project to provide a subminiature, low-cost flight termination system with time-space-position information and data link capabilities. - Initiate the Synthetic Battlefield Emitter Systems project to provide a controlled density open air environment for testing of C4ISR systems. - Initiate the C-130 Based Telemetry Instrumentation System project to provide expanded capability and capacity telemetry support for aircraft and missile defense testing in inter-range and broad ocean area test scenarios. <p>Resource Enhancement Project:</p> <ul style="list-style-type: none"> - Complete development of the Multispectral Sea and Land Target Simulator (MSALTS) project. - Complete development of Precision Target Signatures-Reflective Performance Mover (PTS-RPM) to develop low cost, radar cross section representative, movable targets. - Complete development of Force on Force Real Time Casualty Assessment Test Instrumentation II (FOF-TI II) to provide force-on-force evaluations of the Lightweight Armored Vehicle Anti-Tank Modernization program. - Complete delivery of the MILSATCOM Atmospheric Scintillation Simulator project. - Complete delivery of the Threat Model Assessment Program of Operational Test and Evaluation project. - Complete optical component design of the J-31 Radar Missile Gun System project. - Complete development of the Ground Mounted Seeker Simulator project to provide additional missile seekers to the Missile on the Mountain facility. - Continue development of Hostile Fire Indicator Site (HFIS) to enhance existing Hostile Fire Indicator test site with key upgrades to fully facilitate HFI testing of warning systems. - Continue development of C2 and Urban Background Environment Simulator (CUBES) to incorporate modern signal processor advances for Installed System Test Facility communications jamming purposes. - Continue development of Mobile Flight Mission Simulator (mFMS) Advanced Electronic Attack (AEA) to provide realistic electronic attack capabilities into PATRIOT Flight Mission Simulators. - Initiate and complete development of Direct Injection Plate System (DIPS) to provide Installed System Test Facility with direct RF injection plates for F-35 variants. - Initiate development of DIADS Weapons Control (DWC) to develop new Integrated Air Defense (IADS) weapons control algorithms in the Digital IADS (DIADS) used in the F-35 Virtual Simulator (VSIM). - Initiate development of Torpedo Operational Testing Using Modeling and Simulation (TOTUMS) to enhance torpedo OT&E by upgrading an HWIL simulator and environment simulator for high-fidelity, OT-ready realism. 				

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>		R-1 ITEM NOMENCLATURE PE 0604940D8Z: <i>Central Test and Evaluation Investment Program (CTEIP)</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
<p>- Initiate development of Boosted Zombie Target (BZT) to develop multi-stage, economical targets for PAC-3 by integrating a GFE booster to blue "Zombie" maneuvering target.</p> <p>FY 2014 Plans: JIM Projects:</p> <ul style="list-style-type: none"> - Complete system development for the Next Generation Electronic Warfare Environment Generator Build a project to provide a multiple jammer characterization system for dynamic stimulation and measurement of multiple jamming and radar signals. - Complete concept development and preliminary design and initiate systems development for the Advanced Range Tracking and Imaging System project to provide an integrated next generation suite of optical tracking mounts needed to increase performance, reduce costs, and effectively deliver secure reliable optical throughput. - Complete system development for the Missile Warning System and Flares segment of the Joint Distributed Infrared Countermeasures (IRCM) Ground Test System project to provide an end-to-end ground test system enabling complete testing of IRCM systems. - Continue concept development and preliminary design of a Joint Urban Test Capability to provide urban environment test capabilities. - Continue systems development for the Multi-Level Secure (MLS) Joint/Coalition Network Environment project to develop a standardized, DoD multi-level secure and cross-domain data management T&E network architecture. - Continue systems development of the Joint Unmanned Aerial Systems (UAS) Mission Environment project to develop a capability for testing UAS in simulated system of systems environments. - Continue systems development for the Next Generation Electronic Warfare Environment Generator Build B project to provide electronic warfare simulation capabilities for testing future Electronic Attack and Electronic Support Measures systems. - Continue systems development of the Subminiature Flight Safety System project to provide a subminiature, low-cost flight termination system with time-space-position information and data link capabilities. - Continue system development for the Objective Helicopter Icing Spray System project to provide an enhanced capability to perform in-flight icing and rain testing for low-speed air vehicles. - Continue systems development for the Common Range Integrated Instrumentation System project to develop a common range instrumentation system to address next generation range data requirements. - Continue systems development for the Integrated Network Enhanced Telemetry project Block I capability to develop a network-enhanced aeronautical telemetry capability for T&E ranges and facilities. - Continue threat system simulator development efforts to improve integration, reduce potential duplication, and ensure that accurate, cost-effective representations of threat systems are available to support testing. - Continue the C-130 Based Telemetry Instrumentation System project to provide expanded capability and capacity telemetry support for aircraft and missile defense testing in inter-range and broad ocean area test scenarios. 				

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>		R-1 ITEM NOMENCLATURE PE 0604940D8Z: <i>Central Test and Evaluation Investment Program (CTEIP)</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
<ul style="list-style-type: none"> - Continue the Synthetic Battlefield Emitter Systems project to provide a controlled density open air environment for testing of C4ISR systems. - Continue the Vertical Electromagnetic Pulse (EMP) and High Power Microwave (HPM) Test Sources project to provide vertical high-altitude EMP and HPM external electromagnetic environments for testing in accordance with applicable Military Standards. - Continue the Next Generation Range Control and Data Distribution project to enhance and modernize range control and data distribution systems at the Pacific Missile Range Facility (PMRF). - Initiate the Vertical Electromagnetic Pulse (EMP) and High Power Microwave (HPM) Test Sources project to provide vertical high-altitude EMP and HPM external electromagnetic environments for testing in accordance with applicable Military Standards. - Initiate the Network Centric Weapon (NCW) T&E Environment project to provide an enhanced capability to test and evaluate NCW in a distributed simulation environment. - Initiate the Cyber Test Analysis and Simulation Environment project to enhance current Information Assurance / Cyber testing and analysis capabilities and modeling and simulations tools for testing against increasingly robust Cyber threats. - Initiate development of improved electronic warfare test capabilities for fielding at Installed Systems Test Facilities, threat simulation facilities, and open air test ranges to address critical shortfalls in developmental and operational testing of F-35 and other high performance aircraft against advanced threats. <p>Resource Enhancement Project:</p> <ul style="list-style-type: none"> - Complete development of Hostile Fire Indicator Site (HFIS) to enhance existing Hostile Fire Indicator test site with key upgrades to fully facilitate HFI testing of warning systems. - Complete development of Mobile Flight Mission Simulator (mFMS) Advanced Electronic Attack (AEA) to provide realistic electronic attack capabilities into PATRIOT Flight Mission Simulators. - Complete development of DIADS Weapons Control (DWC) to develop new Integrated Air Defense (IADS) weapons control algorithms in the Digital IADS (DIADS) used in the F-35 Virtual Simulator (VSIM). - Continue development of C2 and Urban Background Environment Simulator (CUBES) to incorporate modern signal processor advances for Installed System Test Facility communications jamming purposes. - Complete development of Torpedo Operational Testing Using Modeling and Simulation (TOTUMS) to enhance torpedo OT&E by upgrading an HWIL simulator and environment simulator for high-fidelity, OT-ready realism. - Continue development of Boosted Zombie Target (BZT) to develop multi-stage, economical targets for PAC-3 by integrating a GFE booster to blue "Zombie" maneuvering target. - Initiate development of instrumented facilities to evaluate our next generation of sensors, weapons, platforms, and C4ISR systems in a realistic urban environment. - Initiate development of hardware simulators to test missile warning systems of new generation electronic warfare (EW) suites in a dynamic environment. 				

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>	R-1 ITEM NOMENCLATURE PE 0604940D8Z: <i>Central Test and Evaluation Investment Program (CTEIP)</i>			
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
- Initiate the development of non-intrusive instrumentation to address near term OT capability shortfalls to evaluate advanced sensor system performance in harsh environments.				
Accomplishments/Planned Programs Subtotals		156.249	144.109	240.213
D. Other Program Funding Summary (\$ in Millions) N/A				
Remarks				
E. Acquisition Strategy N/A				
F. Performance Metrics A portion of CTEIP projects that were developed and delivered to the DoD test community over the past five years.				

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE							
0400: Research, Development, Test & Evaluation, Defense-Wide					PE 0604942D8Z: Assessments & Evaluations							
BA 6: RDT&E Management Support												
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
Total Program Element	-	2.574	2.419	2.127	-	2.127	2.173	2.273	2.254	2.403	Continuing	Continuing
P805: Assessments & Evaluations	-	2.574	2.419	2.127	-	2.127	2.173	2.273	2.254	2.403	Continuing	Continuing
Quantity of RDT&E Articles												
[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012												
^{##} The FY 2014 OCO Request will be submitted at a later date												
A. Mission Description and Budget Item Justification												
This program is reported in accordance with Title 10, United States Code, Section 119(a)(1) in the Special Access Program Annual Report to Congress. For further information, please contact the Director of Special Programs, OUSD(AT&L)/DSP at (703) 697-1282.												
B. Program Change Summary (\$ in Millions)				FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total				
Previous President's Budget				2.690	2.419	2.471	-	2.471				
Current President's Budget				2.574	2.419	2.127	-	2.127				
Total Adjustments				-0.116	0.000	-0.344	-	-0.344				
• Congressional General Reductions				-	-							
• Congressional Directed Reductions				-	-							
• Congressional Rescissions				-	-							
• Congressional Adds				-	-							
• Congressional Directed Transfers				-	-							
• Reprogrammings				-	-							
• SBIR/STTR Transfer				-	-							
• Adjustments				-0.116	-	-0.344	-	-0.344				
C. Accomplishments/Planned Programs (\$ in Millions)									FY 2012	FY 2013	FY 2014	
Title: Assessments & Evaluations									2.574	2.419	2.127	
FY 2012 Accomplishments:												
Not applicable, Information is Classified.												
FY 2013 Plans:												
Not applicable, Information is Classified.												
FY 2014 Plans:												

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>		R-1 ITEM NOMENCLATURE PE 0604942D8Z: <i>Assessments & Evaluations</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
Not applicable, Information is Classified.				
Accomplishments/Planned Programs Subtotals		2.574	2.419	2.127
D. Other Program Funding Summary (\$ in Millions) N/A				
Remarks				
E. Acquisition Strategy Not applicable, Information is Classified.				
F. Performance Metrics Not applicable. Classified				

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 6: RDT&E Management Support					R-1 ITEM NOMENCLATURE PE 0604943D8Z: Thermal Vicar							
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
Total Program Element	-	7.658	8.214	8.287	-	8.287	8.465	8.822	9.132	9.278	Continuing	Continuing
P943: Thermal Vicar	-	7.658	8.214	8.287	-	8.287	8.465	8.822	9.132	9.278	Continuing	Continuing
Quantity of RDT&E Articles												
# FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012												
## The FY 2014 OCO Request will be submitted at a later date												
A. Mission Description and Budget Item Justification												
This program is reported in accordance with Title 10, United States Code, Section 119(a)(1) in the Special Access Program Annual Report to Congress. For further information, please contact the Director of Special Programs, OUSD(AT&L)/DSP at (703) 697-1282.												
B. Program Change Summary (\$ in Millions)				FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total				
Previous President's Budget				7.660	8.214	8.287	-	8.287				
Current President's Budget				7.658	8.214	8.287	-	8.287				
Total Adjustments				-0.002	0.000	0.000	-	0.000				
• Congressional General Reductions				-	-							
• Congressional Directed Reductions				-	-							
• Congressional Rescissions				-	-							
• Congressional Adds				-	-							
• Congressional Directed Transfers				-	-							
• Reprogrammings				-	-							
• SBIR/STTR Transfer				-	-							
• Adjustments				-0.002	-	-	-	-				
C. Accomplishments/Planned Programs (\$ in Millions)								FY 2012	FY 2013	FY 2014		
Title: Thermal Vicar								7.658	8.214	8.287		
Description: Not applicable. Information is Classified.												
FY 2012 Accomplishments: Not applicable. Information is Classified.												
FY 2013 Plans:												

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>		R-1 ITEM NOMENCLATURE PE 0604943D8Z: <i>Thermal Vicar</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
Not applicable. Information is Classified.				
FY 2014 Plans: Not applicable. Information is Classified.				
Accomplishments/Planned Programs Subtotals		7.658	8.214	8.287
D. Other Program Funding Summary (\$ in Millions) N/A				
Remarks				
E. Acquisition Strategy Not applicable.				
F. Performance Metrics Not applicable.				

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE							
0400: Research, Development, Test & Evaluation, Defense-Wide BA 6: RDT&E Management Support					PE 0605100D8Z: Joint Mission Environment Test Capability (JMETC)							
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
Total Program Element	-	10.215	19.380	31.000	-	31.000	31.557	31.809	32.279	32.969	Continuing	Continuing
100: Joint Mission Environment Test Capability (JMETC)	-	10.215	19.380	31.000	-	31.000	31.557	31.809	32.279	32.969	Continuing	Continuing
Quantity of RDT&E Articles												

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

The Joint Mission Environment Test Capability (JMETC) program was established for the purpose of implementing the Department's strategy to move to an enterprise-centric, distributed test capability that results in acquisition systems fielded with enhanced joint capabilities, reduced program costs, and improved acquisition timelines. The JMETC program implements the infrastructure capabilities defined in the DoD's "Testing in a Joint Environment Roadmap" to provide acquisition program managers a robust nation-wide capability to "test like we fight." JMETC provides a persistent, distributed test and evaluation (T&E) capability that otherwise would not be readily available to Service/Component acquisition programs. This program is funded within the RDT&E Management Support Budget Activity because it is intended to provide test capability in support of RDT&E programs.

JMETC creates a common corporate capability to link live systems with virtual and constructive representations in order to generate a realistic joint mission test environment for the system(s) being tested. JMETC is a widely applicable, persistent, service provider for the Department's acquisition and net-centric programs. Key JMETC products include readily available connectivity over existing networks, standardized data transport solutions, tools and utilities for planning and conducting distributed integrations, DoD corporate distributed testing expertise, and a reuse repository. This common integration capability, through the use of the Test and Training Enabling Architecture (TENA), provides compatibility between JMETC and the Joint National Training Capability (JNTC), streamlining reuse of technical resources across the test and training communities. In turn, this integration capability enables combined test and training exercises.

By linking distributed facilities, JMETC allows acquisition programs to efficiently evaluate their warfighting capability in a realistic joint mission environment. This enables a customer-defined joint mission test environment for systems engineering and testing, extensible to training and experimentation, in a timely and cost effective manner.

JMETC's institutional funding builds, maintains, and operates the JMETC infrastructure and pays for persistent availability of national connectivity for testing; data communications middleware; identification and development of interface standards; common software tools and components; and a reuse repository. It also funds JMETC program management, facilities, equipment, operating costs, and special studies and analysis related to distributed test capabilities and infrastructure. Key attributes of the JMETC include: persistency; interoperability; reuse; various combinations of distributed capabilities (reconfigurable infrastructure to meet customer requirements); modeling and simulation (M&S) linkage; Live-Virtual-Constructive (LVC) test resource integration; and distributed test support to satisfy both Service and Joint needs. System engineering, training, and experimentation all benefit from a corporate JMETC developed for T&E.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense				DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 6: RDT&E Management Support		R-1 ITEM NOMENCLATURE PE 0605100D8Z: Joint Mission Environment Test Capability (JMETC)				
The Test Resource Management Center (TRMC) is the Department's lead for the JMETC program, and oversees both its development and its operations.						
B. Program Change Summary (\$ in Millions)	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total	
Previous President's Budget	10.218	19.380	19.060	-	19.060	
Current President's Budget	10.215	19.380	31.000	-	31.000	
Total Adjustments	-0.003	0.000	11.940	-	11.940	
• Congressional General Reductions	-	-				
• Congressional Directed Reductions	-	-				
• Congressional Rescissions	-	-				
• Congressional Adds	-	-				
• Congressional Directed Transfers	-	-				
• Reprogrammings	-0.003	-				
• SBIR/STTR Transfer	-	-				
• Efficiency Savings in Travel and Administrative Requirements	-	-	-0.310	-	-0.310	
• Program Adj: National Cyber Range	-	-	12.250	-	12.250	
Change Summary Explanation						
• Efficiency Savings: Fiscal Guidance of baseline program adjusted to realign funds for higher priorities within DOD.						
• National Cyber Range: Funding provided to operate and operationalize the National Cyber Range (NCR) since Test Research Management Center assumed responsibility for the NCR effective FY13.						
C. Accomplishments/Planned Programs (\$ in Millions)				FY 2012	FY 2013	FY 2014
Title: Joint Mission Environment Test Capability				10.215	19.380	31.000
FY 2012 Accomplishments:						
- Completed a Data Management Study to define joint requirements for data management in the distributed test capability and continued to work with other DoD and Service programs to identify solutions for these requirements.						
- Supported 444 test days (defined as JMETC support of one customer test event for one day) in the execution of 131 distinct customer distributed live-virtual-constructive (LVC) test activities to DoD acquisition programs and events as follows: MQ-4C Triton (formerly referred to as Broad Area Maritime Surveillance (BAMS)) Environment Integration; Air Force Systems Interoperability Tests (AFSIT), Aegis Accelerated Mid-Term Interoperability Improvement Program (AMIIP), Joint Integrated Air and Missile Defense Organization's (JIAMDO) Correlation/De-correlation Interoperability Test (C/DIT) and JIAMDO Joint Tactical Air Picture Mission Environment - 12A (JTAP – ME); Joint Interoperability Test Command (JITC)(five actual tests); B1-B Fully Integrated Data Link (FIDL); Air Ground Integrated Layer Exploration (AGILE) Fire V and VI; B-52 Combat Network						

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>		R-1 ITEM NOMENCLATURE PE 0605100D8Z: <i>Joint Mission Environment Test Capability (JMETC)</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
<p>Communications Technology (B-52 CONECT); Joint Track Manager Capability /Composite Track Management (JTMC-D/CTM); Distributed Common Ground System – Army (DCGS-A); Joint Distributed IRCM Groundtest System(JDIGS), Naval Air Systems Command (NAVAIR) Integrated Warfare Capability (IWC); Joint Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (JC4ISR) Interoperability Test and Evaluation Capability (InterTEC) System Integration Test, Aegis Performance Assessment Verification (PAV), InterTEC Cyber Event (ICE), and VENGENACE.</p> <ul style="list-style-type: none"> - Supported JIAMD0 in the successful renegotiation of the International Agreement between the US and UK for Correlation/De-correlation Interoperability Testing. - Supported the development of a Marine Corps Mobile Van for data collection and analysis to enable the Marine Corps to support future G/ATOR and CAC2S testing at the Marine Air Control Station (MACS-24), VA, Wallops Island, VA, and Yuma Proving Ground, AZ. - Supported the JTRS program in the development of a Radio Frequency (RF) over Fiber capability to digitize and extend an RF signal over the JMETC network, enabling remote radio play in geographically separated networks. - Supported HPCMPO contracting activities for the award of the new DREN III contract.- Verified the reliability of the JMETC infrastructure to support the Test-Analyze-Fix Test of AEGIS baseline software during multiple iterations of the Navy Accelerated Mid-Term Interoperability Improvement Project (AMIIP) testing as risk reduction for at-sea testing during Trident Warrior FY 12.- Assisted and supported customers with distributed test tools and expertise for planning their distributed events. - Continued to expand the JMETC persistent infrastructure from 68 to 72 (an additional 10 are planned); increased our network connectivity to industry and academia with the addition of peering points to MITRE Corporation, Georgia Tech Research Institute (GTRI) and Lockheed Martin Corporation - Continued the integration of SDREN and JTEN in support of Combat system interoperability testing. - Continued the installation of a networked cross domain solution (CDS) capability in preparation for the live fire activities at the AEGIS and Potomac River Gun Range at Dahlgren, VA. - Continued support of coalition distributed testing requirements in support of JIAMD0. - Continued to provide distributed test and integration support for major customer events such as Joint Interoperability Test Command's Joint Interoperability Tests (5 tests),JIAMD0 JTAP-ME and C/DIT(JTAP–ME), Aegis PAV and AMIIP, and AGILE Fire (2 events),. - Continued to provide general distributed test support for customers such as MQ-4C Triton , Joint Tactical Radio System (JTRS), JTMC-D/CTM, Aegis PAV and AMIIP, AFSIT, NAVAIR IWC events, InterTEC development and fielding, and for numerous other smaller test activities. - Continued planning support to new and on-going acquisition program customers, particularly Apache Blk III, CVN-78, F-35, F-22, Army Network Integration Event/Brigade Modernization (NIE), JTRS Joint Reference Implementation Laboratory (JRIL), Ground/Air Task Oriented Radar (G/ATOR), Common Aviation Command and Control System (CAC2S), Joint Operational Test Approach (JOTA-2) Mode V IFF, Dismounted Detection Radar (DDR), and InterTEC Cyber Event (ICE). 				

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>		R-1 ITEM NOMENCLATURE PE 0605100D8Z: <i>Joint Mission Environment Test Capability (JMETC)</i>		
C. Accomplishments/Planned Programs (\$ in Millions) <ul style="list-style-type: none"> - Continued outreach efforts to new acquisition programs that must demonstrate compliance with Net-Ready Key Performance Parameter requirements. - Continued to expand and sustain the JMETC persistent connectivity infrastructure to meet customer requirements in full consideration of maximizing their potential for reuse. - Enhanced the User Interface and content of the web-based JMETC Reuse Repository to store software interfaces, tools, utilities, and test metadata making all available to the DoD test community for reuse. - Continued coordination with the High Performance Computing Modernization Program Office (HPCMPO) to develop plans to improve network services focused on the Secure Defense Research and Engineering Network (SDREN) as well as implementation of computer network defense (CND) capability. - Continued coordination efforts to rationalize and integrate Service distributed T&E infrastructure to the JMETC infrastructure. Integrated the Army Test Integration Network (ATIN) within the JMETC enterprise management responsibility. - Continued to improve our capability to leverage the kinetic assets native on JMETC with the threat capabilities of the Joint Information Operation Range in support of emerging Cyberspace T&E requirements. Initiated planning efforts to build and sustain the infrastructure to support cyberspace T&E to include cyber test and assessment tools, cyber data collection, and distributed cyber testing. - Coordinated with Deputy Assistant Secretary Defense (DASD)(Developmental Test & Evaluation (DT&E)), and supported the ICE pilot events to further identify requirements and deficiencies in cyber space T&E processes, methodology, workforce and infrastructure. - Implemented a revamped distributed test tools assessment process to assist the distributed testing community in selection of the proper tools for planning and execution of distributed tests as well as analysis of test data. In coordination with the JMETC Users Group, completed plans and resource requirements determination to sustain selected tools with consideration of JMETC Advisory Group inputs. FY 2013 Plans: <ul style="list-style-type: none"> - Continue to provide distributed test support for 15-20 major customer events such as Apache Blk III Link-16 Interoperability test, Army (NIE)/Brigade Modernization (2 events), JTRS JRIL, F-35, MQ-4C Triton , G/ATOR, CAC2S, Army Integrated Air and Missile Defense (IAMD), JIAMD projects, Joint Interoperability Tests, AGILE Fire, NAVAIR Integrated Warfare Capability (IWC), InterTEC Cyber Event (ICE), JOTA-2 Mode V IFF, and numerous smaller test activities, as well as, continuous interconnectivity between distributed test resources for day-to-day exchange of test operations data. - Continue planning support to on-going acquisition programs, particularly Apache Blk III, G/ATOR, CAC2S, JTRS JRIL, F-35, F-22, BAMS, CVN-78, and P-8 Multi-Mission Maritime Aircraft. - Continue to provide distributed test planning support to the Joint Staff J7 Joint Coalition Warfare (JCW), the Joint Staff J6 Command, Control, and Interoperability (C2I), and to other customers for their distributed test events. 		FY 2012	FY 2013	FY 2014

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>		R-1 ITEM NOMENCLATURE PE 0605100D8Z: <i>Joint Mission Environment Test Capability (JMETC)</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
<ul style="list-style-type: none"> - Continue outreach efforts to new acquisition programs that must demonstrate compliance with Net-Ready Key Performance Parameter requirements. - Continue coordination efforts to rationalize and integrate Service distributed T&E infrastructure to the JMETC infrastructure. - Continue to support and enhance the JMETC Reuse Repository to store software interfaces, tools, utilities, and test metadata making all available to the DoD test community for reuse. - Continue to sustain the JMETC persistent connectivity infrastructure and expand as necessary to meet customer requirements in full consideration of maximizing the potential for reuse. - Continue the distributed test tools assessment process in coordination with the distributed test community and complete plans and resource requirements determinations to sustain selected tools with consideration given to inputs from the JMETC Advisory Group. - Continue to work with Industry, DoD, and Service programs to identify solutions for distributed data management and analysis requirements. - Continue the plans and coordination to establish and improve the test infrastructure for cyber tests and assessments by leveraging investments and existing infrastructure, i.e. Joint Information Operations Range and National Cyber Range (NCR). - Assist customers with the use of distributed test tools and troubleshooting of local network infrastructures. Providing on-line and on-site support for the execution of distributed events. - Operationalize the NCR and support Cyber test, training, experimentation and mission rehearsal requirements from acquisition programs, DT&E, Operational Test & Evaluation (OT&E), and Combatant Commands (COCOMS). Evaluate existing NCR tools and capabilities for potential to expand to use by other facilities and environments. - Lead the Cyber Range Interoperability Standards (CRIS) working group to identify keys areas in which establishment and adoption of standards across cyber ranges will result in efficiencies and improved scalability. - Initiate the incorporation of additional data management and analysis requirements and solutions for cyberspace T&E to include the necessary cyber analysis and assessment tools, instrumentation, and network expansion. - Initiate deployment of the Regional Service Delivery Point (RSDP) on the Joint Information Operations Range (JIOR) providing enhanced capabilities, performance and scalability to address the significant increase in demand for cyber test and training. <p>FY 2014 Plans:</p> <ul style="list-style-type: none"> - Continue to provide distributed test support for 20-25 major customer events such as Apache Blk III Link-16 Interoperability tests (2 events), Army NIE/Brigade Modernization (2 events), JTRS JRIL, F-35, MQ-4C Triton, CVN-78, G/ATOR, CAC2S, Apache Blk III, Army IAMD, JTMC-D/CTM, JIAMD projects, Joint Interoperability Tests (5 events), AGILE Fire (2 events), Integrated Warfare Capability (IWC), InterTEC Cyber Event (ICE), and numerous smaller test activities, as well as, continuous interconnectivity between distributed test resources for day-to-day exchange of test operations data. - Continue to assist customers with the use of distributed test tools and troubleshooting of local network infrastructures. Continue providing on-line and on-site support for the execution of distributed events. 				

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>		R-1 ITEM NOMENCLATURE PE 0605100D8Z: <i>Joint Mission Environment Test Capability (JMETC)</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
<ul style="list-style-type: none"> - Continue outreach efforts to new acquisition programs that must demonstrate compliance with Net-Ready Key Performance Parameter requirements. - Continue planning support to on-going acquisition programs, particularly Army NIE/Brigade Modernization, Apache Blk III, G/ATOR, CAC2S, JTRS JRIL, F-35, F-22, MQ-4C Triton, CVN-78, Army IAMD, DDR, and P-8 Multi-Mission Maritime Aircraft. - Continue to provide distributed test planning support to the Joint Staff J7 Joint Coalition Warfare (JCW), the Joint Staff J6 Command, Control, and Interoperability (C2I), and to other customers for their distributed test events. - Continue coordination efforts to rationalize and integrate Service distributed T&E infrastructure to the JMETC infrastructure. - Continue to support and upgrade the JMETC Reuse Repository to store software interfaces, tools, utilities, and test metadata making all available to the DoD test community for reuse. - Continue to sustain the JMETC persistent connectivity infrastructure and expand as necessary to meet customer requirements in full consideration of maximizing the potential for reuse. - Continue the distributed test tools assessment process to assist the distributed testing community in selection of the proper tools for planning and execution of distributed tests as well as analysis of test data. Continue, in coordination with the JMETC Users Group, sustainment of selected tools with consideration of JMETC Advisory Group inputs. - Continue to work with Industry, DoD, and Service programs to identify solutions for distributed data management and analysis requirements. Continue to identify additional data management and analysis solutions for Cyberspace T&E. - Continue deployment of the Regional Service Delivery Point (RSDP) on the Joint Information Operations Range (JIOR) providing enhanced capabilities, performance and scalability to address the significant increase in demand for cyber test and training. - Continue to lead the Cyber Range Interoperability Standards (CRIS) working group to identify keys areas in which establishment and adoption of standards across cyber ranges will result in efficiencies and scalability. - Refine and expand the NCR capabilities and process to support increased Cyber test, training, experimentation and mission rehearsal requirements from acquisition programs, DT&E, OT&E, and COCOMS. Enhance selected NCR tools and capabilities for use by other facilities and environments. - Initiate the plans and coordination to establish and improve the test infrastructure and tools for cyber training, tests, and assessments by leveraging investments and existing infrastructure (i.e. Joint Information Operations Range and National Cyber Range). 				
Accomplishments/Planned Programs Subtotals		10.215	19.380	31.000
D. Other Program Funding Summary (\$ in Millions)				
N/A				
Remarks				

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 6: RDT&E Management Support	R-1 ITEM NOMENCLATURE PE 0605100D8Z: Joint Mission Environment Test Capability (JMETC)	
E. Acquisition Strategy N/A		
F. Performance Metrics - Expansion of initial capability to support acquisition program test requirements, providing distributed capability to test systems and demonstrating required joint capability. - Successful use of integration software compatible with the JNTC and Joint Training infrastructure. - Number of test sites/locations that are reused to support distributed tests using the JMETC infrastructure.		

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>	R-1 ITEM NOMENCLATURE PE 0605104D8Z: <i>Technical Studies</i>
--------------------------------------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------

COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
Total Program Element	-	33.001	32.266	24.379	-	24.379	24.589	25.045	25.601	26.268	Continuing	Continuing
P421: <i>Technical Studies</i>	-	33.001	32.266	24.379	-	24.379	24.589	25.045	25.601	26.268	Continuing	Continuing

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

This program is a key source of funding for the Office of the Secretary of Defense and the Joint Staff to manage studies, analysis, management, and technical support efforts strategically to improve and support policy development, decision making, management and administration of DoD programs and activities. Studies and analysis will examine current and alternative policies, plans, operations, strategies and budgets, and are essential for managing and responding to the ever-changing complex international, political, technological, economic, military, and acquisition environments in which national security planning decisions are made. The need for independent analysis has become particularly acute with the evolution of requirements for planning the reconstitution of forces affected by operations, and there is a strong need to incorporate the effects of operational analysis in force planning assessments. With the persistently complex security, threat, and economic environment, the need for objective analysis and forward looking planning for the mid and long-term is vital.

In FY 2014 the budget request for the Global Theater Security Cooperation Management Information Systems (TSCMIS) program will be transferred to the Defense Security Cooperation Agency. TSCMIS is an existing program that will be executed by the Joint Staff separately from the Technical Studies, Support, and Analysis program. The Global Theater Security Cooperation Management Information Systems program responds to OSD's Guidance for Employment of the Force so that Combatant Commanders, Military Department Chiefs, CSA Directors, and applicable Defense Agency and Field Activity Directors are able to use a tracking mechanism to account for their steady-state activities that is accessible to other DoD components. Together these tracking mechanisms will provide a global view of all steady-state activities conducted by DoD components. The intent of this program is to encourage further development of tracking mechanisms in order to achieve full visibility of Defense Department activities.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense	DATE: April 2013
-------------------------------------------------------------------------------------------------	-------------------------

APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>	R-1 ITEM NOMENCLATURE PE 0605104D8Z: <i>Technical Studies</i>
--------------------------------------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------

B. Program Change Summary (\$ in Millions)	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total
Previous President's Budget	33.162	32.266	33.218	-	33.218
Current President's Budget	33.001	32.266	24.379	-	24.379
Total Adjustments	-0.161	0.000	-8.839	-	-8.839
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Transfer of Global Theater Security Cooperation Management Information Systems to DSCA	-	-	-8.300	-	-8.300
• Program adjustments	-0.161	-	-0.539	-	-0.539

Change Summary Explanation

In following the program efficiencies guidance of the Secretary of Defense, the scope and detail of studies and analyses are managed at a senior level in order to focus upon issues of the highest strategic importance to the Department of Defense while making every effort to continue supporting requirements materializing from legislative direction as required.

In FY 2014 and beyond Global Theater Security Cooperation Management Information Systems will be transferred to Defense Security Cooperation Agency.

Defense Efficiency – Reports, Studies, Boards and Commissions. As part of the Department of Defense reform agenda, the budget estimate trend reflects a reduction in the number and cost of reports and studies below the aggregate level reported in previous budget submissions.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 6: RDT&E Management Support					R-1 ITEM NOMENCLATURE PE 0605104D8Z: Technical Studies				PROJECT P421: Technical Studies			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
P421: Technical Studies	-	33.001	32.266	24.379	-	24.379	24.589	25.045	25.601	26.268	Continuing	Continuing
Quantity of RDT&E Articles												

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

This program is a key source of funding for the Office of the Secretary of Defense and the Joint Staff for studies, analysis, management, and technical support efforts to improve and support policy development, decision making, management and administration of DoD programs and activities. Studies and analysis will examine current and alternative policies, plans, operations, strategies and budgets, and are essential for managing and responding to the ever-changing complex international, political, technological, economic, military, and acquisition environments in which national security planning decisions are made. The need for independent analysis has become particularly acute with the evolution of requirements for planning the reconstitution of forces affected by operations, and there is a strong need to incorporate the effects of operational analysis in force planning assessments. With the persistently complex security, threat, and economic environment, the need for objective analysis and forward looking planning for the mid and long-term is vital.

Beginning in FY 2010 this program element includes funding for the Global Theater Security Cooperation Management Information Systems (TSCMIS) Program, which is a separate program from the OSD Technical Studies, Support & Analysis program. TSCMIS is an existing program which provides a global view of all steady-state activities conducted by DoD components and enables that information to be accessible by other DoD components. Proposed enhancements to TSCMIS will enable all of the Services and Combatant Commands to access information in this system and will allow the incorporation of data provided by other interagency partners. The budget request for the TSCMIS program will be transferred to the Defense Security Cooperation Agency beginning in FY 2014.

B. Accomplishments/Planned Programs (\$ in Millions)

Title: Technical Studies and Analyses Support for the Office of the Secretary of Defense	FY 2012	FY 2013	FY 2014
FY 2012 Accomplishments: Technical Support for the USD(Acquisition, Technology & Logistics): Studies and analyses of: Nuclear weapons arms control, homeland defense airspace surveillance, weapons systems requirements and analyses in allied operations, unmanned naval systems, surface warfare requirements, next-generation propulsion technology, weapons systems affordability, reducing inventory and product lead-time, automated identification technologies, performance based logistics implementation, industrial base capabilities and gaps, risk management of critical defense component supplies, future technology requirements in defense manufacturing, changes in patterns of defense industry innovation, satellite communications and imagery architecture planning, global defense industry trends, remote sensing technology requirements, strengthening allied cooperative	25.421	24.464	24.379

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>	R-1 ITEM NOMENCLATURE PE 0605104D8Z: <i>Technical Studies</i>	PROJECT P421: <i>Technical Studies</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
<p>efforts in weapons systems research and development, effects on force capabilities by changes in allied procurement, strategic basing requirements, NATO policy planning, strategic energy infrastructure, operational energy risk, identifying acquisition program risk and affordability issues, support to Defense Science Board task forces on missile defense and long-term technology innovation, maintaining technological superiority, small business investment and acquisition strategy, the effectiveness of the Small Business Innovation Research (SBIR) program, and DoD contracting policies toward small businesses</p> <p>Technical Support for the Director, Cost Assessment and Program Evaluation: Studies and analyses regarding the following areas:</p> <p>Assessments of force structure and weapons systems performance and cost effectiveness, counter-insurgency system performance, evolving requirements for weapons system development, air tanker options, naval mine countermeasures, irregular warfare emergency response capability, assessments in support of Analytical Agenda and Multi-Service Force Deployment baseline development, technical studies and analysis to support independent cost estimates, cyberdefense strategies, comparative analyses of alternative strategic and conventional weapons systems configurations and force levels, and continuation of development of critical management indicators, tools and methodologies for measuring the long-term trends, strength and affordability of the defense program</p> <p>Technical Support for the USD(Policy): Studies, analyses, and activities in the following areas:</p> <p>Pacific force posture, foreign defense industry modernization, political transitions in the Near East and Africa, allied Pacific defense strategies, security transition strategies in areas of conflict, biometrics, cross-domain deterrence, state and transnational non-state actors in North and West Africa, identifying and countering emerging risks by terrorist organizations, analyses of counter-proliferation security policies and initiatives, national security policy reviews as required by national and departmental-level guidance, recommendations and analyses regarding military posture, and strategic-level simulations of areas of interest for legislative and executive branch decision-makers</p> <p>Technical Support for the USD(Personnel & Readiness): Studies and analyses in the following areas:</p> <p>Military manpower and compensation, post-deployment employment transitions of reservists, force structure concept planning, modeling future enlisted force profiles, estimating qualified military available population, military sexual assault policy and prevention, military academy selection criteria, virtual training capability, acquisition workforce planning, use of social media in</p>			
			FY 2014

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>	R-1 ITEM NOMENCLATURE PE 0605104D8Z: <i>Technical Studies</i>	PROJECT P421: <i>Technical Studies</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
recruiting, training software requirements, personnel cycles within the Total Force, reserve component readiness, officer recruiting sources, and workforce and leadership diversity management			
<p>Technical Support for the USD(Intelligence): Studies and analyses of:</p> <p>Military intelligence language specialist planning, intelligence force capabilities, multi-level security of sensor data from multiple networks, space situational awareness and long-term posture, and sensor force mix</p> <p>Technical Support for the Joint Staff conducting joint research with OSD:</p> <p>Studies and analyses with OSD regarding global insurgency transit hubs, security cooperation, joint logistics and distribution operations, operational airlift requirements, hybrid warfare planning, and joint contingency basing requirements</p> <p>FY 2013 Plans: Technical Support for the USD(Acquisition, Technology & Logistics): Studies and analyses of:</p> <p>Strengthening peacekeeping and counter-insurgency capabilities of allied states, future naval force mix planning, unmanned systems requirements, aircraft engine sustainment, air and missile defense capabilities integration, allied radar interoperability, future vertical lift requirements, cybersecurity operational requirements, space-based environmental monitoring capabilities, space launch architecture, Global Positioning System service capabilities, anti-counterfeiting strategy in the supply chain, foreign acquisitions in defense-related firms, commercial imaging industrial capabilities, strengthening allied cooperative efforts in weapons systems research and development, policy implications of changes in allied defense capabilities, anti-tampering technology policy, capability gaps in materiel requirements, strategic basing requirements, improving resource efficiency in DoD installations, energy requirements in contingency operations, battlefield power investment strategy, logistics supply chain requirements, NATO policy planning, identifying acquisition program risk, affordability of acquisition programs, support to Defense Science Board task forces on various evolving technological and policy issues, small business investment and acquisition strategy, the effectiveness of the Small Business Innovation Research (SBIR) program, and DoD contracting policies toward small businesses</p> <p>Technical Support for the Director, Cost Assessment and Program Evaluation: Studies and analyses regarding the following areas:</p>			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>	R-1 ITEM NOMENCLATURE PE 0605104D8Z: <i>Technical Studies</i>	PROJECT P421: <i>Technical Studies</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
<p>Assessments of force structure and weapons systems performance and cost effectiveness, assessments in support of scenario analyses, technical studies and analyses to support independent cost estimates and economic research, medical requirements cost structure, comparative analyses of alternative strategic and conventional weapons systems configurations and force levels, and continuation of development of critical management instruments for measuring the long-term trends, strength and affordability of the defense program</p> <p>Technical Support for the USD(Policy): Studies, analyses, and activities in the following areas:</p> <p>Asia-Pacific strategic opportunities and challenges, demographics of key states, U.S. - Russia defense policy engagement, protecting intellectual property, enhancing distribution of excess DoD property to first responders, Central and South American defense policy and strategic planning, sub-Saharan Africa counterterrorism requirements, joint stability operations requirements, biometric security, information operations force structure, and strategic-level simulations of areas of interest for legislative and executive branch decision-makers</p> <p>Technical Support for the USD(Personnel & Readiness): Studies and analyses in the following areas:</p> <p>Military manpower requirements and compensation policy, cyberspace workforce requirements, military sexual harassment and violence prevention, potential medical cost savings and benefit design, effect of retirements on force planning, measuring the effects of tour lengths and alternative options, improving military applicant screening, officer special and incentive pay effectiveness, and forecasting enlistment success over the long term</p> <p>Technical Support for the USD(Intelligence): Studies and analyses of:</p> <p>Cost drivers in satellite development and acquisition, professional military and civilian linguist requirements, personnel security investigation cost growth, improving cyber support to intelligence operations, and improving information sharing between allied and coalition partners</p> <p>Technical Support for the Joint Staff conducting joint research with OSD:</p>			
			FY 2014

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>	R-1 ITEM NOMENCLATURE PE 0605104D8Z: <i>Technical Studies</i>	PROJECT P421: <i>Technical Studies</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
<p>Studies and analyses with OSD supporting global operational energy infrastructure, air warfare, infantry armaments, logistics planning, weapons of mass destruction consequence management, geopolitical contingency policy planning, and joint contingency basing requirements</p> <p>FY 2014 Plans: Technical Support for the USD(Acquisition, Technology & Logistics): Studies and analyses of:</p> <p>Allied technology and warfighting capability planning, strategic and conventional system technology, counter WMD defense capabilities integration, industrial base capabilities assessments, cyber operational requirements, future technology requirements in defense manufacturing, maintaining competition in the defense industry, global defense industry trends, modeling and simulation requirements, allied defense capabilities, strategic basing requirements, improving resource efficiency in DoD installations, DoD energy and logistic strategic planning, logistics supply chain requirements, NATO policy planning, treaty compliance requirements, identifying acquisition program risk, support to Defense Science Board task forces on various evolving technological and policy issues, small business investment and acquisition strategy, the effectiveness of the Small Business Innovation Research (SBIR) program, and DoD contracting policies toward small businesses</p> <p>Technical Support for the Director, Cost Assessment and Program Evaluation: Studies and analyses regarding the following areas:</p> <p>Contingency operations planning, maintaining force readiness, personnel force models, assessments in support of scenario analyses, military healthcare cost efficiency, technical studies and analyses to support independent cost estimates and economic research, comparative analyses of alternative strategic and conventional weapons systems configurations and force levels, and continuation of development of critical management instruments for measuring the long-term trends, strength and affordability of the defense program</p> <p>Technical Support for the USD(Policy): Studies, analyses, and activities in the following areas:</p> <p>Regional and strategic defense posture, international defense policy engagement, deterrence and counterproliferation requirements, international defense trade relationships, the European regional security environment, effects of new energy technologies, space strategic guidance planning, humanitarian operations and complex catastrophes, transnational terrorist linkages, and strategic-level simulations of areas of interest for legislative and executive branch decision-makers</p>			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>	R-1 ITEM NOMENCLATURE PE 0605104D8Z: <i>Technical Studies</i>	PROJECT P421: <i>Technical Studies</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
<p>Technical Support for the USD(Personnel & Readiness): Studies and analyses in the following areas:</p> <p>Recruiting and retention issues, controlling healthcare and manpower costs, forecasting the impacts and the development of mitigation strategies for impacts of potential force drawdowns, reserve component readiness and sustainability, military compensation policy, military family issues, sexual assault prevention, and most efficient and effective uses of the Total Force</p> <p>Technical Support for the USD(Intelligence): Studies and analyses of:</p> <p>Counterintelligence capabilities, military intelligence language specialties, technology in intelligence collection, improving allied surveillance interoperability, operational security effectiveness and countermeasures analyses, and risk management for the security enterprise</p> <p>Technical Support for the Joint Staff conducting joint research with OSD:</p> <p>Studies and analyses with OSD addressing force projection capabilities, supportability of contingency operations, countering anti-access environments, geopolitical contingency policy planning, and joint contingency basing requirements</p>			
<p>Title: Global Theater Security Cooperation Management information Systems (TSCMIS) Program</p> <p>Description: Global Theater Security Cooperation Management Information Systems (TSCMIS) Program. This item is a separate requirement from the Technical Studies, Support, and Analysis program beginning in FY 2010 and will be executed by the Joint Staff apart from the Technical Studies, Support, and Analysis program.</p> <p>Organizations implementing TSCMIS include all of the Geographic Combatant Commands and the Army, and this program change will facilitate the inclusion of all of the Combatant Commands, all of the military services, DTRA, and DSCA. Future years will result in the integration of other security cooperation databases, including foreign military sales, training databases, and other interagency partner databases into the TSCMIS portal.</p> <p>FY 2012 Accomplishments: Program management (\$1,280K); requirements management (\$520K); software development (\$1,416K); systems engineering (\$2,509K); testing (\$439K); logistics management (\$1,416K)</p> <p>FY 2013 Plans:</p>		7.580	7.802
			0.000

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>	R-1 ITEM NOMENCLATURE PE 0605104D8Z: <i>Technical Studies</i>	PROJECT P421: <i>Technical Studies</i>		
B. Accomplishments/Planned Programs (\$ in Millions) Program management (\$1,026K); requirements management (\$282K); software development (\$2,664K); systems engineering (\$2,006K); testing (\$450K); logistics management (\$1,374K) FY 2014 Plans: The budget request for the Global Theater Security Cooperation Management information Systems (TSCMIS) Program will be submitted by the Defense Security Cooperation Agency in FY 2014 and future fiscal years.		FY 2012	FY 2013	FY 2014
Accomplishments/Planned Programs Subtotals		33.001	32.266	24.379
C. Other Program Funding Summary (\$ in Millions) N/A Remarks D. Acquisition Strategy N/A E. Performance Metrics PE 0605104D8Z Technical Studies, Support & Analysis FY 2014 BA: \$24.379 FY 2014 BA Assoc w/Metrics: \$24.379M Percent FY 2014 BA Assoc w/Metrics: 100% This program conducts over one-hundred actions per fiscal year to support a wide variety of national security goals of the Department and is designed to encourage a collaborative research approach among the components of OSD and the Joint Staff. The research and study projects supported by this program are closely integrated with the strategic goals of the Department of Defense. The focus of studies varies across a wide spectrum including weapons systems cost analysis, strengthening and leveraging alliances, human resource and military personnel management, examination of innovative technologies, application of technology to operational doctrine, and many other issues of emerging importance. Most of the actions are long to intermediate-range in outlook, and the program allows organizational leaders to plan and guide their research toward meeting their highest-priority goals and other high-level guidance such as executive branch performance management objectives, the Quadrennial Defense Review, and the National Security Strategy of the United States of America. In following the program efficiencies guidance of the Secretary of Defense, the scope and detail of studies and analyses will be abridged in order to focus upon issues of the highest strategic importance to the Department of Defense while continuing to make every effort to support requirements from legislative direction.				

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE							
0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>					PE 0605110D8Z: <i>USD (A&T) Critical Technology Support</i>							
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
Total Program Element	-	1.425	0.840	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
P110: <i>USD (A&T) Critical Technology Support</i>	-	1.425	0.840	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

Note

This program element (PE) is realigned under PE 0605798D8Z Defense Technology Analysis in the P579 project beginning in FY 2014.

A. Mission Description and Budget Item Justification

(1) Export Control Program:

The Militarily Critical Technologies Program (MCTP) provides the technical reference guidance in support of development and implementation of Department of Defense (DoD) technology security policies on international transfers of defense related goods, services, and technologies. The export control program provides an ongoing assessment and analysis of global goods and technologies. Determines significant advances in the development, production, and use of military capabilities by potential adversaries. Determines goods and technologies being developed worldwide with potential to significantly enhance or degrade U.S. military capabilities in the future. Identified in the Export Administration Act of 1979 and extended by Presidential Executive Order to review militarily critical goods and technologies and to consider worldwide technology capabilities. The Militarily Critical Technologies List (MCTL) is a congressionally mandated source document for identification of leading edge and current technologies monitored worldwide for national security, nonproliferation control of weapons of mass destruction, and advanced conventional weapons.

Specific activities include:

- Develop and publish in electronic form (including Internet version) restricted editions of the MCTL document that describe the military and proliferation significance of various technologies.
- Monitor and assess dual-use and military technologies worldwide.
- Assist in the development of proposals for negotiation in various multilateral export control regimes.
- Limited worldwide technology capability assessments for the MCTL and other U.S. international critical technologies efforts.
- Identification and determination of technical parameters for proposals for international control of weapons of mass destruction.
- Identification of foreign technologies of interest to the DoD and opportunities for international cooperative research and development.

(2) The DoD Damage Assessment Management Office (DAMO) Program:

The Defense Industrial Base (DIB) secures critical DoD programs and technology by protecting DoD unclassified information resident on and transiting DIB unclassified networks. This project further establishes the DoD DAMO to coordinate the conduct of assessments involving the loss of DoD information requiring controls resulting

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY

0400: *Research, Development, Test & Evaluation, Defense-Wide*
BA 6: *RDT&E Management Support*

R-1 ITEM NOMENCLATURE

PE 0605110D8Z: *USD (A&T) Critical Technology Support*

from the unauthorized access and/or exfiltration of technical data maintained on unclassified DIB networks. The DAMO identifies and categorizes the impact of the loss of acquisition information contained on the affected systems, organizes, and coordinates the assessment reports with all affected components and DIB members, and establishes a process to appropriately share collected information with all affected parties. The DAMO establishes policy and procedures for conducting damage assessments applicable to all DoD components and in concert with Federal Acquisition Regulation (FAR) and Defense Federal Acquisition Regulation (DFAR) procedures pertaining to contracts with the DIB.

Specific activities include:

- Provide technical expertise and analyses in assessing the impact of data lost as a result of the unauthorized access and/or exfiltration.
- Develop a damage assessment ontology and data repository in order to provide analysis to identify trends in the targeting and compromise of defense program information.

B. Program Change Summary (\$ in Millions)	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total
Previous President's Budget	1.433	0.840	0.904	-	0.904
Current President's Budget	1.425	0.840	0.000	-	0.000
Total Adjustments	-0.008	0.000	-0.904	-	-0.904
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-0.008	-			
• SBIR/STTR Transfer	-	-			
• Baseline Adjustment	-	-	-0.904	-	-0.904

Change Summary Explanation

FY 2014 baseline adjustments are reflective of DoD priorities and requirements.

This program element (PE) is realigned under PE 0605798D8Z Defense Technology Analysis in the P579 project beginning in FY 2014.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE				PROJECT			
0400: Research, Development, Test & Evaluation, Defense-Wide BA 6: RDT&E Management Support					PE 0605110D8Z: USD (A&T) Critical Technology Support				P110: USD (A&T) Critical Technology Support			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
P110: USD (A&T) Critical Technology Support	-	1.425	0.840	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles												

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

Note

This program element (PE) is realigned under PE 0605798D8Z Defense Technology Analysis in the P579 project beginning in FY 2014.

A. Mission Description and Budget Item Justification

(1) Export Control Program:

The Militarily Critical Technologies Program (MCTP) provides the technical reference guidance in support of development and implementation of DoD technology security policies on international transfers of defense related goods, services, and technologies. The export control program provides an ongoing assessment and analysis of global goods and technologies. Determines significant advances in the development, production, and use of military capabilities by potential adversaries. Determines goods and technologies being developed worldwide with potential to significantly enhance or degrade U.S. military capabilities in the future. Identified in the Export Administration Act of 1979 and extended by Presidential Executive Order to review militarily critical goods and technologies and to consider worldwide technology capabilities. The Militarily Critical Technologies List (MCTL) is a congressionally mandated source document for identification of leading edge and current technologies monitored worldwide for national security, nonproliferation control of weapons of mass destruction, and advanced conventional weapons.

Specific activities include:

- Develop and publish in electronic form (including Internet version) restricted editions of the MCTL document that describe the military and proliferation significance of various technologies.
- Monitor and assess dual-use and military technologies worldwide.
- Assist in the development of proposals for negotiation in various multilateral export control regimes.
- Limited worldwide technology capability assessments for the MCTL and other U.S. international critical technologies efforts.
- Identification and determination of technical parameters for proposals for international control of weapons of mass destruction.
- Identification of foreign technologies of interest to the DoD and opportunities for international cooperative research and development.

(2) The DoD Damage Assessment Management Office (DAMO) Program:

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>		R-1 ITEM NOMENCLATURE PE 0605110D8Z: <i>USD (A&T) Critical Technology Support</i>	PROJECT P110: <i>USD (A&T) Critical Technology Support</i>
<p>The Defense Industrial Base (DIB) secures critical DoD programs and technology by protecting DoD unclassified information resident on and transiting DIB unclassified networks. This project further establishes the DoD DAMO to coordinate the conduct of assessments involving the loss of DoD information requiring controls resulting from the unauthorized access and/or exfiltration of technical data maintained on unclassified DIB networks. The DAMO identifies and categorizes the impact of the loss of acquisition information contained on the affected systems, organizes, and coordinates the assessment reports with all affected components and DIB members, and establishes a process to appropriately share collected information with all affected parties. The DAMO establishes policy and procedures for conducting damage assessments applicable to all DoD components and in concert with Federal Acquisition Regulation (FAR) and Defense Federal Acquisition Regulation (DFAR) procedures pertaining to contracts with the DIB.</p> <p>Specific activities include:</p> <ul style="list-style-type: none"> - Provide technical expertise and analyses in assessing the impact of data lost as a result of the unauthorized access and/or exfiltration. - Develop a damage assessment ontology and data repository in order to provide analysis to identify trends in the targeting and compromise of defense program information. 			
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
Title: USD (A&T) Critical Technology Support		1.425	0.840
FY 2012 Accomplishments: <ul style="list-style-type: none"> - Conducted limited MCTL annual update and reviews. - Continued technology assessment support to Counter-Intelligence (CI) community by participation with Federal Law Enforcement via the National Counter-Intelligence Working Group (NCIWG); with the CI-Interagency Management Group (IMG); and with the Services via the industrial security working group (ISWG). - Issued limited technical alerts to the stakeholders. 			0.000
FY 2013 Plans: <ul style="list-style-type: none"> - Maintain technical interface to export technology security organizations and functions. - Establish and maintain interface with user community for critical technology assessments. 			
Accomplishments/Planned Programs Subtotals		1.425	0.840
C. Other Program Funding Summary (\$ in Millions)			
N/A			
Remarks			
D. Acquisition Strategy			
N/A			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>	R-1 ITEM NOMENCLATURE PE 0605110D8Z: <i>USD (A&T) Critical Technology Support</i>	PROJECT P110: <i>USD (A&T) Critical Technology Support</i>

E. Performance Metrics
N/A.

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense	DATE: April 2013
-------------------------------------------------------------------------------------------------	-------------------------

APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE							
0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>					PE 0605117D8Z: <i>Foreign Materiel Acquisition and Exploitation</i>							
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
Total Program Element	94.649	64.505	56.012	54.311	-	54.311	53.602	48.300	49.201	50.156	Continuing	Continuing
411: <i>Foreign Materiel Acquisition and Exploitation</i>	94.649	64.505	56.012	54.311	-	54.311	53.602	48.300	49.201	50.156	Continuing	Continuing
Quantity of RDT&E Articles												

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

This program manages the acquisition and assessment of foreign weapons systems, military equipment, and military and dual-use technologies for the military services and defense agencies.

B. Program Change Summary (\$ in Millions)

	<u>FY 2012</u>	<u>FY 2013</u>	<u>FY 2014 Base</u>	<u>FY 2014 OCO</u>	<u>FY 2014 Total</u>
Previous President's Budget	64.524	56.012	54.659	-	54.659
Current President's Budget	64.505	56.012	54.311	-	54.311
Total Adjustments	-0.019	0.000	-0.348	-	-0.348
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Department Adjustment	-	-	-0.348	-	-0.348
• Other Program Adjustment	-0.019	-	-	-	-

C. Accomplishments/Planned Programs (\$ in Millions)

	<u>FY 2012</u>	<u>FY 2013</u>	<u>FY 2014</u>
Title: Foreign Materiel Acquisition and Exploitation	64.505	56.012	54.311
FY 2012 Accomplishments: Mission Support (Details provided in Defense-Wide classified book)			
FY 2013 Plans:			

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>		R-1 ITEM NOMENCLATURE PE 0605117D8Z: <i>Foreign Materiel Acquisition and Exploitation</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
Mission Support (Details provided in Defense-Wide classified book)				
FY 2014 Plans: Mission Support (Details provided in Defense-Wide classified book)				
Accomplishments/Planned Programs Subtotals		64.505	56.012	54.311
D. Other Program Funding Summary (\$ in Millions) N/A				
Remarks				
E. Acquisition Strategy N/A				
F. Performance Metrics Details provided in Defense-Wide classified book.				

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense	DATE: April 2013
-------------------------------------------------------------------------------------------------	-------------------------

APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>	R-1 ITEM NOMENCLATURE PE 0605128D8Z: <i>Classified Program</i>
--------------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------

COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
Total Program Element	-	97.603	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
128: <i>Classified Program</i>	-	97.603	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles												

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

Classified

<u>B. Program Change Summary (\$ in Millions)</u>	<u>FY 2012</u>	<u>FY 2013</u>	<u>FY 2014 Base</u>	<u>FY 2014 OCO</u>	<u>FY 2014 Total</u>
Previous President's Budget	96.401	0.000	0.000	-	0.000
Current President's Budget	97.603	0.000	0.000	-	0.000
Total Adjustments	1.202	0.000	0.000	-	0.000
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	1.202	-			
• SBIR/STTR Transfer	-	-			

Congressional Add Details (\$ in Millions, and Includes General Reductions)

Project: 128: *Classified Program*

Congressional Add: *Classified*

	<u>FY 2012</u>	<u>FY 2013</u>
	97.603	-
Congressional Add Subtotals for Project: 128	97.603	0.000
Congressional Add Totals for all Projects	97.603	0.000

Change Summary Explanation

Reprogramming action a result of SBIR/STTR return.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense	DATE: April 2013
--------------------------------------------------------------------------------------	------------------

APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>	R-1 ITEM NOMENCLATURE PE 0605128D8Z: <i>Classified Program</i>
--------------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2012	FY 2013
Congressional Add: Classified	97.603	-
FY 2012 Accomplishments: Classified Program		
Congressional Adds Subtotals	97.603	0.000

D. Other Program Funding Summary (\$ in Millions)

N/A

Remarks

E. Acquisition Strategy

N/A

F. Performance Metrics

None

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY

0400: *Research, Development, Test & Evaluation, Defense-Wide*
BA 6: *RDT&E Management Support*

R-1 ITEM NOMENCLATURE

PE 0605130D8Z: *Foreign Comparative Testing*

COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013[#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
Total Program Element	-	18.616	18.174	12.134	-	12.134	21.285	22.206	20.842	21.442	Continuing	Continuing
P130: <i>Foreign Comparative Testing</i>	-	18.616	18.174	12.134	-	12.134	21.285	22.206	20.842	21.442	Continuing	Continuing

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

The Foreign Comparative Testing (FCT) Program supports the warfighter by leveraging mature technologies and equipment from allied nations and coalition partners to satisfy U.S. defense requirements, thereby accelerating the U.S. acquisition process and lowering development costs. Authorized by Title 10, U.S. Code, Section 2350a (g), the FCT Program is managed by the Office of Secretary of Defense (Deputy Assistant Secretary of Defense (DASD) Rapid Fielding), Comparative Technology Office (CTO). FCT projects are nominated by the Services and U.S. Special Operations Command (SOCOM) each year. Evaluation processes for project selection include a detailed review to confirm the proposed item addresses valid requirements, a thorough market survey, and development of a viable acquisition strategy.

B. Program Change Summary (\$ in Millions)

	<u>FY 2012</u>	<u>FY 2013</u>	<u>FY 2014 Base</u>	<u>FY 2014 OCO</u>	<u>FY 2014 Total</u>
Previous President's Budget	18.674	18.174	18.751	-	18.751
Current President's Budget	18.616	18.174	12.134	-	12.134
Total Adjustments	-0.058	0.000	-6.617	-	-6.617
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-0.052	-			
• SBIR/STTR Transfer	-	-			
• Baseline Adjustments	-	-	-6.617	-	-6.617
• Other Adjustments	-0.006	-	-	-	-

Change Summary Explanation

FY 2014: Baseline adjustment reflective of DoD priorities and requirements.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE				PROJECT			
0400: Research, Development, Test & Evaluation, Defense-Wide BA 6: RDT&E Management Support					PE 0605130D8Z: Foreign Comparative Testing				P130: Foreign Comparative Testing			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
P130: Foreign Comparative Testing	-	18.616	18.174	12.134	-	12.134	21.285	22.206	20.842	21.442	Continuing	Continuing
Quantity of RDT&E Articles												

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

The Foreign Comparative Testing (FCT) Program supports the warfighter by leveraging mature technologies and equipment from allied nations and coalition partners to satisfy U.S. defense requirements, thereby accelerating the U.S. acquisition process and lowering development costs. Authorized by Title 10, U.S. Code, Section 2350a(g), the FCT Program is managed by the Office of Secretary of Defense (OSD), Deputy Assistant Secretary of Defense (DASD) Rapid Fielding (RF), Comparative Technology Office (CTO). FCT projects are nominated by the Services and U.S. Special Operations Command (USSOCOM) each year. Evaluation processes for project selection include a detailed review to confirm the proposed item addresses valid requirements, a thorough market survey, and development of a viable acquisition strategy.

Since the program's inception in 1980, OSD has initiated 671 projects; 601 projects have been completed to date. Of the 312 evaluations that met the sponsors' requirements, 243 led to procurements worth approximately \$11.000 billion in FY 2011 constant year dollars. With an OSD investment of about \$1.170 billion, the FCT Program realized an estimated research, development, test, and evaluation (RDT&E) cost avoidance of \$7.800 billion in FY 2011 constant year dollars.

The FCT Program is a catalyst for teaming or other business relationships between foreign and U.S. industries. Many successful FCT projects result in the licensed production of the qualified foreign item in the U.S. Other nations recognize the long-term value of such practices for competing in the U.S. defense market and the resultant strengthening of the "two-way street" in Defense procurement. The result often means the creation of jobs and contributions to local economies throughout the U. S. To date, companies across 33 states benefited from FCT projects.

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2012	FY 2013	FY 2014
Title: A-10 / F-16 Three Dimensional (3D) Audio Integration (Air Force)	1.982	0.000	0.000
Description: A-10 / F-16 Three Dimensional (3D) Audio Integration tests and qualifies a 3D audio system for the A-10 and F-16 Block 30 platforms. This system will incorporate active and electronic noise reduction, spatial separation of multiple radio channels from multiple sources, and 3D threat audio cueing from on-board threat detection systems. The A-10 and the F-16 do not have active or electronic noise reduction capability. The primary output is a 3D audio capability that automatically sorts and presents information spatially in real time to the pilot. The 3D audio integration increases situational awareness, allows pilots to respond quicker by reducing information overload, and provides significant noise reduction.			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>	R-1 ITEM NOMENCLATURE PE 0605130D8Z: <i>Foreign Comparative Testing</i>	PROJECT P130: <i>Foreign Comparative Testing</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
FY 2012 Accomplishments: Initiated and completed developmental and integration testing, and initiated field user evaluation at the end of 4Q FY 2012. In FY 2013, the technical test report and production decision will be completed.			
Title: Airborne Stand-Off Radar (ASTOR) Precision Targeting (PT) (Navy) Description: ASTOR provides the Distributed Common Ground System – Navy (DCGS-N) and Marine Corps (DCGS-MC) with a capability to receive Intelligence, Surveillance, and Reconnaissance (ISR) data from Royal Air Force (RAF) Airborne Stand-Off Radar (ASTOR) platforms. The primary outputs of the ASTOR System aboard the Sentinel Aircraft are Synthetic Aperture Radar images and Moving Target Indicator contacts. Software modifications to the ISR processing, exploitation, and dissemination components currently used by DCGS-N will be implemented and tested to verify that ISR data from ASTOR Systems can be rapidly received, processed, screened for potential mission application, and exploited to produce targeting data that can be used by U.S. weapon systems. This capability will allow U.S. forces to leverage coalition ISR assets and reduce mission requirements for U.S. ISR platforms. FY 2012 Accomplishments: Provided contracts for image processing software conversion and radar target surveys in the United Kingdom (UK). Completed coordination plans for flight testing and evaluation that commenced at the end of 3Q FY 2012 at RAF Waddington, UK. Conducted flight testing and evaluation through 4Q FY 2012. Began targeting validation analysis during 4Q FY 2012. In 2Q FY 2013, flight testing, targeting reliability validation and data analysis will be conducted. The product will be deployed to DCGS-N and DCGS-MC Programs at the end of 3Q FY 2013 and the project close-out report will be completed.		1.270	0.000
Title: Coating for Howitzer Breech-Spindles (Army) Description: Coating for Howitzer Breech-Spindles will test and compare several different coating and refurbishment technologies for the 155mm Howitzer-Breech Spindles. These new coating technologies will mitigate wear and corrosion problems and extend the useful life of the spindles. The lab will apply advanced mature Physical Vapor Deposition, Electro-less Nickel, and Super-finishing technologies to coat and refurbish the 155mm Howitzer breech-spindles. The lab will conduct analytical and fire testing to validate the new process, and develop a prototype for transition to production. The objective is to replace the electroplated chrome presently used with a product that provides improved durability, sustainability, environmental benefits, and significant cost savings. FY 2012 Accomplishments: Established contract with Sheffield Hallam University, United Kingdom (SHU-UK) during 4Q FY 2012. Produced deliverables, which include two prototype 155mm Howitzer breech spindles coated with nanoscale multilayered advanced coating (Chromium Nitride/Niobium Nitride multilayer) deposits using an advanced PVD process known as High Power Impulse Magnetron Sputtering		1.434	0.000

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>	R-1 ITEM NOMENCLATURE PE 0605130D8Z: <i>Foreign Comparative Testing</i>	PROJECT P130: <i>Foreign Comparative Testing</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
System. Completed a minimum three optimization runs to identify, down-select, and validate the surface preparation and deposition parameters required for the optimized deposition of nanoscale multilayered advanced coatings. Completed adhesion characterization to determine optimal deposition parameters. In FY 2013, the program manager will establish a statement of work with IonBond, Inc., and establish a timeline with international vendors, SHU-UK, Oerlikon Balzers, and IonBond, Inc. to complete the project.			
Title: Improved Aluminum Alloys for Armored Vehicles (Army)		1.450	0.000
<p>Description: Test improved aluminum armor alloys against current fielded aluminum alloys on armored vehicles for incorporation into military vehicle specifications. Possible candidates are the Ground Combat Vehicle (GVC), the Joint Light Tactical Vehicle (JLTV), the Armored Multi-Purpose Vehicle (AMPV), and foreign military sales M2 Bradley systems. This project will evaluate aluminum alloys AA7017-T6, AA2139-T8, and AA2195-BT. The project will also evaluate the weld-ability of the alloys for verification of improved ballistics and structural performance versus current armors. In addition to improved mechanical properties, preliminary data indicates these alloys also display improved resistance to stress corrosion cracking. The improved ballistics and resistance to stress corrosion cracking (SCC) make AA7017 a promising replacement for current corrosion prone aluminum alloys while maintaining good weld ability. The AA2195 and AA2139 alloys deliver increased protection levels beyond the current armor alloys, but are only approved for use as bolt-on or appliqué supplemental armors. Further verifications are needed to achieve full weldable status.</p> <p>FY 2012 Accomplishments: Ordered main ingots for the ballistics and welds for delivery to the U.S. Army Research Laboratory (ARL). Evaluated initial one inch plate samples of armor, and performed ballistics against armor piercing rounds. Prepared tempered plates for re-qualification to achieve better results against fragmentation rounds. Hosted the kick-off Integrated Product Team (IPT) meeting with U.S. Army Research Lab at Aberdeen Proving Ground. ARL received and machined specimens for fatigue, corrosion fatigue, and stress corrosion cracking to verify that sustainment costs for these alloys will remain low. In FY 2013, ARL plans to complete ballistics and weld evaluation of the new armor plate alloys to meet corresponding new military specifications (MIL-SPECs) or revisions to existing MIL-SPECs to incorporate the new alloys for acquisition.</p>			
Title: Rapid Deployment and Extended Autonomy for Single and Multiple Unmanned Underwater Vehicle (UUVs) (Navy)		1.218	0.000
<p>Description: Evaluate a module for autonomous mission planning that integrates with the existing Common Operator Interface Navy (COIN) tool to permit adaptive mission execution with unmanned underwater vehicles (UUVs). In addition to demonstrating new behaviors and algorithms, including automated target recognition (ATR), the tool will be adapted to provide an open and modular interface for third-party autonomy algorithms, supporting application of ongoing Navy efforts or competition of future capabilities. The effort aims to increase UUV mission capabilities through autonomy and provide an interface for application of existing Navy adaptive behaviors to improve fielding efforts. This is expected to be reflected in system performance as a</p>			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>	R-1 ITEM NOMENCLATURE PE 0605130D8Z: <i>Foreign Comparative Testing</i>	PROJECT P130: <i>Foreign Comparative Testing</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
33 percent decrease in mine countermeasures (MCM) total mission time and a 33 percent decrease in human-caused pre-programming errors without degradation of system key performance parameters. Based on reported present capabilities and open integration model, the effort is also estimated to avoid RDT&E and Operations and Support costs worth over \$2.000 million.			
FY 2012 Accomplishments: Defined testing methods for autonomy and aligned present system capabilities with Navy needs and mission objectives in 1Q FY 2012. Completed adaptation of existing software to Navy systems during 2Q FY 2012. Executed preliminary prototype demonstration at contractor-arranged facility on multiple platforms in 3Q FY 2012. Completed government simulation testing of prototype modules. Performed initial government evaluation and final adaptation of module to government systems in 4Q FY 2012. In FY 2013, the final adaptation of module to Government system will be conducted as well as final integration and demonstration of autonomy module. In 3Q FY 2013, the test report, procurement decision, and close-out report will be conducted.			
Title: Reconnaissance Airborne Pod TORnado (RAPTOR) Precision Targeting (PT) (Navy) Description: Provide the Distributed Common Ground System – Navy (DCGS-N) and Marine Corps (DCGS-MC) with a capability to receive in near real-time, via Common Data Link antenna systems, Intelligence, Surveillance, and Reconnaissance (ISR) data from the Reconnaissance Airborne Pod for Tornado (RAPTOR) Systems that are carried by Royal Air Force (RAF) GR-4 platforms. The primary outputs of the RAPTOR System are Electro-Optical and Infrared images in a digital format. Software modifications to the ISR Processing, Exploitation, and Dissemination Systems currently used by DCGS-N will be implemented and tested to verify that ISR data from RAPTOR Systems can be rapidly received, screened for potential mission application, and exploited to produce targeting data that can be used by U.S. weapon systems. This capability will allow U.S. forces to leverage coalition ISR assets and reduce mission requirements for U.S. ISR platforms. FY 2012 Accomplishments: Goodrich Aerospace United Kingdom (UK) downloaded RAPTOR and converted to U.S. National Imagery Transmission Format testing in 1Q FY 2012. Coordinated plans for target surveys, flight testing, and data evaluation during 2Q FY 2012. Conducted flight tests at the end of 3Q FY 2012 at RAF Marham, UK. Continued data analysis and began targeting reliability validation during 4Q FY 2012. In FY 2013, the flight testing, data validation and targeting reliability validation will be conducted. In 3Q FY 2013, the project close-out report will complete following the deployment to DCGS-N and DCGS-MC Programs.		1.220	0.000
Title: Special Operations Forces (SOF) Special Reconnaissance and Exploitation Systems (United States Special Operations Command (USSOCOM)) Description: Evaluate covert, digital, encrypted, wireless data audio/video devices; miniaturized concealable audio/video devices; remote camera systems; as well as tagging and tracking systems. The primary outputs and efficiencies to be demonstrated in the		1.557	0.000

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>	R-1 ITEM NOMENCLATURE PE 0605130D8Z: <i>Foreign Comparative Testing</i>	PROJECT P130: <i>Foreign Comparative Testing</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
project are: (1) new systems that replace legacy and compromised technology; and (2) avoid RDT&E, manufacturing, production, and Operations and Support costs worth \$38.000 million.				
FY 2012 Accomplishments: Received test articles in 4Q FY 2012. Began initial developmental testing during 4Q FY 2012. In FY 2013, final developmental testing, user assessment and production decision will be conducted. Closeout report will be completed by 3Q FY 2013.				
Title: Towed Array Handler Technology Insertion (Navy) Description: Test a handling system which offers the potential for increased towed array and handling system reliability while improving maintainability. Compared to the current system, the system under evaluation is more modular in design with improved simplicity which should directly lower overall maintenance cost to the Navy. The test article will be subjected to structure-borne noise, temperature, vibration, and shock testing. Additionally, there will be a land-based test to verify the required parameters and validate the design of the system and a shipboard installation and evaluation of the pre-production unit to verify the at-sea operation of the system. If successful, the handling system can be readily back-fitted to the handling systems that are currently installed on in-service submarines (OHIO, VIRGINIA, and LOS ANGELES) and can be used in new submarine design. The primary outputs and efficiencies produced by this project are 1) reduced damage and degradation to the arrays; 2) avoidance of RDT&E and Operations and Support costs worth \$96.160 million; and 3) avoidance of Manufacturing and Procurement costs worth \$1.430 million. FY 2012 Accomplishments: Completed Phase One engineering concepts, obtained shipboard assets, and awarded contract for refurbishment in 2Q FY 2012. Completed refurbishment of shipboard assets, procured guide tube representative assets, and completed test facility layout in 3Q FY 2012. Completed Foundation Drawings, entry and exit criteria for Preliminary Design Review, and finalized Test Plans during 4Q FY 2012. FY 2013 Plans: Finalize government furnished equipment deliveries and conduct Preliminary Design Review during 1Q FY 2013. Finalize interface control drawings in 2Q FY 2013. Develop and finalize temporary alteration for shipboard installation, conduct land-based testing, and procure assets for shipboard installation during 3Q 2013. Complete test and evaluation report and project close-out in 4Q FY 2013.		1.026	0.800	0.000
Title: Minor Resource Projects (Less than one million dollars) Description: Multi-Diver Heating and Cooling System (United States Special Operations Command), Enhanced Fuse for 70mm Warhead (United States Special Operations Command), Sheeted Nitrocellulose for Combustible Case Cartridges (Army), Robotic – Moving Target System (R-MTS) (Navy), Stand Off Gas Cloud Detector(United States Special Operations Command), Tactical		7.459	0.530	0.000

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>	R-1 ITEM NOMENCLATURE PE 0605130D8Z: <i>Foreign Comparative Testing</i>	PROJECT P130: <i>Foreign Comparative Testing</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
Communications Enhancements (United States Special Operations Command), Ballistic Pelvic Protection (BPP) (Navy), Micro Smooth Coating System (Navy), Accurate Low Cost Inertial Navigation Improvement (ALCINI) (Navy), and Moving Target Indication Software (Navy) will continue into FY 2013.			
FY 2012 Accomplishments: Completed and Transitioned: LCAC Operator Suspension Seats, and Ultra High Energy Rechargeable Battery.			
FY 2013 Plans: The following projects will finalize testing, receive test articles, and complete reporting and transition plans: Multi-Diver Heating & Cooling System, Enhanced Fuse for 70mm Warhead, Sheeted Nitrocellulose for Combustible Case Cartridges, Robotic – Moving Target System (R-MTS), Tactical Communications Enhancements, Stand-Off Gas Cloud Detector for Chemical Warfare Agents, Ballistic Pelvic Protection, Micro Smooth Coating System, Accurate Low Cost Inertial Navigation Improvement, Moving Target Indication (MTI) Software Flight, Marine Grade Aluminum Plate, and Aircraft Airframe Structure Match Drilling.			
Title: Foreign Comparative Testing (FCT) FY 2013 and FY 2014 Focal Area: Force Application		0.000	8.422
Description: Focal area for FY 2013 and FY 2014 for Force Application projects will involve the ability to create effects necessary to achieve mission objectives while reducing the cost, acquisition time, and risk of major defense acquisition programs.			6.105
FY 2013 Plans: CTO's investment decisions into Force Application will increase Comparative Testing's ability to assist Combatant Commanders, Service and other government organizations' requirements with achieving mission objectives while reducing the cost, acquisition time, and risk of major defense acquisition programs objectives as new threats emerge or new opportunities are presented in the execution years.			
FY 2014 Plans: CTO's investment decisions into Force Application will provide the ability to assist Combatant Commander, Services and other government organizations' requirements with achieving mission objectives while reducing the cost, acquisition time, and risk of major defense acquisition programs objectives as new threats emerge or new opportunities are presented in the execution years. The decrease from FY 2013 to FY 2014 reflects DoD priorities and requirements.			
Title: Foreign Comparative Testing (FCT) FY 2013 and FY 2014 Focal Area: Logistics		0.000	8.422
Description: Focal area for FY 2013 and FY 2014 Logistics projects will involve the ability to project and sustain a logistically ready joint force through the deliberate sharing of national and multi-national resources to effectively support operations while reducing the cost, acquisition time, and risk of major defense acquisition programs.			6.029
FY 2013 Plans:			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>		R-1 ITEM NOMENCLATURE PE 0605130D8Z: <i>Foreign Comparative Testing</i>	PROJECT P130: <i>Foreign Comparative Testing</i>
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
<p>CTO's investment decisions into Logistics will involve the ability to project and sustain a logistically ready joint force through the deliberate sharing of national and multi-national resources to Combatant Commanders, Services, and other government organizations' requirements as new threats emerge or new opportunities are presented made during the execution years.</p> <p>FY 2014 Plans: CTO's investment decisions into Logistics will involve the ability to project and sustain a logistically ready joint force through the deliberate sharing of national and multi-national resources to Combatant Commander, Service and other government organizations' requirements as new threats emerge or new opportunities are presented made during the execution years. The decrease from FY 2013 to FY 2014 reflects DoD priorities and requirements.</p>			
Accomplishments/Planned Programs Subtotals		18.616	18.174
C. Other Program Funding Summary (\$ in Millions)			
N/A			
Remarks			
D. Acquisition Strategy			
N/A			
E. Performance Metrics			
<p>In FY 2014, generic performance metrics applicable to these RDT&E initiatives includes attainment of DoD Strategic Objective 3.5.2D. The title of this objective is "Maintain a strong technical foundation within the Department's Science and Technology (S&T) program" and the metrics for this objective is to transition 40 percent of completing demonstration programs per year. Since the program's inception in 1980, Office of Secretary of Defense (OSD) has invested about \$1.170 billion in FY2012 constant year dollars to initiate 671 projects; 601 projects have been completed to date. Of the 312 evaluations that met the sponsors' requirements, 243 led to procurements worth over \$11.000 billion. In FY 2012, FCT had a transition rate of 79 percent for completed projects, exceeding the objective of 30 percent for demonstration programs.</p>			

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE							
0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>					PE 0605142D8Z: <i>Systems Engineering</i>							
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
Total Program Element	-	39.118	43.195	44.237	-	44.237	52.067	53.621	53.380	54.322	Continuing	Continuing
P142: <i>Systems Engineering</i>	-	34.554	38.452	34.921	-	34.921	41.890	43.272	43.058	43.897	Continuing	Continuing
P143: <i>Program Protection</i>	-	4.564	4.743	4.316	-	4.316	5.177	5.349	5.322	5.425	Continuing	Continuing
P241: <i>Systems Engineering Research Center</i>	-	0.000	0.000	5.000	-	5.000	5.000	5.000	5.000	5.000	Continuing	Continuing

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

This Program Element (PE) establishes the dedicated funding line to carry out the duties as described in Title 10 US Code, Section 139, the Weapons Systems Acquisition Reform Act of 2009. The Deputy Assistant Secretary of Defense for Systems Engineering (DASD(SE)) is the principal advisor to the Secretary of Defense, the Under Secretary of Defense for Acquisition, Technology and Logistics (USD(AT&L)) and the Assistant Secretary of Defense for Research and Engineering (ASD(R&E)) on systems engineering, development planning, and related technical fields in the Department of Defense. The DASD(SE) develops policies and guidance for (1) the use of systems engineering principles and best practices; (2) the use of systems and software engineering planning and contracting approaches to enhance reliability, availability, and maintainability on major defense acquisition programs (MDAPs); (3) the systems engineering plans (SEPs) for MDAPs including software, and systems engineering considerations in support of lifecycle management and sustainability; and (4) the inclusion of provisions relating to systems engineering and reliability in requests for proposals. The DASD(SE) reviews and approves the SEP for each MDAP and monitors and reviews the systems engineering and development planning activities of MDAPs and other defense acquisition programs as directed by the Secretary of Defense or the USD(AT&L). Based on the Director's continuous program engagement, the DASD(SE) advises and makes recommendations to the Secretary of Defense and the USD(AT&L) regarding systems engineering, development planning and the execution of these activities. As a member of the Defense Acquisition Board, the DASD(SE) provides independent assessments of defense acquisition program's systems engineering, development planning, technical execution, and risk. The DASD(SE) also provides input on the inclusion of systems engineering requirements as part of the Joint Requirements Oversight Council's process for joint military requirements, to include developing specific inputs relating to each capabilities development document.

The DASD(SE) issues guidance to, and consults with, the Services and Agencies with respect to systems engineering in the Department and provides advocacy, oversight, and guidance to elements of the acquisition workforce responsible for systems engineering, development planning, and lifecycle management and sustainability functions and developing policies and guidance for the integration of specialty engineering functions. The DASD(SE) integrates systems engineering with Mission Assurance in the acquisition system. The DASD(SE) periodically reviews the organizations and capabilities of the military departments with respect to systems engineering, development planning, and lifecycle management and sustainability, and identifies needed changes or improvements to such organizations and capabilities.

The DASD(SE) prepares and submits an annual report to Congress on systems engineering activities and effectiveness.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY

0400: *Research, Development, Test & Evaluation, Defense-Wide*
BA 6: *RDT&E Management Support*

R-1 ITEM NOMENCLATURE

PE 0605142D8Z: *Systems Engineering*

This PE includes efforts by the office of the DASD(SE) in implementing the Department's Trusted Defense System Strategy. Specifically, the PE will develop and mature the critical sub discipline of systems engineering - system security engineering and the Comprehensive Program Protection Planning process that implements a risk-based approach to protection of critical technology, components and information in acquisition programs. This includes study and maturation of policy, guidance and SSE discipline fundamentals such as engineering methods, tools and best practices. These activities will be promulgated in defense acquisition as a fundamental element of DASD(SE) systems engineering and technical reviews.

B. Program Change Summary (\$ in Millions)	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total
Previous President's Budget	40.438	43.195	42.514	-	42.514
Current President's Budget	39.118	43.195	44.237	-	44.237
Total Adjustments	-1.320	0.000	1.723	-	1.723
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-1.308	-			
• SBIR/STTR Transfer	-	-			
• Baseline Adjustments	-	-	1.723	-	1.723
• Other Adjustments	-0.012	-	-	-	-

Change Summary Explanation

Baseline adjustments are reflective of DoD priorities and requirements.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE				PROJECT			
0400: Research, Development, Test & Evaluation, Defense-Wide BA 6: RDT&E Management Support					PE 0605142D8Z: Systems Engineering				P142: Systems Engineering			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
P142: Systems Engineering	-	34.554	38.452	34.921	-	34.921	41.890	43.272	43.058	43.897	Continuing	Continuing
Quantity of RDT&E Articles												

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

This project (142) supports the execution of the missions of the Deputy Assistant Secretary of Defense for Systems Engineering (DASD(SE)) to: (1) provide flexible engineering policy, guidance, and workforce development requirements for the Department of Defense (DoD) acquisition workforce; (2) foster an acquisition environment of collaboration, teamwork, and joint ownership of program success through a proactive program oversight process, ensuring appropriate levels of systems engineering discipline are applied through all phases of the acquisition life cycle; and (3) engage all stakeholders across government, industry, and academia to collectively advance systems engineering practice and achieve acquisition excellence. The outcome of this effort is to ensure systems engineering principles and disciplines are fully accepted and assimilated into the DoD acquisition workforce positioning the DoD for acquisition excellence leading to a stronger national defense.

Activities include the following functions:

Program Support

- Work with program managers to prepare systems engineering plans (SEPs) to document the technical management approach.
- Conduct periodic program engagements in support of technical reviews to confirm programs are executed in accordance with the SEP.
- Review all aspects of the systems engineering process for major defense acquisition programs (MDAPs) to ensure they are adequate to support fielding and the achievement of cost and performance goals including reliability, sustainment, and other mission assurance considerations.
- Participate in Systems Engineering Integrated Project Teams (IPTs), Systems Engineering Working Integrated Project Teams (WIPTs), and Systems Engineering technical reviews, especially Preliminary Design Reviews and Critical Design Reviews.
- Work with DoD Service program managers, their staffs, and other organizations, technical authorities, and oversight organizations to develop and implement technical management programs for MDAPs.
- Conceive plans and lead program support reviews and assessments of MDAP weapons systems and other programs (e.g., Major Automated Information Systems (MAIS)) to shape technical planning and management to ensure program success.
- Conduct other technical reviews as requested, e.g., Nunn-McCurdy certification reviews, Non-Advocate Reviews, focused technical assessments, and software readiness reviews to identify and mitigate program risk.

Mission Assurance

- Establish Mission Assurance policy, guidance, and workforce development to drive the development of fully capable and supportable weapons systems.
- Oversee Component implementation of Mission Assurance initiatives and conduct independent Mission Assurance assessments.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 6: RDT&E Management Support	R-1 ITEM NOMENCLATURE PE 0605142D8Z: Systems Engineering	PROJECT P142: Systems Engineering		
<ul style="list-style-type: none">• Develop education and training materials for instructing, maintaining, and enhancing the defense acquisition workforce. Activities include: (1) developing guidance to enhance Systems Planning, Research, Development and Engineering (SPRDE) and Production Quality and Manufacturing (PQM) acquisition career planning and progression; and (2) monitoring, and facilitating Defense Acquisition University (DAU) updates to the systems engineering, quality and software engineering course, to ensure curriculum represents the education and training requirements necessary to be a viable team member in the acquisition process.• Drive an overall improvement in weapon system reliability through improved reliability engineering, reliability growth management, and reliability monitoring in program development contracting, execution and sustainment.• Prepare and submit annual reports to Congress on the Department's capabilities and effectiveness in systems engineering and development planning. <p>System Analysis</p> <ul style="list-style-type: none">• Foster program protection planning methodology, system security engineering discipline, industry standards, and engagement with acquisition programs to support risk assessment and vulnerability mitigation.• Guide Service and other component organizations in the development planning process to ensure proposed MDAP programs are executable within acceptable levels of risk.• Resolve long-term major systems engineering challenges such as systems of systems (SoS) systems engineering, systems engineering Complexity Analysis, and systems engineering based technical trade off analysis and pre-program formulation stages.• Provide necessary modeling and simulation policy and guidance, clarify the application of distributed simulation standards and work with the DoD modeling and simulation community to identify and promulgate required capabilities and competencies needed to support acquisition modeling and simulations.				
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
Title: Systems Engineering Initiatives		34.554	38.452	34.921
Description: The DASD(SE) provides objective assessments of program risk to support knowledge-based decision making by DoD leaders regarding DoD MDAPs and MAISs.				
FY 2012 Accomplishments: Strategic Thrust: Major Program Support <ul style="list-style-type: none">• Conducted deep-dive systems engineering reviews of MDAPs and special interest programs.• Expanded conduct of SE and execution risk assessments.• Initiated systems integration and development planning risk assessments.• Expanded monitoring of programs, provide SE oversight to include all MDAPs, MAIS, and special interest programs.• Conducted systemic analysis and process management.• Expanded root cause analysis conducted during and after Program Support Reviews (PSRs).• Expanded detailed performance measurements and analysis.• Provided decision-quality information and recommendations to Defense Acquisition Boards (DABs), In Process Reviews (IPRs), Defense Space Acquisition Boards (DSABs) and Information Technology Acquisition Boards (ITABs).• Reviewed MDAP Request for Proposals for critical engineering requirements.				

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>	R-1 ITEM NOMENCLATURE PE 0605142D8Z: <i>Systems Engineering</i>	PROJECT P142: <i>Systems Engineering</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
<p>Strategic Thrust: Systems Engineering Capabilities Assessment</p> <ul style="list-style-type: none"> • Conducted analysis of Military Departments self-assessments; conduct analysis of DoD's SE capability. • Authored annual Congressional Report jointly with DT&E. • Developed and strengthen component SE organization and capabilities. <p>Strategic Thrust: Engineering and Policy</p> <ul style="list-style-type: none"> • Developed and updated core SE policy, guidance and standards; review all acquisition policy for SE implications. • For workforce development, functional lead for SPRDE, PQM and assisted software engineering. <p>Strategic Thrust: Early Systems Engineering and Development Planning</p> <ul style="list-style-type: none"> • Developed policy and guidance for development planning and early SE; oversee its establishment within Services. • Performed early acquisition risk assessment including pre-Milestone A (pre-MS A) engagement with Joint Requirements Oversight Council processes. • Supported Services and COCOMs in pre-MS A formulation. • Supported requirements analyses and analysis of alternatives. • Supported initial capabilities document definition and development. • Led systems engineering research, systems of systems research and collaboration across Services to identify areas of improvement; developed and established best practices. • Oversaw the Systems Engineering Research University Affiliated Research Center (UARC) and conducted studies and analysis. <p>FY 2013 Plans:</p> <p>Strategic Thrust: Major Program Support</p> <p>Continue to:</p> <ul style="list-style-type: none"> • Conduct deep-dive systems engineering reviews of MDAPs and special interest programs. • Expand conduct of SE and execution risk assessments. • Initiate systems integration and development planning risk assessments. • Expand monitoring of programs, provide SE oversight to include all MDAPs, MAIS, and special interest programs. • Conduct systemic analysis and process management. • Expand root cause analysis conducted during and after PSRs. • Expand detailed performance measurements and analysis. • Provide decision-quality information and recommendations to DABs, IPRs, DSABs and ITABs. • Review MDAP Request for Proposals for critical engineering requirements. 			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>	R-1 ITEM NOMENCLATURE PE 0605142D8Z: <i>Systems Engineering</i>	PROJECT P142: <i>Systems Engineering</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
<p>Strategic Thrust: Systems Engineering Capabilities Assessment</p> <ul style="list-style-type: none"> • Conduct analysis of Military Departments self-assessments; conduct analysis of DoD's SE capability. • Author annual Congressional Report jointly with Development Test and Evaluation (DT&E). • Develop and strengthen component SE organization and capabilities. <p>Strategic Thrust: Engineering and Policy</p> <ul style="list-style-type: none"> • Develop and update core SE policy, guidance and standards; review all acquisition policy for SE implications. • Workforce development: Functional Lead for SPRDE, PQM and assist software engineering. <p>Strategic Thrust: Early Systems Engineering and Development Planning</p> <ul style="list-style-type: none"> • Develop policy and guidance for development planning and early SE; oversee its establishment within Services. • Perform early acquisition risk assessment including pre-MS A engagement with Joint Requirements Oversight Council processes. • Support Services and COCOMs in pre-MS A formulation. • Support requirements analyses and analysis of alternatives. • Support initial capabilities document definition and development. • Lead systems engineering research, systems of systems research and collaboration across Services to identify areas of improvement; develop and establish best practices. • Oversee the Systems Engineering Research UARC and conduct University-based research into SE processes and techniques. <p>FY 2014 Plans:</p> <p>Strategic Thrust: Program Support</p> <p>Continue to:</p> <ul style="list-style-type: none"> • Conduct deep-dive systems engineering reviews of major defense acquisition programs (MDAPs) and special interest programs. • Expand conduct of SE and execution risk assessments. • Initiate systems integration and development planning risk assessments. • Expand monitoring of programs, provide SE oversight to include all MDAPs, Major Automated Information Systems (MAIS), and special interest programs. • Conduct systemic analysis and process management. • Expand root cause analysis conducted during and after Program Support Reviews (PSRs). • Expand detailed performance measurements and analysis. • Provide decision-quality information and recommendations to Defense Acquisition Boards, In Progress Reviews, Defense Space Acquisition Boards and Information Technology Advisory Boards. • Review MDAP Request for Proposals for critical engineering requirements. 			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>	R-1 ITEM NOMENCLATURE PE 0605142D8Z: <i>Systems Engineering</i>	PROJECT P142: <i>Systems Engineering</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
<p>Strategic Thrust: Specialty Engineering</p> <ul style="list-style-type: none"> • Develop engineering and policies for the integration of specialty engineering functions as part of the SE responsibility for mission assurance in the acquisition process including, but not limited to, cyber security; program protection in accordance with Reference (gc); safety; software; reliability, availability, and maintainability; human systems integration; modeling and simulation; configuration management; data management; and risk management. • Conduct studies and analyses of methods, processes and tools to identify challenges and opportunities and develop and promulgate best practices and guidance for applying SE to rapid development and acquisition. • Assess challenges and impact and develop new guidance, best practices, methods, processes and tools to more effectively implement SE for Systems of Systems. <p>Strategic Thrust: Work Force Development</p> <ul style="list-style-type: none"> • Workforce development: Functional Lead for Systems Planning, Research, Development and Engineering (SPRDE), Process Quality Management (PQM) and assist software engineering. • SE Capstone Education: Support Undergraduate STEM initiative designed to increase the Systems Content of Senior Undergraduate Capstone Engineering Design Courses. • Build an Enduring high performance engineering culture across the Department in Systems Engineering. • Outline a Department plan for engineering workforce career development, focused on delivering critical Engineering content vs. teaching OSD acquisition Policy. • Outline a Department plan for engineering workforce rewards and recognition. • Outline a strategy to show the value of systems engineering contributions to "design and manufacturing quality" in DoD acquisition systems. • Perform outreach to services and OSD to focus departments attention and behavior on promoting an engineering culture. • Manage DoD sponsorship of the MITRE Federally Funded Research and Development Center (FFRDC) <p>Strategic Thrust: Engineering and Policy</p> <ul style="list-style-type: none"> • Develop and update core SE policy, guidance and standards; review all acquisition policy for SE implications. • Provide advice and make recommendations to the Secretary of Defense and the USD(AT&L) regarding systems engineering and development planning and the execution of these activities within and across Defense acquisition programs. Issue guidance to and consult with the Heads of the DoD Components with respect to systems engineering and development planning in the Department of Defense. • Provide guidance to Defense acquisition programs for developing and documenting each program's technical strategy and management approach in the SEP throughout the program's lifecycle. 			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>		R-1 ITEM NOMENCLATURE PE 0605142D8Z: <i>Systems Engineering</i>	PROJECT P142: <i>Systems Engineering</i>
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
<p>Strategic Thrust: Systems Engineering Capabilities Assessment</p> <ul style="list-style-type: none"> • Conduct analysis of Military Departments self-assessments; conduct analysis of DoD's SE capability. • Author annual Congressional Report jointly with Development, Test and Evaluation (DT&E). • Work jointly with DT&E to develop and track new measurable performance criteria. • Develop and strengthen component SE organization and capabilities. • Periodically review the organizations and capabilities of the Military Departments and Defense Agencies with respect to systems engineering, development planning, and lifecycle management and sustainability, and identify needed changes or improvements to such organizations and capabilities. • Store and analyze Performance Criteria in SEPs and Test and Evaluation Master Plans (TEMPs) for MDAPs; Develop Program Metrics to aid SE assessments and program execution. <p>Strategic Thrust: Early Systems Engineering and Development Planning</p> <ul style="list-style-type: none"> • Develop policy and guidance for development planning and early SE; oversee its establishment within Services. • Perform early acquisition risk assessment including pre-MS A engagement with Joint Requirements Oversight Council processes. • Support Services and COCOMs in pre-MS A formulation. • Support requirements analyses and analysis of alternatives. • Support initial capabilities document definition and development. 			
Accomplishments/Planned Programs Subtotals		34.554	38.452
C. Other Program Funding Summary (\$ in Millions)			
N/A			
Remarks			
D. Acquisition Strategy			
N/A			
E. Performance Metrics			
<p>Improve the Systems Engineering effectiveness of the Department's acquisition enterprise and provide Department leadership with technical insights into acquisition program performance through:</p> <ul style="list-style-type: none"> • Systems engineering plans (SEPs) reviewed and approved to document each program's technical management approach. • Program support reviews (PSRs) and periodic program engagements conducted and program technical reviews supported to confirm programs are executed in accordance with the SEP. 			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>	R-1 ITEM NOMENCLATURE PE 0605142D8Z: <i>Systems Engineering</i>	PROJECT P142: <i>Systems Engineering</i>
<ul style="list-style-type: none"> • Technical reviews conducted as requested, e.g., Nunn-McCurdy certification reviews, Non-Advocate Reviews, and focused technical assessments to identify and mitigate program risk. • DABs, Overarching Integrated Product Teams (OIPs), and other program review participation to provide technical insights to OSD stakeholders. • Effective systems engineering policy and guidance established and promulgated throughout the Military Services and the Defense Acquisition System. • A systems engineering workforce staffed, trained and certified with capable and experienced personnel. • Weapon system reliability increased through improved reliability engineering, reliability growth management, and reliability monitoring in program development contracting, execution and sustainment. • Annual reports to Congress prepared and submitted on the Department's capabilities and effectiveness in systems engineering and development planning. • Service and other component organizations engaged and supported in the development planning process through effective policy, guidance, document reviews and program engagement to ensure proposed MDAP programs are executable within acceptable levels of risk. 		

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>	R-1 ITEM NOMENCLATURE PE 0605142D8Z: <i>Systems Engineering</i>	PROJECT P143: <i>Program Protection</i>
--------------------------------------------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------	---------------------------------------------------

COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
P143: <i>Program Protection</i>	-	4.564	4.743	4.316	-	4.316	5.177	5.349	5.322	5.425	Continuing	Continuing
Quantity of RDT&E Articles												

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

The Department of Defense (DoD) must address cyber security and supply chain risks to DoD networks, weapons systems and information stored and processed on both DoD and Defense Industrial Base (DIB) unclassified networks that support DoD programs. Increased reliance on the internet as a vehicle for sharing information, globalization of the supply chain, and advanced persistent threats (APTs) that can evade commercially available security tools and defeat generic security best practices, drive the need for better and smarter program protection planning and execution. The President's Cyber Initiative has moved to counter these threats and mitigate the risks. The Acquisition Cyber Security Initiative links high level policies and practical expertise to specific acquisition practices, systems engineering activities, and risk reduction activities. Through this initiative the Department will pilot activities with the DIB to reduce risks in sharing and storing critical program information, better understand and mitigate supply chain risks, improve program protection planning, and improve and streamline program protection engineering. The Department has developed a Trusted Systems strategy which integrates Protection Planning for the development of capabilities, the use of proven mitigation techniques and tools, the ongoing refinement of risk management processes, and creation of needed technology.

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2012	FY 2013	FY 2014
Title: Program Protection	4.564	4.743	4.316
FY 2012 Accomplishments: <ul style="list-style-type: none"> • Provided support to Acquisition Category (ACAT) I programs to conduct broad program protection planning. Conducted criticality analyses. Developed Program Protection Plans, and tracked progress to verify protection of critical program capabilities. Reviewed ACAT I Program Protection Plans and provided recommendations for their approval to Under Secretary of Defense for Acquisition, Technology, and Logistics. • Conducted outreach to further the implementation and understanding of system security engineering requirements and practices (courseware, guidance dissemination, mentoring of Service teams, training, and outreach). • Collaborated in developing DFARS or FAR language to implement information security on DoD contracts for protection of defense program information. Developed and implemented process for adjudicating public comments. Provided acquisition support to DIB Cyber Security program. 			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>	R-1 ITEM NOMENCLATURE PE 0605142D8Z: <i>Systems Engineering</i>	PROJECT P143: <i>Program Protection</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
<ul style="list-style-type: none"> • Oversaw and managed the acquisition security database and tracked implementation by the components. Implemented horizontal protection adjudication process. Evolved the Horizontal Protection processes to meet changing threats. <p>FY 2013 Plans: Continue to:</p> <ul style="list-style-type: none"> • Provide support to Acquisition Category (ACAT) I programs to conduct broad program protection planning. - Conduct criticality analyses. - Develop Program Protection Plans, and track progress to verify protection of critical program capabilities. - Review ACAT I Program Protection Plans and provide recommendations for their approval to Under Secretary of Defense for Acquisition, Technology, and Logistics. <ul style="list-style-type: none"> • Conduct outreach to further the implementation and understanding of system security engineering requirements and practices (courseware, guidance dissemination, mentoring of Service teams, training, and outreach). <ul style="list-style-type: none"> • Collaborate in developing DFARS or FAR language to implement information security on DoD contracts for protection of defense program information. Develop and implement process for adjudicating public comments. Provide acquisition support to DIB Cyber Security program. <ul style="list-style-type: none"> • Oversee and manage the acquisition security database and tracked implementation by the components. Implement horizontal protection adjudication process. Evolve the Horizontal Protection processes to meet changing threats. <p>FY 2014 Plans: Continue to:</p> <ul style="list-style-type: none"> • Provide support to Acquisition Category (ACAT) I programs to conduct broad program protection planning. - Conduct criticality analyses to determine system vulnerabilities. - Develop Program Protection Plans, and track progress to verify protection of critical program capabilities. - Review ACAT I Program Protection Plans and provide recommendations for their approval to Under Secretary of Defense for Acquisition, Technology, and Logistics. <ul style="list-style-type: none"> • Advance the state of the practice of systems security engineering - Continue development of methodology to identify and mitigate security risk. - Courseware, guidance dissemination, mentoring of Service teams, training, and outreach. 			
Accomplishments/Planned Programs Subtotals		4.564	4.743
			4.316

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>	R-1 ITEM NOMENCLATURE PE 0605142D8Z: <i>Systems Engineering</i>	PROJECT P143: <i>Program Protection</i>
C. Other Program Funding Summary (\$ in Millions) N/A		
Remarks		
D. Acquisition Strategy N/A		
E. Performance Metrics The program protection project supports activities focused on: (1) reducing risks in sharing and storing critical program information, (2) better understanding and mitigating supply chain risks, (3) improving program protection planning, and (4) improving and streamlining program protection engineering. Impact of the program protection initiative is assessed based upon number of major acquisition programs supported with formal assessments, program protection plans reviewed and approved and through engagement supporting acquisition policy initiatives related to program protection.		

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>					R-1 ITEM NOMENCLATURE PE 0605142D8Z: <i>Systems Engineering</i>				PROJECT P241: <i>Systems Engineering Research Center</i>			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
P241: <i>Systems Engineering Research Center</i>	-	0.000	0.000	5.000	-	5.000	5.000	5.000	5.000	5.000	Continuing	Continuing
Quantity of RDT&E Articles												

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

The Systems Engineering Research Center (SERC) is a University Affiliated Research Center (UARC) established in 2008. As a UARC, the SERC is a strategic resource to further systems research and increase its impact on the Department's ability to meet its mission. Greatly improved systems engineering is essential to the president's strategy for the Department to field systems that are agile, affordably sustainable, flexible, and ready for a full range of contingencies in the face of declining budgets and a shrinking workforce. The SERC consists of a network of eighteen research universities from across the US that work collaboratively to bring the best talent in the nation to bear on DoD's systems engineering research problems.

In prior years, DASD/SE has resourced the SERC at \$1.000 million per year from P142.

The additional funding, beginning in FY 2014, will increase the Department's engagement with SERC, supporting additional research on topics of strategic importance to DoD.

This new project code, established within the Systems Engineering Program Element: (1) provides core funding for the SERC; (2) provides adequate stable resources for the SERC research agenda; and (3) enables the SERC to take full advantage of the university collaborators, enabling them to address DoD needs much more effectively.

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2012	FY 2013	FY 2014
Title: Systems Engineering Research Center	0.000	0.000	5.000
Description: The Systems Engineering Research Center (SERC) is a DoD University Affiliated Research Center which conducts University-based research that directly supports DoD's Strategic Plan through development of new systems engineering methods, processes and tools.			
FY 2014 Plans: Funding will provide enhanced engineering methods, processes and tools (MPTs) that make significant improvements in four areas:			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>		R-1 ITEM NOMENCLATURE PE 0605142D8Z: <i>Systems Engineering</i>	PROJECT P241: <i>Systems Engineering Research Center</i>
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
(1) Systems Engineering Transformation: transform systems engineering within the defense enterprise by developing new engineering and estimation methods to address complexity in modern systems and enable affordable development of flexible systems responsive to changing threats and missions;			
(2) Enterprises and Systems of Systems: build and transform enterprises and systems of systems using new systems engineering methods with fewer unintended consequences and unforeseen risks;			
(3) Trusted Systems: secure defense systems from cyber and other threats through systemic security approaches that complement incomplete current perimeter/network defense methods; and			
(4) Human Capital Development: speed the professional development of strong systems engineers and technical leaders in the Department and the Defense Industrial Base.			
Accomplishments/Planned Programs Subtotals		0.000	0.000
C. Other Program Funding Summary (\$ in Millions) N/A			
Remarks			
D. Acquisition Strategy N/A			
E. Performance Metrics Develop and extend fundamental knowledge, advanced methods, processes and tools and cutting edge techniques for systems engineering of complex designs of relevance to the DoD mission.			
<ul style="list-style-type: none"> • Generation and execution of relevant and appropriate SERC Research tasks. • Promulgation of advanced SE approaches through research publications, presentations and monographs. 			

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense	DATE: April 2013
-------------------------------------------------------------------------------------------------	-------------------------

APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE							
0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>					PE 0605151D8Z: <i>Studies and Analysis Support - OSD</i>							
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
Total Program Element	0.000	0.000	6.457	5.871	-	5.871	6.327	6.083	6.161	6.853	Continuing	Continuing
001: <i>Joint Service Training & Readiness System Development Program</i>	0.000	0.000	6.457	5.871	-	5.871	6.327	6.083	6.161	6.853	Continuing	Continuing
Quantity of RDT&E Articles												

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

The Joint Service programs were established by the Secretary of Defense to improve the training and readiness of the Active and Reserve Components. This project expedites the prototype development of new training and readiness technologies and Joint Service training and readiness systems, which improve the training and readiness effectiveness and enhance the performance of the military forces. It facilitates the sharing of training and readiness information, while allowing for the transfer of emerging and innovative technologies among the Services and private sector. In addition, this project supports OSD (P&R) and DoD training managers (OSD, Joint Staff, Unified Commands, and the Services) in promoting more efficient and effective use of training resources, increasing the effectiveness of military training, and enhancing the readiness and performance of the military forces. Projects analyze the contributions to readiness of various training techniques and programs and use the results to expedite new training concepts and procedures that increase unit effectiveness or decrease costs. Emphasis is placed on developing analytical tools and systematic methodologies to improve training resource allocations.

B. Program Change Summary (\$ in Millions)	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total
Previous President's Budget	0.000	6.457	6.460	-	6.460
Current President's Budget	0.000	6.457	5.871	-	5.871
Total Adjustments	0.000	0.000	-0.589	-	-0.589
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Program Adjustments	-	-	-0.589	-	-0.589

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 6: RDT&E Management Support		R-1 ITEM NOMENCLATURE PE 0605151D8Z: Studies and Analysis Support - OSD		
<u>Change Summary Explanation</u> Supports OSD (P&R) and DoD training managers (OSD, Joint Staff, Unified Commands, and the Services) in promoting more efficient and effective use of training resources, increasing the effectiveness of military training, and enhancing the readiness and performance of the military forces. Projects analyze the contributions to readiness of various training techniques and programs and use the results to expedite new training concepts and procedures that increase unit effectiveness or decrease costs. Emphasis is placed on developing analytical tools and systematic methodologies to improve training resource allocations.				
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
Title: Joint Service Training & Readiness System Development		0.000	6.457	5.871
Description: The Joint Service programs were established by the Secretary of Defense to improve the training and readiness of the Active and Reserve Components. This project expedites the prototype development of new training and readiness technologies and Joint Service training and readiness systems, which improve the training and readiness effectiveness and enhance the performance of the military forces. It facilitates the sharing of training and readiness information, while allowing for the transfer of emerging and innovative technologies among the Services and private sector. In addition, this project supports OSD (P&R) and DoD training managers (OSD, Joint Staff, Unified Commands, and the Services) in promoting more efficient and effective use of training resources, increasing the effectiveness of military training, and enhancing the readiness and performance of the military forces. Projects analyze the contributions to readiness of various training techniques and programs and use the results to expedite new training concepts and procedures that increase unit effectiveness or decrease costs. Emphasis is placed on developing analytical tools and systematic methodologies to improve training resource allocations.				
FY 2012 Accomplishments: <ul style="list-style-type: none">• Provided options for reducing force structure;• Developed alternative approaches to Force Generation and Management;• Developed a strategy for open source development of a virtual world (VW) software framework optimizing web-based communications protocols;• Developed flexible force structure concept plan for reduction and expansion of the force depending upon varying world situations;• Identified social media tools capable of data mining to enhance education by harnessing the large amounts of unstructured and structured data available to enhance an individual learner’s potential, this is foundation work for our partnership with the Department of Education;• Developed methodologies for preventing and managing prescription drug misuse among uniform personnel;• Assessed the effects on readiness and retention on the addition of synthetic cannabinomimetics to the panel of random tested drugs, completed initial work toward the development of cost effective screening techniques;• Provided options to lower or stop suicide rates, data collection research focused the Department’s ability to collect, standardize, and analyze related data;• Developed criteria for Cyberspace Operations Workforce;				

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>		R-1 ITEM NOMENCLATURE PE 0605151D8Z: <i>Studies and Analysis Support - OSD</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
<ul style="list-style-type: none"> • Conducted capabilities based assessment (CBA) of stability operations, captured lessons learned; • Investigated options for use of agile software in training environments leading to more efficient methodologies; • Ensured 5th generation fighter training interoperability increasing training efficiencies; • Investigated radio frequency (RF) spectrum options for instrumented air combat training (ACT), future RF spectrum will be limited, so needed to plan now; • Assessed requirements for full-time support to the Reserve components as mandated by Congress (i.e., Section 514 of S.1253); • Determined the feasibility of the Regional Integrated Training Environment (RITE) concept prior to moving forward with a formal strategic communications and education effort and determine best approach for concept implementation; • Determined the knowledge, skills, and abilities for effective diversity management leaders; • Assessed prevalence of Total Force “reuse;” • Developed model to assess future enlisted force profiles in a dynamic environment; • Developed improved methods to identify potential security and insider threats; and • Evaluated and optimized training for sexual assault prevention and response as mandated by Congress (PL 111-383). <p>FY 2013 Plans:</p> <ul style="list-style-type: none"> • Continue to develop VW technology to support DoD training; a VW Framework (VWF) which includes an overarching architecture encompassing a number of VW applications, as well as a VW Roadmap and Governance process to implement the VWF with potential to drastically reduce the Department’s \$9.1B modeling and simulation bill; • Continue to monitor and develop strategies to relieve stress on the force increasing overall health of the force; • Continue to analyze training requirement to support the new DoD Strategy for Operating in Cyberspace; • Continue to identify and analyze the specific benefits of early and effective incorporation of system training details into acquisition programs, particularly those with significant human systems interface requirements; • Provide SECDEF options for reducing force structure that will conform to budgetary limitations without creating a “hollow force;” • Continue to provide options to lower or stop suicide rates; • Continue to develop alternative approaches to Force Generation and Management that will include a reasonable capability for expansion to meet changing world situations; • Continue to examine alternative Courses of Action (COA) for moving RITE from concept to operational capability; • Continue to develop and test multiple COAs to provide OASD (RA) leadership with the means to make an informed decision on how best to engage with Services to generate future operational force training and facility cost efficiencies and effectiveness; • Continue to plan and assess training requirements for non-standard force requirements; • Assess lessons learned from this period of extended hostilities to include changes in accession standards, expanded family programs, etc.; • Continue to investigate the opportunities for a continuum of service; and 				

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>		R-1 ITEM NOMENCLATURE PE 0605151D8Z: <i>Studies and Analysis Support - OSD</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
<ul style="list-style-type: none"> • Continue the evaluation and optimization of training for sexual assault prevention and response. FY 2014 Plans: <ul style="list-style-type: none"> • Continue to develop VW technology to support DoD training; a VWF which includes an overarching architecture encompassing a number of VW applications, as well as a VW Roadmap and Governance process to implement the VWF; • Assess lessons learned on managing the force in a dynamic environment including self-selection for successive deployments; • Continue to assess workforce skills and analyze training requirement to support the DoD Strategy for Operating in Cyberspace; • Continue to identify and analyze the specific benefits of early and effective incorporation of system training details into acquisition programs, particularly those with significant human systems interface requirements; • Evaluate effectiveness of SECDEF options provided for reducing force structure; • Continue to review current programs and provide options to lower or stop suicide rates; • Implement policy changes from drug demand reduction program; • Continue collaborative efforts to validate the performance of the commercial screening technology, determine the prevalence of use of these drugs in Service member samples, develop appropriate screening and confirmation cutoff concentrations, and develop confirmation procedures; • Update alternative approaches to Force Generation and Management; • Continue to plan and assess training requirements for non-standard force requirements; • Assess changes in accession standards during the drawdown; • Develop and evaluate expanded family programs; • Continue to investigate the opportunities for a continuum of service; • Modify the Request for Forces(RFF) system and process to meet the needs of the COCOMs; • Develop a model that calculates the cost and discounted present value of alternative military career management paradigms; and • Continue analyses of existing cultural training programs and assess developments in the area of cultural competency training. 				
Accomplishments/Planned Programs Subtotals		0.000	6.457	5.871
D. Other Program Funding Summary (\$ in Millions) N/A				
Remarks				
E. Acquisition Strategy N/A				

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 6: RDT&E Management Support	R-1 ITEM NOMENCLATURE PE 0605151D8Z: Studies and Analysis Support - OSD	
F. Performance Metrics Each project contained within this program contains specific metrics to determine progress towards completion. Metrics for all include completed and documented analysis provided by the performer. The completion date for that analysis varies with each project. In addition, to that analysis, each effort contains a roadmap addressing the best use of the findings throughout the department. If the results of the analysis show benefit to the Department, those findings are included in policy, doctrine, tactics and procedures.		

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense	DATE: April 2013
-------------------------------------------------------------------------------------------------	-------------------------

APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>	R-1 ITEM NOMENCLATURE PE 0605161D8Z: <i>Nuclear Matters</i>
--------------------------------------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------

COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
Total Program Element	-	3.824	4.901	5.028	-	5.028	5.095	5.106	5.206	5.295	Continuing	Continuing
P161: <i>Nuclear Matters</i>	-	3.824	4.901	5.028	-	5.028	5.095	5.106	5.206	5.295	Continuing	Continuing

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

The purpose of the Nuclear Matters program is to sustain the U.S. nuclear deterrent posture, counter nuclear threats, and to develop nuclear and conventional physical security equipment. The funds for this program are used to support research, development, test and evaluation efforts as well as studies and analyses for nuclear weapons security; use control; nuclear weapons stockpile safety, survivability and performance; countering nuclear threats and office management. Funds are also used to develop and implement plans for stockpile transformation; infrastructure analyses and assessments; DoD-NNSA Nuclear Weapons Council activities, as mandated by Title 10 USC, section 179; radiological and nuclear emergency response efforts; and management of international programs of nuclear cooperation, particularly with respect to enhancing international nuclear safety and security and office management. Nuclear Matters is also responsible for policy development and implementation for personnel reliability; nuclear weapons, nuclear command and control, and special nuclear materials security; use control; nuclear weapons transportation; physical security equipment; countering nuclear threats; and nuclear and radiological incident response.

This Program Element can fund travel to support the requirements of this program.

This appropriation will finance work, including manpower, performed by a government agency or by private individuals or organizations under a contractual or grant arrangement with the government who conduct research (systematic study directed toward fuller scientific knowledge or understanding of the subject studied), development (systematic use of the knowledge and understanding gained from research, for the production of useful materials, devices, systems, or methods, including the design and development of prototypes and processes) and test and evaluation efforts.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense	DATE: April 2013
-------------------------------------------------------------------------------------------------	-------------------------

APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>	R-1 ITEM NOMENCLATURE PE 0605161D8Z: <i>Nuclear Matters</i>
--------------------------------------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------

B. Program Change Summary (\$ in Millions)	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total
Previous President's Budget	4.114	4.901	4.969	-	4.969
Current President's Budget	3.824	4.901	5.028	-	5.028
Total Adjustments	-0.290	0.000	0.059	-	0.059
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-0.290	-			
• SBIR/STTR Transfer	-	-			
• Baseline Increased for Management Support	0.000	0.000	0.059	-	0.059

Change Summary Explanation

Baseline increased \$59K to support all requirements to sustain operations required for general research, development, test and evaluation.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 6: RDT&E Management Support					R-1 ITEM NOMENCLATURE PE 0605161D8Z: Nuclear Matters				PROJECT P161: Nuclear Matters			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
P161: Nuclear Matters	-	3.824	4.901	5.028	-	5.028	5.095	5.106	5.206	5.295	Continuing	Continuing
Quantity of RDT&E Articles												
# FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012												
## The FY 2014 OCO Request will be submitted at a later date												
A. Mission Description and Budget Item Justification												
The purpose of the Nuclear Matters program is to sustain the U.S. nuclear deterrent posture, counter nuclear threats, and to develop nuclear and conventional physical security equipment. The funds for this program are used to support research, development, test and evaluation efforts as well as studies and analyses for nuclear weapons security; use control; nuclear weapons stockpile safety, survivability and performance; countering nuclear threats and office management. Funds are also used to develop and implement plans for stockpile transformation; infrastructure analyses and assessments; DoD-NNSA Nuclear Weapons Council activities, as mandated by Title 10 USC, section 179; radiological and nuclear emergency response efforts; and management of international programs of nuclear cooperation, particularly with respect to enhancing international nuclear safety and security and office management. Nuclear Matters is also responsible for policy development and implementation for personnel reliability; nuclear weapons, nuclear command and control, and special nuclear materials security; use control; nuclear weapons transportation; physical security equipment; countering nuclear threats; and nuclear and radiological incident response.												
This Program Element can fund travel to support the requirements of this program.												
This appropriation will finance work, including manpower, performed by a government agency or by private individuals or organizations under a contractual or grant arrangement with the government who conduct research (systematic study directed toward fuller scientific knowledge or understanding of the subject studied), development (systematic use of the knowledge and understanding gained from research, for the production of useful materials, devices, systems, or methods, including the design and development of prototypes and processes) and test and evaluation efforts.												
B. Accomplishments/Planned Programs (\$ in Millions)									FY 2012	FY 2013	FY 2014	
Title: Nuclear Weapons Council (NWC) and Committee of Principals (CoP)									0.658	0.785	0.783	
Description: The Nuclear Weapons Council (NWC) is a joint Department of Defense (DoD) and Department of Energy (DOE)/ National Nuclear Security Administration (NNSA) organization established by Congress to facilitate cooperation and coordination between the two Departments as they fulfill their dual agency responsibilities for U.S. nuclear weapons stockpile management.												
FY 2012 Accomplishments:												

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>	R-1 ITEM NOMENCLATURE PE 0605161D8Z: <i>Nuclear Matters</i>	PROJECT P161: <i>Nuclear Matters</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
<p>- Oversaw the activities on the Congressionally mandated Joint DoD-DOE Nuclear Weapons Council and its support committees to include the Nuclear Weapons Council Standing and Safety Committee, the Compartmented Advisory Committee and the Action Officer group</p> <p>FY 2013 Plans:</p> <p>- Oversee the activities on the Congressionally mandated Joint DoD-DOE Nuclear Weapons Council and its support committees to include the Nuclear Weapons Council Standing and Safety Committee, the Compartmented Advisory Committee and the Action Officer group</p> <p>FY 2014 Plans:</p> <p>- Oversee the activities on the Congressionally mandated Joint DoD-DOE Nuclear Weapons Council and its support committees to include the Nuclear Weapons Council Standing and Safety Committee, the Compartmented Advisory Committee and the Action Officer group</p>			
<p>Title: International Programs</p> <p>Description: The United States also participates in several international programs of cooperation regarding nuclear weapons with foreign governments and regional defense organizations that involve unclassified and classified information exchanges. In general, these agreements are designed to promote safety and security, advance stockpile stewardship and collaborate in counter-proliferation efforts.</p> <p>FY 2012 Accomplishments:</p> <p>- Executed confidence building programs of cooperation with international partners.</p> <p>- Sponsored international partners at national-level nuclear weapons accident/incident exercises.</p> <p>FY 2013 Plans:</p> <p>- Execute confidence building programs of cooperation with international partners.</p> <p>- Sponsor international partners at national-level nuclear weapons accident/incident exercises.</p> <p>FY 2014 Plans:</p> <p>- Execute confidence building programs of cooperation with international partners.</p> <p>- Sponsor international partners at national-level nuclear weapons accident/incident exercises.</p>		0.295	0.363
<p>Title: Nuclear Surety</p> <p>Description: Because of their political and military importance, destructive power, and the potential consequences of an accident or unauthorized act, nuclear weapons and nuclear weapon systems require special consideration and must be protected against</p>		0.368	0.785
			0.783

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>	R-1 ITEM NOMENCLATURE PE 0605161D8Z: <i>Nuclear Matters</i>	PROJECT P161: <i>Nuclear Matters</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
risks and threats inherent in their peacetime and wartime environments. Oversight of the DoD nuclear surety program is provided by Deputy Assistant Secretary of Defense for Nuclear Matters (DASD(NM)).				
FY 2012 Accomplishments: - Conducted OSD oversight and provide direction for actions taken under DoDD 4540.5, "Transportation of Nuclear Weapons"; DoDD S-5210.81, "United States Nuclear Weapons Command and Control, Safety, and Security"; DoDD S-3150.7, "Controlling the Use of Nuclear Weapons"; DoDD 5210.42 and 5210.42-R, "The DoD Personnel Reliability Program"; and DoDD 5210-.41 and S-5210.41-M, "Physical Security of Nuclear Weapons." - Supported activities that support nuclear surety policy and provide OSD oversight of the Nuclear Surety program.				
FY 2013 Plans: - Conduct OSD oversight and provide direction for actions taken under DoDD 4540.5, "Transportation of Nuclear Weapons"; DoDD S-5210.81, "United States Nuclear Weapons Command and Control, Safety, and Security"; DoDD S-3150.7, "Controlling the Use of Nuclear Weapons"; DoDD 5210.42 and 5210.42-R, "The DoD Personnel Reliability Program"; and DoDD 5210-.41 and S-5210.41-M, "Physical Security of Nuclear Weapons." - Support activities that support nuclear surety policy and provide OSD oversight of the Nuclear Surety program.				
FY 2014 Plans: - Conduct OSD oversight and provide direction for actions taken under DoDD 4540.5, "Transportation of Nuclear Weapons"; DoDD S-5210.81, "United States Nuclear Weapons Command and Control, Safety, and Security"; DoDD S-3150.7, "Controlling the Use of Nuclear Weapons"; DoDD 5210.42 and 5210.42-R, "The DoD Personnel Reliability Program"; and DoDD 5210-.41 and S-5210.41-M, "Physical Security of Nuclear Weapons." - Support activities that support nuclear surety policy and provide OSD oversight of the Nuclear Surety program.				
Title: Stockpile Transformation Description: To meets its security needs and those of its allies, the U.S. will need a safe, secure, and reliable nuclear deterrent for the foreseeable future. There's increased risk, absent nuclear testing, in assuring long-term safety and reliability of today's aging stockpile—the legacy warheads left over from the Cold War. Today's nuclear weapons complex is not sufficiently "responsive" to technical problems in the stockpile, or to potential emerging threats. The task is to ensure the U.S. nuclear weapons stockpile and supporting infrastructure, meets long-term national security needs.		1.031	1.218	1.215
FY 2012 Accomplishments: - Conducted life cycle activities in support of the nuclear weapons stockpile under DoDD 3150.1, "Nuclear Weapons Life Cycle" and DODI 5030.55, "DoD Procedures for Joint DoD-DOE Nuclear Weapons Life Cycle Activities." - Managed DoD RDT&E activities for nuclear warheads to include B61, W76, W78, W80(0,1), B83, W87, W88 Weapons.				

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>	R-1 ITEM NOMENCLATURE PE 0605161D8Z: <i>Nuclear Matters</i>	PROJECT P161: <i>Nuclear Matters</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
<ul style="list-style-type: none"> - Supported studies for warhead replacement. <p>FY 2013 Plans:</p> <ul style="list-style-type: none"> - Conduct life cycle activities in support of the nuclear weapons stockpile under DoDD 3150.1, "Nuclear Weapons Life Cycle" and DODI 5030.55, "DoD Procedures for Joint DoD-DOE Nuclear Weapons Life Cycle Activities. - Manage DoD RDT&E activities for nuclear warheads to include B61, W76, W78, W80(0,1), B83, W87, W88 Weapons. - Support studies for warhead replacement. <p>FY 2014 Plans:</p> <ul style="list-style-type: none"> - Conduct life cycle activities in support of the nuclear weapons stockpile under DoDD 3150.1, "Nuclear Weapons Life Cycle" and DODI 5030.55, "DoD Procedures for Joint DoD-DOE Nuclear Weapons Life Cycle Activities. - Manage DoD RDT&E activities for nuclear warheads to include B61, W76, W78, W80(0,1), B83, W87, W88 Weapons. - Support studies for warhead replacement. 			
<p>Title: Survivability and Weapons of Mass Destruction (WMD)</p> <p>Description: In the 2010 Quadrennial Defense Review (QDR), the SECDEF directed the Department to rebalance its policy, doctrine, and capabilities to better support six key missions. The fifth on the list of key missions is to prevent proliferation and counter weapons of mass destruction. This project directly supports the nation's defense strategy.</p> <p>FY 2012 Accomplishments:</p> <ul style="list-style-type: none"> - Oversaw the Nuclear Defense Portfolio. - Planned and coordinated the activities of the National Nuclear Forensics Steering Committee and Working Group. - Developed OSD-wide approach to overseeing Global Nuclear Defense missions within DoD. - Oversaw the integration of all DoD nuclear defense capabilities in support of the Global Nuclear Defense Initiative. - Supported International Conference on Nuclear Security and Technology Demonstrations as part of the Nuclear Security Summit process. <p>FY 2013 Plans:</p> <p>Continue to:</p> <ul style="list-style-type: none"> - Oversee the Nuclear Defense Portfolio. - Plan and coordinate the activities of the National Nuclear Forensics Steering Committee and Working Group. - Develop OSD-wide approach to overseeing Global Nuclear Defense missions within DoD. - Oversee the integration of all DoD nuclear defense capabilities in support of the Global Nuclear Defense Initiative. 		0.773	0.918
			0.916

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>	R-1 ITEM NOMENCLATURE PE 0605161D8Z: <i>Nuclear Matters</i>	PROJECT P161: <i>Nuclear Matters</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
<ul style="list-style-type: none"> - Support International Conference on Nuclear Security and Technology Demonstrations as part of the Nuclear Security Summit process. <p>FY 2014 Plans: Continue to:</p> <ul style="list-style-type: none"> - Oversee the Nuclear Defense Portfolio. - Plan and coordinate the activities of the National Nuclear Forensics Steering Committee and Working Group. - Develop OSD-wide approach to overseeing Global Nuclear Defense missions within DoD. - Oversee the integration of all DoD nuclear defense capabilities in support of the Global Nuclear Defense Initiative. - Support International Conference on Nuclear Security and Technology Demonstrations as part of the Nuclear Security Summit process. 			
<p>Title: Nuclear Matters Support Program</p> <p>Description: The Nuclear Matters support program conducts studies / analyses; DoD-NNSA Nuclear Weapons Council activities; and provides funding for analytical support functions.</p> <p>FY 2012 Accomplishments:</p> <ul style="list-style-type: none"> - Submitted annual reports to the President and the Congress. - Continued to oversee DoD/DOE relationship regarding the survivability and surety of the national nuclear stockpile. - Continued as DoD Sigma 15 Approval Authority (Interface with DOE/NNSA). - Continued to address Freedom of Information Act and Mandatory Declassification Requests. <p>FY 2013 Plans:</p> <ul style="list-style-type: none"> - Submit annual reports to the President and the Congress. - Continue to oversee DoD/DOE relationship regarding the survivability and surety of the national nuclear stockpile. - Continue as DoD Sigma 15 Approval Authority (Interface with DOE/NNSA). - Continue to address Freedom of Information Act and Mandatory Declassification Requests. <p>FY 2014 Plans:</p> <ul style="list-style-type: none"> - Submit annual reports to the President and the Congress. - Continue to oversee DoD/DOE relationship regarding the survivability and surety of the national nuclear stockpile. - Continue as DoD Sigma 15 Approval Authority (Interface with DOE/NNSA). - Continue to address Freedom of Information Act and Mandatory Declassification Requests. 		0.699	0.832
Accomplishments/Planned Programs Subtotals		3.824	4.901
			0.829

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>	R-1 ITEM NOMENCLATURE PE 0605161D8Z: <i>Nuclear Matters</i>	PROJECT P161: <i>Nuclear Matters</i>
C. Other Program Funding Summary (\$ in Millions) N/A		
Remarks		
D. Acquisition Strategy N/A		
E. Performance Metrics Success in this area is measured by compliance with various statutes and DoD directives that govern the conduct of the affairs within the Office of DASD(Nuclear Matters). Success is also measured by the currency of information and usability of the website, timeliness and responsiveness of reports due to Congress, performance in various response exercises, and feedback from a number of senior-level government organizations that DASD(Nuclear Matters) supports.		

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense	DATE: April 2013
-------------------------------------------------------------------------------------------------	-------------------------

APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE							
0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>					PE 0605170D8Z: <i>Support to Networks and Information Integration</i>							
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
Total Program Element	0.000	9.119	6.307	6.301	-	6.301	6.148	5.956	5.956	5.975	Continuing	Continuing
001: <i>Command Information Superiority Architecture</i>	0.000	1.086	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	1.086
002: <i>Defense Architecture Repository</i>	0.000	1.215	1.108	1.107	-	1.107	1.080	1.046	1.046	1.049	Continuing	Continuing
003: <i>Integrated Planning and Management</i>	0.000	1.933	1.783	1.781	-	1.781	1.738	1.684	1.684	1.690	Continuing	Continuing
004: <i>Support to NII Mission Requirements</i>	0.000	4.885	3.416	3.413	-	3.413	3.330	3.226	3.226	3.236	Continuing	Continuing

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

This program element supports studies and analysis in the areas of networks, information integration, defense-wide command and control (C2), and communications. This program is funded under Budget Activity 6, RDT&E Management Support because it includes studies and analysis in support of RDT&E efforts.

B. Program Change Summary (\$ in Millions)	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total
Previous President's Budget	9.122	6.307	6.301	-	6.301
Current President's Budget	9.119	6.307	6.301	-	6.301
Total Adjustments	-0.003	0.000	0.000	-	0.000
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Program Adjustment	-0.003	-	-	-	-

Change Summary Explanation

Program Change Summary:

FY 2012: Program Adjustment -0.003 million.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 6: RDT&E Management Support FY 2013: No change. FY 2014: No change.		R-1 ITEM NOMENCLATURE PE 0605170D8Z: Support to Networks and Information Integration

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense									DATE: April 2013			
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 6: RDT&E Management Support					R-1 ITEM NOMENCLATURE PE 0605170D8Z: Support to Networks and Information Integration				PROJECT 001: Command Information Superiority Architecture			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
001: Command Information Superiority Architecture	0.000	1.086	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	1.086
Quantity of RDT&E Articles												
# FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012												
## The FY 2014 OCO Request will be submitted at a later date												
A. Mission Description and Budget Item Justification												
The CISA program provides a structured planning process based on Information Technology (IT) best business practices to define current and objective capabilities for IT support to assigned missions in a net-centric environment. CISA is the DoD program that provides architectures in compliance with the Clinger-Cohen Act, OMB Circular A-130, E-Gov Act and other related higher level guidance from the Federal CIO Council and the Federal Enterprise Architecture Program Management Office, which mandates the development and use of architectures as validation for IT investment decisions. The CISA program supports the development of architectural standard tools and systems. Develop and maintain key GIG policy and guidance documents that drive the acquisition, transition to and operation of a net-centric GIG; the implementation of policy/guidance through a set of critical supporting activities such as IT standards management, and DoD transition to Internet Protocol version 6 (IPv6); Real Time Service and IP convergence and enforcing policy through key enterprise governance mechanisms. Review and assess Command and Control, Computers, Communications and Intelligence Support Plans / Information Support Plans for the DoD CIO, identifying interoperability, supportability, net-centric and integration issues.												
B. Accomplishments/Planned Programs (\$ in Millions)									FY 2012	FY 2013	FY 2014	
Title: Command Information Superiority Architectures Accomplishments and Plans									1.086	0.000	0.000	
FY 2012 Accomplishments:												
- Provided DoD Enterprise Architecture strategy, policy, oversight, and guidance												
- Delivered DoD Information Enterprise Architecture Version 2.0												
- Delivered DoD Architecture Framework Version 2.02												
- Provided NDAA FY12 Section 2867 DoD Performance Plan for Data Center Consolidation and Computing Infrastructure.												
FY 2013 Plans:												
This program was terminated as a result of a Department efficiency.												
FY 2014 Plans:												
n/a												
Accomplishments/Planned Programs Subtotals									1.086	0.000	0.000	

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>	R-1 ITEM NOMENCLATURE PE 0605170D8Z: <i>Support to Networks and Information Integration</i>	PROJECT 001: <i>Command Information Superiority Architecture</i>
C. Other Program Funding Summary (\$ in Millions) N/A		
Remarks		
D. Acquisition Strategy N/A		
E. Performance Metrics CISA Performance is based on the number of initiatives that transition to the net-centric environment to support operations. Measures include: <ul style="list-style-type: none">- Timely development and issuance of policy, guidance, processes, and technologies to build, populate, govern, operate, and protect the Network.- Policies developed and issued for GIG design, architecture content management, implementation, and operations.		

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 6: RDT&E Management Support					R-1 ITEM NOMENCLATURE PE 0605170D8Z: Support to Networks and Information Integration				PROJECT 002: Defense Architecture Repository			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
002: Defense Architecture Repository	0.000	1.215	1.108	1.107	-	1.107	1.080	1.046	1.046	1.049	Continuing	Continuing
Quantity of RDT&E Articles												

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

DARS is the Department's enterprise registry, catalog and navigation map for enterprise architecture. It serves as the Department's primary catalog of architecture data holdings and provides users the ability to register holdings metadata and search, retrieve, and use DoD architecture data in federated architecture data repositories across DoD. DARS provides a key component of the Department's net-centric data management capability by federating enterprise architecture data across the Department. It enables alignment of program architecture components with the Federal Enterprise Architecture Business Reference Model - consistent with OMB directives for exhibit 300s - via the DoD Business Reference Model. DARS implements a federated search capability and metadata catalog that will interoperate with the Department's Net-Centric Enterprise Discovery Service and enterprise content metadata catalog. Architecture metadata is searchable using the DARS federated discovery web service. The discovery search results provide links to architecture data that is retrievable based on user roles and access permissions. Implementations are accessible on both the NIPRNET (unclassified) and SIPRNET (Collateral Classified). Key features of the DARS program focus on: (1) Making architecture data visible, accessible, trusted, understandable, and interoperable (2) enabling reuse of validated architecture data to build "composite" integrated architectures; (3) enabling architecture analysis; and, (4) integrating architecture data into the DoD mainstream decision-making processes. The Department of the Air Force, Army, and Navy CIO's are collaborating in the development of DARS federation web services via the Federated Joint Architecture Working Group under the auspices of the DoD Enterprise Architecture Summit to ensure DoD-wide access to and usability of all components of the composite DoD enterprise architecture model.

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2012	FY 2013	FY 2014
Title: DARS Accomplishments and Plans	1.215	1.108	1.107
FY 2012 Accomplishments: <ul style="list-style-type: none"> - Delivered DARS Architecture - Delivered Web online Architecture management, measurement - Linked all architectures to the Enterprise Architecture Core Table Graphic - Deliver /approve DARS Functional Capability Document - Delivered enterprise-level operational support for the DoD Architecture Registry System. - Refine requirements and processes to effectively expose existing architectures for reuse. - Developed Transition Plan for DARS to Operational Command 			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>		R-1 ITEM NOMENCLATURE PE 0605170D8Z: <i>Support to Networks and Information Integration</i>	PROJECT 002: <i>Defense Architecture Repository</i>
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
- Provided NDAA FY12 Section 2867 DoD Performance Plan for Data Center Consolidation and Computing Infrastructure. FY 2013 Plans: - Continue enterprise-level operational support for the DoD Architecture Registry System. - Continue to work with DoD Component to refine requirements and processes to effectively expose existing architectures for reuse. - Continue to expand and refine DARS to accommodate registration /federation requirements. - Integration of DARS data services into the "Core Enterprise Services". - Transition DARS support to Operational Command. FY 2014 Plans: - Expand and refine DARS to accommodate Registration /Federation requirements across the entire DoD. - Integration of DARS data services into the "Core Enterprise Services". - Support to Operational Command Agency servicing DARS.			
Accomplishments/Planned Programs Subtotals		1.215	1.108
C. Other Program Funding Summary (\$ in Millions)			
N/A			
Remarks			
D. Acquisition Strategy			
N/A			
E. Performance Metrics			
DARS Performance Metrics: - Timely development and issuance of policy, guidance, processes, and technologies to build, populate, govern, operate, and protect the Network. - Policies developed and issued for GIG design, architecture content management, implementation, and operations.			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 6: RDT&E Management Support					R-1 ITEM NOMENCLATURE PE 0605170D8Z: Support to Networks and Information Integration				PROJECT 003: Integrated Planning and Management			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
003: Integrated Planning and Management	0.000	1.933	1.783	1.781	-	1.781	1.738	1.684	1.684	1.690	Continuing	Continuing
Quantity of RDT&E Articles												

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

The Integrated Planning and Management Project encompasses the National Leadership Command Capability (NLCC) Management Office's (NMO) responsibilities for establishing overall DoD policy and oversight with respect to the capability development, interoperability, standards, and architecture for National and Nuclear Command Capabilities for our National Leadership. The NMO serves as the single point of contact within the Department for policy, long-range plans, programs and budget, integrated mission advocacy, and management of decision-maker capabilities. NMO's objective is to ensure capabilities are in place to provide complete and timely situational awareness and decision tools for senior decision-makers. Additionally, the NMO assists the DoD CIO as the Executive Agent and primary OSD advocate for the White House Military Office with oversight of a wide range of DoD command and control and communications (C3) assets and oversees the efforts of the Services and Agencies in the design, integration, and deployment of critical and sensitive C3 capabilities. Three overall areas of focus include: 1) National Senior Leader C3 Systems, Emergency Preparedness, DoD support to Civil Authorities; Continuity of Government (COG); 2) Nuclear C2, Integrated Missile Defense, Tactical Warning, Global Strike; and 3) Cyber Mission Indications and Warnings.

B. Accomplishments/Planned Programs (\$ in Millions)

Title: Integrated Planning and Management	FY 2012	FY 2013	FY 2014
	1.933	1.783	1.781
FY 2012 Accomplishments:			
- Further established and formalized a testing and analysis functionality for National and Nuclear C2 voice conferencing. This functionality has conducted a number of testing exercises, called Phantom Signal testing, during FY12. These testing exercises have included tests on national and nuclear platforms and at critical facilities. Tests are focused both on root cause analysis as well as modernization verification and systems validation.			
- Developed policy and a supporting implementation strategy for Senior Leader Secure Communications Modernization. The policy was originally established as a DTM, but is currently being staffed through the 106 process in order to become a DoDI with DepSecDef signature. This policy and supporting strategy outlines a number of milestones and activities across mobile, fixed and airborne operating environments for communications modernization for Presidential and Tier I/II senior principal leadership.			
- Helped establish an NLCC-focused Secure Communications Assessment Network (SeCAN) Testbed for the testing of legacy systems and validation of modernization paths. This testbed leverages UARC research and development talents and integrates across multiple government organizations (to include DoD CIO, DISA, NSA, EOP, WHMO, WHCA, and others) in order to develop and provide a validated path towards organizational implementation of secure (fixed and mobile) communication solutions.			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>	R-1 ITEM NOMENCLATURE PE 0605170D8Z: <i>Support to Networks and Information Integration</i>	PROJECT 003: <i>Integrated Planning and Management</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
<ul style="list-style-type: none"> - Provided systems engineering and integration support to the NSA Fishbowl Commercial Solutions For Classified (CSFC) project. Ensured Senior Leader requirements were collected and being represented in the end, fixed and wireless, solution. - Conducted an assessment of Senior Leader Wideband Airborne Communication systems. Developed potential courses of action in order to support focus team decision making on near-, mid- and long-term solutions for SLC3S-A fixed-wing platforms. - Provided oversight, advisory and analysis on Maritime Information Systems and associated threats. - Led and facilitated the Department's National and Nuclear Cryptographic Modernization Program. Developed implementation plans, planned and coordinated supporting conferences and conducted broad organizational (to include interagency) collaboration. - Provided oversight, and collaborated with DISA and the Joint Staff, in standing-up and managing the Defense Red Switch Network Reduction Program. <p>FY 2013 Plans: Continue Architecture, Testing Analysis and Systems Engineering support for more robust and capable leadership command information services and applications. Investigate concepts and initiate limited prototyping efforts for testing and developing robust, secure, mobile C3 and computing devices and services for senior leadership, for use across various scenarios and security environments. Specific activities planned for FY13 include:</p> <ul style="list-style-type: none"> - Continue Phantom Signal testing exercises in order to improve National and Nuclear voice conferencing and decision making - Provide oversight on Senior Leader Secure Communications Modernization efforts across the Presidential and Tier I/II Senior Leader support organizations; - Continue to conduct legacy system root cause analysis in order to mitigate communication shortfalls in senior leader environments as well as the independent verification and validation of modernization approaches and solution sets within the NLCC SeCAN Testbed environment - Continue to provide oversight and engineering and integration support to the NSA Fishbowl project in order to deliver secure commercial mobile devices and solutions for senior leadership - Continue to investigate and provide oversight on the implementation of senior leader wideband airborne communications. - Continue to work with and provide oversight to the Navy and other organizations on Maritime Information Systems advisory and modernization - Further build-out the Defense Red Switch Network Reduction IPT and provide roadmaps for transitioning to IP-based technologies; Further work with NLCC community in modernizing the NLCC architecture and developing modernization approaches to ensure no loss of capabilities <p>FY 2014 Plans: - Continue Architecture, Testing Analysis and Systems Engineering to ensure command information services and applications are validated and provide assured communications in support of senior leadership.</p>				

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>		R-1 ITEM NOMENCLATURE PE 0605170D8Z: <i>Support to Networks and Information Integration</i>	PROJECT 003: <i>Integrated Planning and Management</i>
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
<ul style="list-style-type: none"> - Continue to investigate concepts and initiate limited prototyping efforts for testing and developing robust, secure, mobile C3 and computing devices and services for senior leadership, for use across various scenarios and security environments. - Continue to carry-out Phantom Signal testing and validation activities as well as provide oversight and adjustments on the Senior Leader Secure Communications Modernization Implementation Strategy. - Funding plans include support to maintaining a flexible and dynamic testbed environment for senior leader solutions and infrastructure advancement validation. Other plans include finalizing NLCC modernization approaches and architectures (and implementations, where appropriate) for IP-based end-to-end solutions. 			
Accomplishments/Planned Programs Subtotals		1.933	1.783
C. Other Program Funding Summary (\$ in Millions)			
N/A			
Remarks			
D. Acquisition Strategy			
N/A			
E. Performance Metrics			
C2 Integrated Planning & Management Performance Metrics: <ul style="list-style-type: none"> - Successfully develop, coordinate, and publish DOD C2 policies and operational concepts. - Establishment of an information integration and decision portfolio of C2 services and applications to demonstrate selected capabilities. - Development of Dynamic Operational Communities of Interest services based on the capabilities provided by the NCES Program. - Establishment of an ontological framework and XML data model to permit the meta-tagging of information integration decision portfolio data at the strategic and national C2 level in a manner consistent with other DoD data strategies and modeling efforts. 			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE				PROJECT			
0400: Research, Development, Test & Evaluation, Defense-Wide BA 6: RDT&E Management Support					PE 0605170D8Z: Support to Networks and Information Integration				004: Support to NII Mission Requirements			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
004: Support to NII Mission Requirements	0.000	4.885	3.416	3.413	-	3.413	3.330	3.226	3.226	3.236	Continuing	Continuing
Quantity of RDT&E Articles												

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

This program supports studies and analyses in the areas of networks, information integration, defense-wide command and control (C2), and communications.

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2012	FY 2013	FY 2014
Title: Support to NII Mission Requirements	4.885	3.416	3.413
FY 2012 Accomplishments: 3.384 million for Global Positioning System (GPS) User Equipment Synchronization to conduct DoD CIO oversight of Global Positioning System (GPS) management and planning activities required for the National Space-Based Positioning, Navigation and Timing Executive Committee:: - Developed International Supplement to GPS Security Policy for entry into SD 106 process (DODI 4650.0xx) - Executed Information Assurance/COMSEC Supplement to GPS Security Policy and entered into SD 106 review process (DODI 4650.0yy) - Developed revised GPS Security Policy for entry into SD 106 review process (DODI 4650.0zz) - Tied DoD user data and populated GPS Protection Profile matrix from Navigation Warfare Concept of Operations DODI 4650.0x into Warfighting Operations Plans (OPLANS) and Contingency Plans (CONPLANS) in coordination with US STRATCOM - Authored draft PNT Navigation Warfare Annexes to all the Operations Plans (OPLANS) and Contingency Plans (CONPLANS) in coordination with US STRATCOM; under review for USSTRATCOM publication - Completing Navigation Warfare (NAVWAR) AoA - Continued developing NextGen interfaces with the GPS Wing, Joint Program Development Office (JPDO), Air Force, and Policy Board for Federal Aviation (PBFA) - Continued implementation of Red Key Sundown Policy - Conducted studies and programmatic analysis of activities involving OCX, MGUE, and GPS III contract activities - Provided staff support, performed research and conducted studies as directed by DEPSECDEF in his role as co-chair of the National Executive Committee for Space-Based PNT and for DoD CIO as co-chair of the Executive Steering Group - Performed annual update of National Five-year Plan for Space-Based Positioning, Navigation and Timing (PNT) - Drafted, coordinated, and published the 2012 edition of the Federal Radionavigation Plan (FRP)			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>	R-1 ITEM NOMENCLATURE PE 0605170D8Z: <i>Support to Networks and Information Integration</i>	PROJECT 004: <i>Support to NII Mission Requirements</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
<p>- Applied Navigation Warfare Concept of Operations DODI 4650.0x via the Joint Navigation Warfare Center (JNWC) and US STRATCOM to develop Doctrine, Tactics, Techniques and Procedures, Training, Equipment Validation and Material Solutions to Navigation Warfare challenges to the Military Services and Combatant Commanders in the scenarios defined in the CONPLANS and OPLANS.</p> <p>\$1.501 million - Command and Control Research:</p> <ul style="list-style-type: none"> - Continued to pursue research on new approaches to military and civil-military command and control suitable for 21st Century coalition operations including stability and reconstruction. - Completed the second phase of a research effort, in collaboration with allies and NATO partners, that defines Agility in the context of entity and collective focus and convergence - Supported DoD organizations in the design and conduct of C2-related experimentation - Continued to work with the DoD community and international partners to improve the understanding of Information Age command and control related concepts, technologies, and experiments. - Conducted workshops to explore command and control related issues. <p>FY 2013 Plans:</p> <p>\$3.416 million for Global Positioning System (GPS) User Equipment Synchronization to conduct DoD CIO oversight of Global Positioning System (GPS) management and planning activities required for the National Space-Based Positioning, Navigation and Timing Executive Committee. Funding will support:</p> <ul style="list-style-type: none"> - Implement and manage the International Supplement to GPS Security Policy DODI 4650.0x - Implement and manage the Information Assurance/COMSEC Supplement to GPS Security Policy DODI 4650.0x - Implement and manage the GPS Security Policy DODI 4650.0xx - Implement the GPS Protection Profile matrix from Navigation Warfare Concept of Operations DODI 4650.0x in conjunction with Warfighting Operations Plans (OPLANS) and Contingency Plans (CONPLANS) in coordination with US STRATCOM - Implement and manage PNT Navigation Warfare Annexes to all the Operations Plans (OPLANS) and Contingency Plans (CONPLANS) in coordination with US STRATCOM - Continue developing NextGen interfaces with the GPS Wing, Joint Program Development Office (JPDO), Air Force, and Policy Board for Federal Aviation (PBFA) - Continue implementation of Red Key Sundown Policy - Conduct studies and programmatic analysis of activities involving OCX, MGUE, and GPS III contract activities - Provide staff support, perform research and conduct studies as directed by DEPSECDEF in his role as co-chair of the National Executive Committee for Space-Based PNT and for DoD CIO in his role as co-chair of the Executive Steering Group - Perform annual update of National Five-year Plan for Space-Based Positioning, Navigation and Timing (PNT) - Begin drafting the 2014 Federal Radionavigation Plan (FRP) 			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>	R-1 ITEM NOMENCLATURE PE 0605170D8Z: <i>Support to Networks and Information Integration</i>	PROJECT 004: <i>Support to NII Mission Requirements</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
<ul style="list-style-type: none"> - Apply Navigation Warfare Concept of Operations DODI 4650.0x via the Joint Navigation Warfare Center (JNWC) and US STRATCOM to develop Doctrine, Tactics, Techniques and Procedures, Training, Equipment Validation and Material Solutions to Navigation Warfare challenges to the Military Services and Combatant Commanders in the scenarios defined in the CONPLANS and OPLANS. - Draft DODI 4650.xx for user equipment certification in DoD <p>FY 2014 Plans:</p> <p>Global Positioning System (GPS) User Equipment Synchronization to conduct DoD CIO oversight of Global Positioning System (GPS) management and planning activities required for the National Space-Based Positioning, Navigation and Timing Executive Committee. Funding will support:</p> <ul style="list-style-type: none"> - Manage the International Supplement to GPS Security Policy DODI 4650.0x - Manage the Information Assurance/COMSEC Supplement to GPS Security Policy DODI 4650.0x - Manage the GPS Security Policy DODI 4650.0xx - Continue implementation of the GPS Protection Profile matrix from Navigation Warfare Concept of Operations DODI 4650.0x in conjunction with Warfighting Operations Plans (OPLANS) and Contingency Plans (CONPLANS) in coordination with US STRATCOM -Manage PNT Navigation Warfare Annexes to all the Operations Plans (OPLANS) and Contingency Plans (CONPLANS) in coordination with US STRATCOM -Implement the recommendations of the Analysis of Alternatives for Security Control of Navigation Aids DODI 5030.x in the DoD DOTMLPF construct; manage this process via the NetCentric Operations CPM portfolio in JCIDs, DAS, and PPBE - Continue developing NextGen interfaces with the GPS Wing, Joint Program Development Office (JPDO), Air Force, and Policy Board for Federal Aviation (PBFA) - Continue implementation of Red Key Sundown Policy - Provide staff support, perform research and conduct studies as directed by DEPSECDEF in his role as co-chair of the National Executive Committee for Space-Based PNT and for DoD CIO in his role as co-chair of the Executive Steering Group - Perform annual update of National Five-year Plan for Space-Based Positioning, Navigation and Timing (PNT) - Complete drafting of the 2014 Federal Radionavigation Plan (FRP); finalize FRP - Apply Navigation Warfare Concept of Operations DODI 4650.0x via the Joint Navigation Warfare Center (JNWC) and US STRATCOM to develop Doctrine, Tactics, Techniques and Procedures, Training, Equipment Validation and Material Solutions to Navigation Warfare challenges to the Military Services and Combatant Commanders in the scenarios defined in the CONPLANS and OPLANS. - Manage and implement the DoD PNT investment strategy using the NetCentric Operations CPM portfolio to insure PNT material solutions are developed in a synchronized fashion in JCIDs, DAS, and PPBE 				
Accomplishments/Planned Programs Subtotals		4.885	3.416	3.413

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>	R-1 ITEM NOMENCLATURE PE 0605170D8Z: <i>Support to Networks and Information Integration</i>	PROJECT 004: <i>Support to NII Mission Requirements</i>
C. Other Program Funding Summary (\$ in Millions) N/A		
Remarks		
D. Acquisition Strategy N/A		
E. Performance Metrics PNT Performance Metrics Implement and successfully manage PNT Navigation Warfare Annexes to applicable Operations Plans (OPLANS) and Contingency Plans (CONPLANS) in coordination with the appropriate Unified Combatant Command Implement the recommendations of the Analysis of Alternatives for the CIO and DCIO C4IIC Global Positioning System (GPS) portfolio of Position, Navigation, and Timing (PNT) programs and activities Provide staff support, perform research and conduct studies as directed by the CIO and DCIO C4IIC relating to the Global Positioning System (GPS) portfolio of Position, Navigation, and Timing (PNT) programs and activities		

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense	DATE: April 2013
-------------------------------------------------------------------------------------------------	-------------------------

APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>	R-1 ITEM NOMENCLATURE PE 0605200D8Z: <i>General Support to OUSD(I)</i>
--------------------------------------------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------

COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
Total Program Element	6.570	17.644	6.601	6.504	-	6.504	6.625	6.829	6.948	7.083	Continuing	Continuing
001: <i>Developmental Activities</i>	2.874	5.301	3.289	3.311	-	3.311	3.375	3.477	3.468	3.536	Continuing	Continuing
002: <i>Operations Integration</i>	3.296	3.143	2.861	2.879	-	2.879	2.935	3.037	3.030	3.088	Continuing	Continuing
003: <i>Defense Civilian Intelligence Personnel System</i>	0.400	0.000	0.451	0.314	-	0.314	0.315	0.315	0.450	0.459	Continuing	Continuing
004: <i>Haystack Projects</i>	0.000	9.200	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	9.200

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

001: Developmental Activities provides innovative approaches to address intelligence, intelligence related capabilities, and intelligence sharing.

002: Operations Integration focuses on technologies and their applications on activities of the Office of the Under Secretary of Defense for Intelligence (OUSD(I)).

003: Defense Civilian Intelligence Personnel System (DCIPS) provides updates to the Performance Appraisal Application (PAA) Defense Civilian Personnel Data System (DCPDS) used by Military Service Intelligence Components, Defense Security Service (DSS) and the Office of the Under Secretary of Defense for Intelligence to evaluate the performance of their DCIPS employees.

004: Haystack Projects develop and demonstrate machine solutions that maximize analysis and operational decision-making through automated entity extraction and resolution of very large structured and unstructured data sets, resulting in advanced automated data fusion and information discovery. This effort was executed in Overseas Contingency Operations (OCO).

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense	DATE: April 2013
-------------------------------------------------------------------------------------------------	-------------------------

APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>	R-1 ITEM NOMENCLATURE PE 0605200D8Z: <i>General Support to OUSD(I)</i>
--------------------------------------------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------

B. Program Change Summary (\$ in Millions)	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total
Previous President's Budget	15.749	6.601	6.546	-	6.546
Current President's Budget	17.644	6.601	6.504	-	6.504
Total Adjustments	1.895	0.000	-0.042	-	-0.042
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	1.900	-			
• SBIR/STTR Transfer	-	-			
• Department Adjustment	-	-	-0.042	-	-0.042
• Other Program Adjustment	-0.005	-	-	-	-

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>					R-1 ITEM NOMENCLATURE PE 0605200D8Z: <i>General Support to OUSD(I)</i>				PROJECT 001: <i>Developmental Activities</i>			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013[#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
001: <i>Developmental Activities</i>	2.874	5.301	3.289	3.311	-	3.311	3.375	3.477	3.468	3.536	Continuing	Continuing
Quantity of RDT&E Articles												
[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012 ^{##} The FY 2014 OCO Request will be submitted at a later date												
A. Mission Description and Budget Item Justification												
This program focuses on developmental technologies, methodologies, and capabilities. These activities provide unique and innovative approaches to address intelligence, intelligence related capabilities, and intelligence sharing initiatives.												
B. Accomplishments/Planned Programs (\$ in Millions)										FY 2012	FY 2013	FY 2014
Title: Developmental Activities										5.301	3.289	3.311
FY 2012 Accomplishments: Leveraged technologies, assessed innovative capabilities, and developed methodologies to support the Defense Intelligence Enterprise.												
FY 2013 Plans: Leverage technologies, assess innovative capabilities, and develop methodologies to support the Defense Intelligence Enterprise.												
FY 2014 Plans: Continue to leverage technologies, assess innovative capabilities, and develop methodologies to support the Defense Intelligence Enterprise.												
Accomplishments/Planned Programs Subtotals										5.301	3.289	3.311
C. Other Program Funding Summary (\$ in Millions)												
N/A												
Remarks												
D. Acquisition Strategy												
N/A												
E. Performance Metrics												
N/A												

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>					R-1 ITEM NOMENCLATURE PE 0605200D8Z: <i>General Support to OUSD(I)</i>				PROJECT 002: <i>Operations Integration</i>			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013[#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
002: <i>Operations Integration</i>	3.296	3.143	2.861	2.879	-	2.879	2.935	3.037	3.030	3.088	Continuing	Continuing
Quantity of RDT&E Articles												
[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012 ^{##} The FY 2014 OCO Request will be submitted at a later date												
<u>A. Mission Description and Budget Item Justification</u>												
Operations Integration focuses on technologies for the application on activities of the OUSD(I). It includes evaluation of concepts, technology development, and feasibility studies related to intelligence processes, shortfalls, and requirements that affect intelligence policy, planning and operational guidance.												
<u>B. Accomplishments/Planned Programs (\$ in Millions)</u>										FY 2012	FY 2013	FY 2014
<i>Title:</i> Operations Integration										3.143	2.861	2.879
<i>FY 2012 Accomplishments:</i> (U) Developed technology and concept evaluation for applications in support of OUSD(I).												
<i>FY 2013 Plans:</i> (U) Continue technology development and concept evaluation for applications in support of OUSD(I).												
<i>FY 2014 Plans:</i> (U) Continue technology development and concept evaluation for applications in support of OUSD(I).												
Accomplishments/Planned Programs Subtotals										3.143	2.861	2.879
<u>C. Other Program Funding Summary (\$ in Millions)</u>												
N/A												
<u>Remarks</u>												
<u>D. Acquisition Strategy</u>												
N/A												
<u>E. Performance Metrics</u>												
N/A												

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE				PROJECT			
0400: Research, Development, Test & Evaluation, Defense-Wide BA 6: RDT&E Management Support					PE 0605200D8Z: General Support to OUSD(I)				003: Defense Civilian Intelligence Personnel System			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
003: Defense Civilian Intelligence Personnel System	0.400	0.000	0.451	0.314	-	0.314	0.315	0.315	0.450	0.459	Continuing	Continuing
Quantity of RDT&E Articles												

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

The Defense Civilian Intelligence Personnel System (DCIPS) was authorized by Public Law 104-201, effective 01 October 1996 and codified in 10 USC 1601-1614. It provides the Defense Intelligence Enterprise with independent civilian personnel authorities necessary to hire, develop, reward, and retain the diverse, versatile and highly qualified workforce necessary to perform the Defense intelligence mission and brings for the first time, the entire Defense Intelligence Enterprise under one personnel framework.

These funds are used to develop modifications to the Performance Appraisal Application (PAA) in the Defense Civilian Personnel Data System and to the classified Global Force Management (GFM) Defense Intelligence Organizational Server. PAA is a performance management tool used by the Military Services Intelligence Components, Defense Security Service and the Office of the Under Secretary of Defense for Intelligence. GFM tracks both civilian and military positions; associated grades and skill levels; and hierarchical organizational relationships.

B. Accomplishments/Planned Programs (\$ in Millions)

Title: Defense Civilian Intelligence Personnel System (DCIPS)	FY 2012	FY 2013	FY 2014
Description: The Defense Civilian Intelligence Personnel System (DCIPS) was authorized by Public Law 104-201, effective 01 October 1996 and codified in 10 USC 1601-1614. It provides the Defense Intelligence Enterprise with independent civilian personnel authorities necessary to hire, develop, reward, and retain the diverse, versatile and highly qualified workforce necessary to perform the Defense intelligence mission and brings for the first time, the entire Defense Intelligence Enterprise under one personnel framework.	0.000	0.451	0.314
FY 2012 Accomplishments: N/A			
FY 2013 Plans: Develop modifications to the Global Force Management (GFM) Defense Intelligence Organizational Server. These modifications include conversion to Electronic Messaging Version 4 and development of a Common Access Point (CAP).			
FY 2014 Plans:			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense								DATE: April 2013			
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>				R-1 ITEM NOMENCLATURE PE 0605200D8Z: <i>General Support to OUSD(I)</i>				PROJECT 003: <i>Defense Civilian Intelligence Personnel System</i>			
B. Accomplishments/Planned Programs (\$ in Millions)								FY 2012	FY 2013	FY 2014	
Continue design enhancements to improve the effectiveness of the existing DCIPS performance management software and the Global Force Management Defense Intelligence Organizational Server.											
Accomplishments/Planned Programs Subtotals								0.000	0.451	0.314	
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
• 0305192D8Z: <i>Defense Civilian Intelligence Personnel System</i>	3.134	2.006	2.100		2.100	2.103	2.040	2.062	2.102	Continuing	Continuing
Remarks											
Funding will be used to develop policy, oversee implementation, assess and continuously improve the effectiveness of Defense Civilian Intelligence Personnel (DCIPS) human capital programs across the Defense Intelligence Enterprise. Funding ensures the effectiveness of strategic human capital and workforce planning, and ongoing workforce management, in accordance with both good business practices and to support the effective and efficient conduct of the Defense and National Intelligence missions.											
D. Acquisition Strategy											
N/A											
E. Performance Metrics											
N/A											

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>					R-1 ITEM NOMENCLATURE PE 0605200D8Z: <i>General Support to OUSD(I)</i>				PROJECT 004: <i>Haystack Projects</i>			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013[#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
004: <i>Haystack Projects</i>	0.000	9.200	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	9.200
Quantity of RDT&E Articles												
[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012 ^{##} The FY 2014 OCO Request will be submitted at a later date												
A. Mission Description and Budget Item Justification												
Haystack Projects developed and demonstrated machine solutions that maximized analysis and operational decision making through automated entity extraction and resolution of very large structured and unstructured data sets, resulting in advanced automated data fusion and information discovery.												
B. Accomplishments/Planned Programs (\$ in Millions)										FY 2012	FY 2013	FY 2014
Title: Haystack Projects										9.200	0.000	0.000
Description: Developed and demonstrated machine solutions that maximized analysis and operational decision making through automated entity extraction and resolution of very large structured and unstructured data sets, resulting in advanced automated data fusion and information discovery.												
FY 2012 Accomplishments: Mission Support (Details provided in Defense-Wide classified book)												
Accomplishments/Planned Programs Subtotals										9.200	0.000	0.000
C. Other Program Funding Summary (\$ in Millions)												
N/A												
Remarks												
D. Acquisition Strategy												
N/A												
E. Performance Metrics												
N/A												

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>	R-1 ITEM NOMENCLATURE PE 0605502D8Z: <i>Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR)</i>
--------------------------------------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------

COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
Total Program Element	-	47.755	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
P502: <i>SBIR</i>	-	42.088	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
P500: <i>STTR</i>	-	5.667	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

The goals of the Office of the Secretary of Defense (OSD) Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) programs are to stimulate technological innovation, increase private sector commercialization of federal research and development (R&D), increase small business participation in federally funded R&D, and foster participation by minority and disadvantaged firms in technological innovation.

B. Program Change Summary (\$ in Millions)	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total
Previous President's Budget	0.000	0.000	0.000	-	0.000
Current President's Budget	47.755	0.000	0.000	-	0.000
Total Adjustments	47.755	0.000	0.000	-	0.000
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	47.755	-			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>					R-1 ITEM NOMENCLATURE PE 0605502D8Z: <i>Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR)</i>				PROJECT P502: <i>SBIR</i>			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013[#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
P502: <i>SBIR</i>	-	42.088	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles												
[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012 ^{##} The FY 2014 OCO Request will be submitted at a later date												
A. Mission Description and Budget Item Justification												
The goals of the Office of the Secretary of Defense (OSD) Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) programs are to stimulate technological innovation, increase private sector commercialization of federal research and development (R&D), increase small business participation in federally funded R&D, and foster participation by minority and disadvantaged firms in technological innovation.												
B. Accomplishments/Planned Programs (\$ in Millions)										FY 2012	FY 2013	FY 2014
Title: SBIR										42.088	0.000	0.000
Description: A set-aside program for small business to engage in defense R&D with potential for commercialization.												
FY 2012 Accomplishments: Represents 2.6% of the extramural research budget for OSD. In FY 2012, the OSD SBIR/STTR program addressed five critical cross-cutting R&D science and technology areas: - Autonomy: Autonomous systems to augment military operations - Cyber: Improve the DoD performance for all operations cyberspace - Data-to-Decisions: Shorten the cycle time from data gathering to decisions - Human Systems: Improve the fusion of humans and systems - Engineering Resilient Systems: Expedite design and delivery of trustworthy, adaptable and affordable defense systems												
Accomplishments/Planned Programs Subtotals										42.088	0.000	0.000
C. Other Program Funding Summary (\$ in Millions)												
N/A												
Remarks												
D. Acquisition Strategy												
N/A												

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 6: RDT&E Management Support	R-1 ITEM NOMENCLATURE PE 0605502D8Z: Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR)	PROJECT P502: SBIR
E. Performance Metrics N/A		

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>					R-1 ITEM NOMENCLATURE PE 0605502D8Z: <i>Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR)</i>				PROJECT P500: <i>STTR</i>			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013[#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
P500: <i>STTR</i>	-	5.667	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles												
[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012 ^{##} The FY 2014 OCO Request will be submitted at a later date												
A. Mission Description and Budget Item Justification												
The goals of the Office of the Secretary of Defense (OSD) Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) programs are to stimulate technological innovation, increase private sector commercialization of federal research and development (R&D), increase small business participation in federally funded R&D, and foster participation by minority and disadvantaged firms in technological innovation.												
B. Accomplishments/Planned Programs (\$ in Millions)										FY 2012	FY 2013	FY 2014
Title: STTR										5.667	0.000	0.000
Description: The STTR program funds cooperative R&D projects with small businesses in partnership with not-for profit research institutions (such as universities) to move research to the marketplace.												
FY 2012 Accomplishments: Represents 0.35% of the extramural research budget for OSD. In FY 2012, the OSD SBIR/STTR program addressed five critical cross-cutting R&D science and technology areas: - Autonomy: Autonomous systems to augment military operations - Cyber: Improve the DoD performance for all operations cyberspace - Data-to-Decisions: Shorten the cycle time from data gathering to decisions - Human Systems: Improve the fusion of humans and systems - Engineering Resilient Systems: Expedite design and delivery of trustworthy, adaptable and affordable defense systems												
Accomplishments/Planned Programs Subtotals										5.667	0.000	0.000
C. Other Program Funding Summary (\$ in Millions)												
N/A												
Remarks												

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense

DATE: April 2013

APPROPRIATION/BUDGET ACTIVITY

0400: Research, Development, Test & Evaluation, Defense-Wide
BA 6: RDT&E Management Support

R-1 ITEM NOMENCLATURE

PE 0605502D8Z: *Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR)*

PROJECT

P500: *STTR*

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

PE 0605502D8Z: *Small Business Innovation Research/Small Business ...*

Office of Secretary Of Defense

UNCLASSIFIED

Page 5 of 5

R-1 Line #155

Volume 3 - 777

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY

0400: *Research, Development, Test & Evaluation, Defense-Wide*
BA 6: *RDT&E Management Support*

R-1 ITEM NOMENCLATURE

PE 0605790D8Z: *Small Business Innovation Research (SBIR)/Small Business Technology Transfer (STTR) Administration*

COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013[#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
Total Program Element	-	1.911	1.857	1.868	-	1.868	1.907	2.532	2.573	2.623	Continuing	Continuing
P518: <i>SBIR/Challenge Admin</i>	-	1.911	1.857	1.868	-	1.868	1.907	2.532	2.573	2.623	Continuing	Continuing

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

(U) This Program Element (PE) provides funding for the administration of the Department of Defense (DoD) Small Business Innovation Research (SBIR) Program and the Small Business Technology Transfer (STTR) Program. The SBIR/STTR Program funds over one billion dollars annually in mission oriented research and development projects at small technology companies. The purpose of the program is to stimulate technological innovation, increase private sector commercialization of Federal R&D, increase small business participation in Federally funded R&D, foster participation by minority and disadvantaged firms in technological innovation, and foster cooperative research & technology transfer between small business and research institutions. The SBIR/STTR Program is codified in 15 USC 638. The SBIR/STTR Program competitively funds scientific and technical innovation to specifically address the needs of participating DoD components.

(U) DoD components participating in the SBIR Program include the: Army, Navy, Air Force, Defense Advanced Research Projects Agency (DARPA), Missile Defense Agency (MDA), Defense Threat Reduction Agency (DTRA), U.S. Special Operations Command (SOCOM), Joint Science & Technology Office for Chemical & Biological Defense (CBD), National Geospatial-Intelligence Agency (NGA), the Defense Logistics Agency (DLA), the Defense Microelectronics Activity (DMEA), the Defense Health Program (DHP) and the Office of Secretary of Defense (OSD) through the Assistant Secretary of Defense for Research & Engineering. DoD components participating in the STTR Program include the: Army, Navy, Air Force, DARPA, MDA, and OSD.

<u>B. Program Change Summary (\$ in Millions)</u>	<u>FY 2012</u>	<u>FY 2013</u>	<u>FY 2014 Base</u>	<u>FY 2014 OCO</u>	<u>FY 2014 Total</u>
Previous President's Budget	1.854	1.857	1.868	-	1.868
Current President's Budget	1.911	1.857	1.868	-	1.868
Total Adjustments	0.057	0.000	0.000	-	0.000
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	0.057	-			
• SBIR/STTR Transfer	-	-			

PE 0605790D8Z: *Small Business Innovation Research (SBIR)/Small Bu...*

Office of Secretary Of Defense

UNCLASSIFIED

Page 1 of 4

R-1 Line #158

Volume 3 - 779

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>					R-1 ITEM NOMENCLATURE PE 0605790D8Z: <i>Small Business Innovation Research (SBIR)/Small Business Technology Transfer (STTR) Administration</i>				PROJECT P518: <i>SBIR/Challenge Admin</i>			
--------------------------------------------------------------------------------------------------------------------------------------------------------------	--	--	--	--	----------------------------------------------------------------------------------------------------------------------------------------------------------	--	--	--	-----------------------------------------------------	--	--	--

COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013[#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
P518: <i>SBIR/Challenge Admin</i>	-	1.911	1.857	1.868	-	1.868	1.907	2.532	2.573	2.623	Continuing	Continuing
Quantity of RDT&E Articles												

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

(U) The SBIR/STTR Program is executed in three phases. The purpose of Phase I is to determine, insofar as possible, the scientific technical and commercial merit, and feasibility of ideas submitted under the SBIR/STTR Program. Phase II awards are made to firms that have been awarded a Phase I contract on the basis of the results of their Phase I effort and the scientific, technical, and commercial merit of the Phase II proposal. Phase II is the principal research or research and development effort and is expected to produce a well-defined deliverable prototype. Phase III SBIR/STTR efforts derive from, extend or conclude Phase I or Phase II efforts, and are not funded with SBIR/STTR funds. Under Phase III, companies participating in the SBIR/STTR Program are expected to obtain funding from the private sector and/or non-SBIR/STTR government sources to develop the prototype into a viable product or non-R&D service for sale in military and/or private sector markets.

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2012	FY 2013	FY 2014
Title: SBIR/Challenge Admin	1.911	1.857	1.868
Description: (U) Public law mandating the SBIR/STTR Programs prohibits the use of the SBIR/STTR budget to fund administrative costs of the program, therefore program element (PE) 0605790D8Z is the only source of funds for the coordination, administration and execution of the Department's SBIR/STTR Programs. In addition to funding costs for program administration, coordination and execution, PE 0605790D8Z funds essential elements of the SBIR/STTR Program that are required by law including: (1) Coordinate and execute the administrative portions of the DoD SBIR/STTR Programs including the development of technical topics, preparation SBIR/STTR R&D solicitations, and receipt of proposal responses; (2) Maintain and modify automated processes across the entire SBIR/STTR lifecycle including the development and maintenance of information systems and software required for the measurement, evaluation, and effective management of the Department's SBIR/STTR Programs; (3) Implement an aggressive outreach program including the execution of two conferences and outreach to small technology companies, potential investors in such companies, SDBs WOSBs HBCU/MI and others, to facilitate participation in the SBIR/STTR Programs; (4) Coordinate oversight, collect results, track execution and provide reporting of Phase II technology transition in support of the DoD SBIR Commercialization Pilot and Commercialization Readiness Program (CPP/CRP); and			

PE 0605790D8Z: *Small Business Innovation Research (SBIR)/Small Bu...*

Office of Secretary Of Defense

UNCLASSIFIED

Page 2 of 4

R-1 Line #158

Volume 3 - 780

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense			DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 6: RDT&E Management Support		R-1 ITEM NOMENCLATURE PE 0605790D8Z: Small Business Innovation Research (SBIR)/Small Business Technology Transfer (STTR) Administration		PROJECT P518: SBIR/Challenge Admin	
B. Accomplishments/Planned Programs (\$ in Millions) (5) Prepare all reports mandated by law and policy. FY 2012 Accomplishments: (U) The execution of the FY 2012 DoD SBIR/STTR budget between 13 DoD Components and the following specific activities: 1) Coordinated and executed the administrative portions of the DoD SBIR/STTR Programs including the receipt and approval of over 600 technical topics, the preparation of five solicitations, and the receipt and processing of over 5,000 proposals; 2) Maintained and modified ten databases and two web sites essential to the management and administration of the program; 3) Planned and executed one government training conference for approximately 300 attendees and one commercialization conference for approximately 400 attendees to promote the transition of small business developed SBIR/STTR technology; 4) Coordinated oversight, collected results, and tracked execution of Phase III technology transition in support of the DoD SBIR Commercialization Pilot Program (CPP) (section 252 of the NDAA for FY 2006); and 5) Prepared the following reports as mandated by law and/or policy: SBIR/STTR Annual, Energy Independence Act, Nanotechnology, Manufacturing and Commercialization Pilot Program (CPP). FY 2013 Plans: (U) FY 2013 plan includes program administration, coordination and execution of the DoD SBIR/STTR Program. Specifically, manage the execution of the FY 2013 DoD SBIR/STTR budget between 13 DoD Components to include: (1) Coordinate and execute the administrative portions of the DoD SBIR/STTR Programs including the development of technical topics, preparation SBIR/STTR R&D solicitations, and receipt of proposal responses; (2) Maintain and modify automated processes across the entire SBIR/STTR lifecycle including the development and maintenance of information systems and software required for the measurement, evaluation, and effective management of the Department's SBIR/STTR Programs; (3) Implement an aggressive outreach program including the execution of two conferences and outreach to small technology companies, potential investors in such companies, SDBs WOSBs HBCU/MI and others, to facilitate participation in the SBIR/STTR Programs; (4) Coordinate oversight, collect results, track execution and provide reporting of Phase II technology transition in support of the DoD SBIR Commercialization Readiness Program (CRP); and (5) Prepare all reports mandated by law and policy. FY 2014 Plans: (U) FY 2014 plan includes program administration, coordination and execution of the DoD SBIR/STTR Program. Specifically, manage the execution of the FY 2014 DoD SBIR/STTR budget between 13 DoD Components to include: (1) Coordinate and execute the administrative portions of the DoD SBIR/STTR Programs including the development of technical topics, preparation SBIR/STTR R&D solicitations, and receipt of proposal responses;			FY 2012	FY 2013	FY 2014

PE 0605790D8Z: Small Business Innovation Research (SBIR)/Small Bu...

Office of Secretary Of Defense

UNCLASSIFIED

Page 3 of 4

R-1 Line #158

Volume 3 - 781

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>		R-1 ITEM NOMENCLATURE PE 0605790D8Z: <i>Small Business Innovation Research (SBIR)/Small Business Technology Transfer (STTR) Administration</i>	
		PROJECT P518: <i>SBIR/Challenge Admin</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
(2) Maintain and modify automated processes across the entire SBIR/STTR lifecycle including the development and maintenance of information systems and software required for the measurement, evaluation, and effective management of the Department's SBIR/STTR Programs;			
(3) Implement an aggressive outreach program including the execution of two conferences and outreach to small technology companies, potential investors in such companies, SDBs WOSBs HBCU/MIIs and others, to facilitate participation in the SBIR/STTR Programs;			
(4) Coordinate oversight, collect results, track execution and provide reporting of Phase II technology transition in support of the DoD SBIR Commercialization Readiness Program (CRP); and			
(5) Prepare all reports mandated by law and policy.			
Accomplishments/Planned Programs Subtotals		1.911	1.857
			1.868
C. Other Program Funding Summary (\$ in Millions)			
N/A			
Remarks			
D. Acquisition Strategy			
Not applicable for this item.			
E. Performance Metrics			
(U) Performance is in support of the administration of the program and compliance with statutory requirements.			
(U) For PE 0605790D8Z, management and administration of the DoD SBIR/STTR Programs, the following measures have been established to meet requirements as mandated by law: 1) Coordinate and execute the administrative portions of the DoD SBIR/STTR Programs, especially the creation of the five solicitations; 2) Maintain and modify automated processes across the entire SBIR/STTR lifecycle; 3) Develop and conduct an aggressive outreach program, especially the planning and execution of one government training workshop and one small business conference; 4) Coordinate oversight, collect results, track execution and provide reporting of Phase III technology transition management and support of the DoD SBIR Commercialization Readiness Program; and 5) Prepare all reports required of the SBIR/STTR Programs as mandated by law and policy.			

PE 0605790D8Z: *Small Business Innovation Research (SBIR)/Small Bu...*

Office of Secretary Of Defense

UNCLASSIFIED

Page 4 of 4

R-1 Line #158

Volume 3 - 782

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE							
0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>					PE 0605798D8Z: <i>Defense Technology Analysis</i>							
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
Total Program Element	-	16.858	12.056	8.362	-	8.362	17.380	18.880	17.998	18.252	Continuing	Continuing
P796: <i>Laboratory Resource Management</i>	-	4.975	4.819	2.389	-	2.389	4.251	4.850	5.119	5.168	Continuing	Continuing
P797: <i>Defense Technology Analysis</i>	-	8.128	4.796	2.633	-	2.633	7.597	8.374	7.513	7.575	Continuing	Continuing
P798: <i>Defense Support Teams</i>	-	3.755	2.441	2.400	-	2.400	4.502	4.032	3.715	3.827	Continuing	Continuing
P579: <i>Critical Technology Assessments</i>	-	0.000	0.000	0.940	-	0.940	1.030	1.624	1.651	1.682	Continuing	Continuing

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

Note

The Critical Technology Assessments project transfers from the USD (A&T) Critical Technology Support program element (PE) 0605110D8Z to the Defense Technology Analysis PE 0605798D8Z in FY 2014.

A. Mission Description and Budget Item Justification

The Assistant Secretary of Defense for Research and Engineering (ASD(R&E)) is the principal staff advisor to the Under Secretary of Defense for Acquisition, Technology & Logistics (USD(AT&L)) and the Secretary and Deputy Secretary of Defense for research and engineering (R&E) matters. In this capacity, the ASD(R&E) has the responsibility to conduct analyses and studies; develop policies; provide technical leadership, oversight and advice; make recommendations; and issue guidance for DoD R&E programs. Additionally, the ASD(R&E) provides technical support to the USD(AT&L) on R&E aspects of programs subject to review by the Defense Acquisition Board, to include assessments of technology maturity consistent with DoD acquisition policy. The mission of the DoD R&E program is to create, demonstrate, prototype, and apply technology that enables affordable and decisive military superiority. Pursuing the R&E mission requires attention to: (1) identification and development of new technological opportunities; (2) insertion of new technologies into warfighting systems and operations; and (3) management and evaluation of the effectiveness of technology programs. This program element provides mission support to the Office of the ASD(R&E) (OASD(R&E)) covering a wide range of studies and analysis in support of the R&E program and it impacts the Department's decision to fund RDT&E efforts.

The program element provides funding for the Defense Laboratory Office within the OASD(R&E)). The Defense Laboratory Office advocates and invests in the DoD laboratory system in three areas: (1) facilities and infrastructure; (2) quality of workforce; and (3) global insight of critical or strategic technologies important to the Department and the Nation.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense	DATE: April 2013
-------------------------------------------------------------------------------------------------	-------------------------

APPROPRIATION/BUDGET ACTIVITY

0400: *Research, Development, Test & Evaluation, Defense-Wide*
 BA 6: *RDT&E Management Support*

R-1 ITEM NOMENCLATURE

PE 0605798D8Z: *Defense Technology Analysis*

The program element provides engineering, scientific, and analytical support to the Office of the Deputy Assistant Secretary of Defense for Research in its responsibility for direction, overall quality, and content of the science and technology (S&T) program and ensures that the technology being developed is affordable and minimizes system development risk. The Defense Technology Analysis program conducts assessments and analysis to ensure maximum utilization of research and development funds to accomplish the overall objectives of the S&T program. Funds are required for technical, analytical and management support, equipment and supplies, travel, and publications.

The DoD's key expertise for reviewing and guiding R&E programs resides in the OASD(R&E). The OASD(R&E) staff augment their responsibilities through their connections to technology experts in various fields throughout academia, industry, and government. The Defense Support Teams project supports the directed responsibilities by building teams of technology experts to conduct program technical assessments. The teams analyze the key engineering problem areas and offer adjustments in the development and test plan; alternate technical approaches; or new technologies that could enable successful development. The teams provide unbiased reviews and gather advice from the Nation's leading technical experts.

The program element provides funding for Critical Technology Assessments within OASD(R&E). Critical Technology Assessments provide the technical reference guidance in support of development and implementation of DoD technology security policies on international transfers of defense related goods, services, and technologies. The program provides an ongoing assessment and analysis of global goods and technologies; determines significant advances in the development, production, and use of military capabilities by potential adversaries; and determines goods and technologies being developed worldwide with potential to significantly enhance or degrade U.S. military capabilities in the future.

B. Program Change Summary (\$ in Millions)	<u>FY 2012</u>	<u>FY 2013</u>	<u>FY 2014 Base</u>	<u>FY 2014 OCO</u>	<u>FY 2014 Total</u>
Previous President's Budget	15.582	12.056	11.981	-	11.981
Current President's Budget	16.858	12.056	8.362	-	8.362
Total Adjustments	1.276	0.000	-3.619	-	-3.619
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	1.281	-			
• SBIR/STTR Transfer	-	-			
• Baseline Adjustments	-	-	-3.619	-	-3.619
• Other Adjustments	-0.005	-	-	-	-

Change Summary Explanation

FY 2014 baseline adjustments reflective of DoD priorities and requirements.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 6: RDT&E Management Support					R-1 ITEM NOMENCLATURE PE 0605798D8Z: Defense Technology Analysis				PROJECT P796: Laboratory Resource Management			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
P796: Laboratory Resource Management	-	4.975	4.819	2.389	-	2.389	4.251	4.850	5.119	5.168	Continuing	Continuing
Quantity of RDT&E Articles												
# FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012												
## The FY 2014 OCO Request will be submitted at a later date												
A. Mission Description and Budget Item Justification												
The Defense Laboratory Office provides advocacy, strategic planning, and policy for the DoD's in-house laboratories. The DoD Laboratory Enterprise consists of 67 laboratories with approximately 65,000 employees and an annual budget of more than \$20.000 billion. The Defense Laboratory Office develops plans and investment strategies for laboratory infrastructure, technology programs, and personnel development.												
B. Accomplishments/Planned Programs (\$ in Millions)										FY 2012	FY 2013	FY 2014
Title: Defense Laboratory Office										4.975	4.819	2.389
FY 2012 Accomplishments:												
• The ASD(R&E)/Research Directorate Laboratory Office identified the Core Technical Competencies (CTC) of the Defense labs, Federally Funded Research and Development Centers (FFRDCs), University Affiliated Research Centers (UARCs) and Department of Energy (DOE) laboratories												
• Developed and delivered the Unified Research & Engineering Database (URED) which combines laboratory budget data, work unit summaries and programmatic information for the DoD labs. Information on lab budget activity (BA) one through three tasks has been compiled; Phase II has been initiated which will collect BA four through seven information. This data will be used to assess lab performance within the identified CTCs.												
• Initiated tasks in support of the DoD Human Capital Strategic Plan and assessment of the state of the technical health of the DoD lab workforce.												
FY 2013 Plans:												
The ASD(R&E)/Research Directorate Laboratory Office will refine and continue to execute laboratory management responsibilities. Areas of emphasis include:												
• Continue identification and validation of Department-wide DoD laboratory in-house CTCs;												
• Understanding Service and laboratory performance within CTCs;												
• Ensuring that CTCs are performing at the cutting-edge of global science, technology, and engineering;												
• Advocacy for investment in CTCs; and												
• Measurement of performance of the Defense Laboratory Enterprise.												

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>		R-1 ITEM NOMENCLATURE PE 0605798D8Z: <i>Defense Technology Analysis</i>	PROJECT P796: <i>Laboratory Resource Management</i>
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
<ul style="list-style-type: none"> Complete Phase I of the Unified Research & Engineering database which will provide budgetary and programmatic information on the in-house defense labs; data will be used to assess laboratory technical health and performance. <p>FY 2014 Plans:</p> <ul style="list-style-type: none"> Expand data collection and analysis of UARCs, FFRDCs, and DOE laboratories to understand technical health, performance and capabilities of all laboratories within the DoD technical base. Continue refinement and analysis of laboratory core technical capabilities; ensure laboratories are maintaining and/or developing needed capabilities in critical mission areas. 			
Accomplishments/Planned Programs Subtotals		4.975	2.389
C. Other Program Funding Summary (\$ in Millions)			
N/A			
Remarks			
D. Acquisition Strategy			
N/A			
E. Performance Metrics			
The performance of the Laboratory Resource Management project is based on the success of initiatives to implement strategic planning objectives. Measures include the quality and timeliness of policy, plans, guidance, and processes.			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE				PROJECT			
0400: Research, Development, Test & Evaluation, Defense-Wide BA 6: RDT&E Management Support					PE 0605798D8Z: Defense Technology Analysis				P797: Defense Technology Analysis			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
P797: Defense Technology Analysis	-	8.128	4.796	2.633	-	2.633	7.597	8.374	7.513	7.575	Continuing	Continuing
Quantity of RDT&E Articles												

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

The Defense Technology Analysis (DTA) project provides engineering, scientific and analytical support to the Office of the Deputy Assistant Secretary of Defense for Research in its responsibility for direction, overall quality, and content of the science and technology (S&T) program and ensures that the technology being developed is affordable and minimizes system development risk. The DTA program conducts assessments and analyses to ensure maximum utilization of research and development funds to accomplish the overall objectives of the S&T program. Funds are required for technical, analytical, and management support, travel, and publications.

B. Accomplishments/Planned Programs (\$ in Millions)

Title: DoD Technology Analysis	FY 2012	FY 2013	FY 2014
	8.128	4.796	2.633
FY 2012 Accomplishments: The Defense Technology Analysis program funded over fifty efforts in FY 2012. The funded efforts were primarily technical and programmatic support using Federally Funded Research and Development Centers (FFRDCs) and technical support services. Activities included workshops, development of congressional reports, completion of focused studies, and access to technical expertise in support of the DoD research and engineering (R&E) program.			
FY 2013 Plans: Provide engineering, scientific, analytical, and managerial support to the Office of the Deputy Assistant Secretary of Defense for Research in: <ul style="list-style-type: none"> • Developing strategies, plans, and policies to develop and exploit technology; • Conducting technology analyses, making recommendations, and developing guidance for S&T plans and programs; • Reviewing acquisition programs and making recommendations to optimize effectiveness of the DoD investments; • Oversight of S&T issues and initiatives and responding to Congressional special interests; • Seeking opportunities for interdepartmental and international cooperation in high priority S&T. Conduct intradepartmental coordination to achieve goals as necessary. 			
FY 2014 Plans:			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>		R-1 ITEM NOMENCLATURE PE 0605798D8Z: <i>Defense Technology Analysis</i>	PROJECT P797: <i>Defense Technology Analysis</i>
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
Provide engineering, scientific, analytical, and managerial support to the Office of the Deputy Assistant Secretary of Defense for Research in: <ul style="list-style-type: none"> • Developing strategies, plans, and policies to develop and exploit technology; • Conducting technology analyses, making recommendations, and developing guidance for S&T plans and programs; • Reviewing acquisition programs and making recommendations to optimize effectiveness of the DoD investments; • Oversight of S&T issues and initiatives and responding to Congressional special interests; • Seeking opportunities for interdepartmental and international cooperation in high priority S&T. Conduct intradepartmental coordination to achieve goals as necessary. 			
Accomplishments/Planned Programs Subtotals		8.128	2.633
C. Other Program Funding Summary (\$ in Millions) N/A			
Remarks			
D. Acquisition Strategy N/A			
E. Performance Metrics Several indicators allow the Department to measure the success of the DTA program element: <ul style="list-style-type: none"> • The number of efforts funded and completed satisfactorily and the OASD(R&E) influence on S&T program decisions serve as valuable indicators of the program's effectiveness. • Feedback into the oversight mechanisms of the program to guide investment decisions serve as additional metrics. 			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 6: RDT&E Management Support					R-1 ITEM NOMENCLATURE PE 0605798D8Z: Defense Technology Analysis				PROJECT P798: Defense Support Teams			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
P798: Defense Support Teams	-	3.755	2.441	2.400	-	2.400	4.502	4.032	3.715	3.827	Continuing	Continuing
Quantity of RDT&E Articles												
# FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012												
## The FY 2014 OCO Request will be submitted at a later date												
A. Mission Description and Budget Item Justification												
The Department's key expertise for reviewing and guiding research and engineering (R&E) programs resides in the Office of the Assistant Secretary of Defense for Research and Engineering (OASD(R&E)). The OASD(R&E) staff augments their responsibilities through connections to technology experts in various fields throughout academia, industry, and government. The Defense Support Teams project supports the directed responsibilities by building teams of technology experts to conduct program technical health check-ups. The teams analyze the key engineering problem areas and offer adjustments in the development and test plans; alternate technical approaches; or new technologies that could enable successful development. The teams provide unbiased reviews and gather advice from the Nation's leading technical experts.												
B. Accomplishments/Planned Programs (\$ in Millions)										FY 2012	FY 2013	FY 2014
Title: Defense Support Teams										3.755	2.441	2.400
FY 2012 Accomplishments: Established support teams and conducted technology analyses to support R&E program investment decisions. Continued or completed teams established in FY 2011. Reviewed in technical detail the respective program issues and offer technical solutions to program managers. Assessed the maturity of technologies that are candidates for transitioning to an acquisition program.												
FY 2013 Plans: Establish support teams and conduct technology analyses to support R&E program investment decisions. For selected acquisition programs and efforts, review in technical detail the respective program issues and offer technical solutions to program managers. Assess the maturity of technologies that are candidates for transitioning to an acquisition program.												
FY 2014 Plans: Establish support teams and conduct technology analyses to support R&E program investment decisions. For selected acquisition programs and efforts, review in technical detail the respective program issues and offer technical solutions to program managers. Assess the maturity of technologies that are candidates for transitioning to an acquisition program.												
Accomplishments/Planned Programs Subtotals										3.755	2.441	2.400
C. Other Program Funding Summary (\$ in Millions)												
N/A												

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>	R-1 ITEM NOMENCLATURE PE 0605798D8Z: <i>Defense Technology Analysis</i>	PROJECT P798: <i>Defense Support Teams</i>
C. Other Program Funding Summary (\$ in Millions)		
Remarks		
D. Acquisition Strategy N/A		
E. Performance Metrics Several indicators allow the Department to measure the success of the DTA program element: <ul style="list-style-type: none">• The number of technological introspections as evidenced by completed support teams and OASD(R&E) influence on acquisition decisions serve as valuable indicators of the program's effectiveness.• The establishment and outputs of Defense Support Teams are additional indicators of program metrics.• Feedback into the oversight mechanisms of the S&T program to guide investment decisions serve as additional metrics.		

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE				PROJECT			
0400: Research, Development, Test & Evaluation, Defense-Wide BA 6: RDT&E Management Support					PE 0605798D8Z: Defense Technology Analysis				P579: Critical Technology Assessments			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
P579: Critical Technology Assessments	-	0.000	0.000	0.940	-	0.940	1.030	1.624	1.651	1.682	Continuing	Continuing
Quantity of RDT&E Articles												
# FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012												
## The FY 2014 OCO Request will be submitted at a later date												
Note This effort was realigned from PE 0605110D8Z USD(A&T) Critical Technology Support to PE 0605798D8Z Defense Technology Analysis, P579 Critical Technology Assessments beginning in FY 2014.												
A. Mission Description and Budget Item Justification Critical Technology Assessments provide the technical reference guidance in support of development and implementation of DoD technology security policies on international transfers of defense related goods, services, and technologies. The export control program provides an ongoing assessment and analysis of global goods and technologies. Determines significant advances in the development, production, and use of military capabilities by potential adversaries. Determines goods and technologies being developed worldwide with potential to significantly enhance or degrade U.S. military capabilities in the future. Identified in the Export Administration Act of 1979 and extended by Presidential Executive Order to review militarily critical goods and technologies and to consider worldwide technology capabilities. The Militarily Critical Technologies List (MCTL) is a congressionally mandated source document for identification of leading edge and current technologies monitored worldwide for national security, nonproliferation control of weapons of mass destruction, and advanced conventional weapons. Specific activities include: - Monitor and assess dual-use and military technologies worldwide. - Assist in the development of proposals for negotiation in various multilateral export control regimes. - Provide limited worldwide technology capability assessments for the MCTL and other U.S. international critical technologies efforts. - Identify and determine technical parameters for proposals for international control of weapons of mass destruction. - Identify foreign technologies of interest to the DoD and opportunities for international cooperative research and development.												
B. Accomplishments/Planned Programs (\$ in Millions)									FY 2012	FY 2013	FY 2014	
Title: Critical Technology Assessments									0.000	0.000	0.940	
Description: Critical Technology Assessments provide the technical reference guidance in support of development and implementation of DoD technology security policies on international transfers of defense related goods, services, and technologies. The export control program provides an ongoing assessment and analysis of global goods and technologies. Determines significant advances in the development, production, and use of military capabilities by potential adversaries.												

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense							DATE: April 2013				
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>				R-1 ITEM NOMENCLATURE PE 0605798D8Z: <i>Defense Technology Analysis</i>			PROJECT P579: <i>Critical Technology Assessments</i>				
B. Accomplishments/Planned Programs (\$ in Millions)							FY 2012	FY 2013	FY 2014		
<p>Determines goods and technologies being developed worldwide with potential to significantly enhance or degrade U.S. military capabilities in the future. Identified in the Export Administration Act of 1979 and extended by Presidential Executive Order to review militarily critical goods and technologies and to consider worldwide technology capabilities. The Militarily Critical Technologies List (MCTL) is a congressionally mandated source document for identification of leading edge and current technologies monitored worldwide for national security, nonproliferation control of weapons of mass destruction, and advanced conventional weapons.</p> <p><i>FY 2014 Plans:</i></p> <ul style="list-style-type: none"> - Maintain technical interface to export technology security organizations and functions. - Maintain interface with user community for critical technology assessments. 											
Accomplishments/Planned Programs Subtotals							0.000	0.000	0.940		
C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2012</u>	<u>FY 2013</u>	<u>FY 2014</u> <u>Base</u>	<u>FY 2014</u> <u>OCO</u>	<u>FY 2014</u> <u>Total</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• PE 0605110D8Z, P110: <i>USD(A&T) Critical Technology Support</i>	1.425	0.840	0.000		0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
Remarks											
This effort was realigned from PE 0605110D8Z USD(A&T) Critical Technology Support to PE 0605798D8Z Defense Technology Analysis, P579 Critical Technology Assessments beginning in FY 2014.											
D. Acquisition Strategy											
N/A											
E. Performance Metrics											
- Currency of the user community of critical technology assessments.											

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY

0400: *Research, Development, Test & Evaluation, Defense-Wide*
BA 6: *RDT&E Management Support*

R-1 ITEM NOMENCLATURE

PE 0605804D8Z: *Development Test & Evaluation*

COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
Total Program Element	-	18.389	15.110	15.451	-	15.451	16.091	16.636	16.917	17.246	Continuing	Continuing
P804: <i>Development Test & Evaluation</i>	-	18.389	14.310	15.451	-	15.451	16.091	16.636	16.917	17.246	Continuing	Continuing
P806: <i>Energy</i>	-	0.000	0.800	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

The Developmental Test and Evaluation (DT&E) program element is budgeted in the Research and Development budget activity as it supports and assesses the DT&E efforts of each Major Defense Acquisition Program (MDAP), Major Automated Information System, and other Special Interest acquisition programs as designated by Under Secretary of Defense for Acquisition, Technology & Logistics (USD(AT&L)); assesses the DT&E capabilities of the Military Departments and Department of Defense (DoD) Components, oversees the Test and Evaluation career field of the defense acquisition workforce; develops policy and guidance for the conduct of DT&E within DoD; and produces the annual DT&E report to Congress.

The Department of Operational Energy Plans and Programs (DOEPP) is funded within this program element for technical analysis and policy guidance for theDoD operational energy programs and initiatives, including institutionalizing energy in DoD's business processes (e.g., Fully Burdened Cost of Fuel and the Energy Efficiency Key Performance Parameters (KPPs)).

B. Program Change Summary (\$ in Millions)

	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total
Previous President's Budget	18.621	15.110	15.708	-	15.708
Current President's Budget	18.389	15.110	15.451	-	15.451
Total Adjustments	-0.232	0.000	-0.257	-	-0.257
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-0.226	-			
• SBIR/STTR Transfer	-	-			
• Baseline Adjustments	-	-	-0.257	-	-0.257
• Other Adjustments	-0.006	-	-	-	-

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>		R-1 ITEM NOMENCLATURE PE 0605804D8Z: <i>Development Test & Evaluation</i>
<u>Change Summary Explanation</u> FY 2014 baseline adjustments are reflective of DoD priorities and requirements.		

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE				PROJECT			
0400: Research, Development, Test & Evaluation, Defense-Wide BA 6: RDT&E Management Support					PE 0605804D8Z: Development Test & Evaluation				P804: Development Test & Evaluation			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
P804: Development Test & Evaluation	-	18.389	14.310	15.451	-	15.451	16.091	16.636	16.917	17.246	Continuing	Continuing
Quantity of RDT&E Articles												

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

This project provides for the assessment of the Developmental Test and Evaluation (DT&E) efforts of each Major Defense Acquisition Program (MDAP), Major Automated Information System, and Special Interest acquisition programs as designated by USD(AT&L). It also provides for the assessment of DT&E capabilities of the Military Departments and DoD Components, oversees the T&E career field of the defense acquisition workforce, develops policy and guidance for the conduct of DT&E within DoD, and produces the annual DT&E report to Congress. Specific activities include the following:

- Work with MDAP/MAIS/SI Program Managers to develop a comprehensive DT&E strategy that supports acquisition decision milestones. Ensure that the test strategy is documented in the Test and Evaluation Master Plans (TEMPs). The Deputy Assistant Secretary of Defense (DASD) DT&E also approves or disapproves the developmental test and evaluation plans in the TEMPs.
- Coordinate with the Director of Systems Engineering to ensure that the DT&E activities of the DoD are fully integrated into, and consistent with, the systems engineering and development planning processes of the Department.
- Provide formal DT&E Assessments prior to major milestone decisions to inform the Acquisition decision-makers on the readiness of programs to proceed into Engineering and Manufacturing Development (MS B), Production and Deployment (MS C), and Operations and Sustainment (FRP) with the goal of reducing discovery of performance issues late in the acquisition cycle.
- Develop policy and guidance to ensure efficient and effective DT&E across DoD, including policy and guidance for developmental testing of interoperability and information assurance in coordination with the Joint Staff and DoD CIO.
- Provide DT&E assessments in support of Nunn-McCurdy certification review teams, and the Director, Performance Assessment and Root Cause Analysis (PARCA).
- Review the organizations and capabilities of the military departments with respect to developmental test and evaluation and identify needed changes or improvements to such organizations and capabilities, and provide input regarding needed changes or improvements for the test and evaluation strategic plan developed by Test Resource Management Center (TRMC).
- As the T&E Functional Leader, establish, oversee, and maintain the education, training and experience requirements including competencies and certification standards to enhance T&E acquisition workforce. Monitor and facilitate Defense Acquisition University (DAU) updates of T&E courses to ensure the curriculum supports the certification standards and provides the appropriate education and training.

B. Accomplishments/Planned Programs (\$ in Millions)

Title: Developmental Test and Evaluation Accomplishments and Plans	FY 2012	FY 2013	FY 2014
	18.389	14.310	15.451

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense			DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>		R-1 ITEM NOMENCLATURE PE 0605804D8Z: <i>Development Test & Evaluation</i>		PROJECT P804: <i>Development Test & Evaluation</i>	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2012	FY 2013	FY 2014
<p><i>FY 2012 Accomplishments:</i></p> <ul style="list-style-type: none"> -Worked with MDAP/MAIS/SI Program Managers to develop comprehensive DT&E strategies to support the program development and acquisition. Reviewed and approved 33 TES/TEMPs submitted to OSD for approval. -Developed the DT&E portion of the Joint Annual Report to Congress that provided an assessment of MDAP DT&E progress and assesses the T&E workforce. -Refined DT&E policies and methodologies addressing DT&E across all MDAP, MAIS, and Special Interest programs. -Published data-based DT&E assessments of system performance for all MDAP and MAIS programs in support of scheduled Defense Acquisition Board (DAB) decisions for each major milestone. -Established the Scientific Test & Analysis Techniques (STAT) T&E Center of Excellence (COE) in coordination with the US Air Force at the Air Force Institute of Technology. - Funded STAT T&E Center of Excellence in order to provide direct support to 20 Service-nominated MDAPs. -Planned and conducted InterTec Cyber Event (ICE) to support the development of the DT&E Cybersecurity methodology. -Promoted the application of sound systems engineering, DT&E, and related technical disciplines across the Department's acquisition community and programs. <p><i>FY 2013 Plans:</i></p> <ul style="list-style-type: none"> -Work with MDAP/MAIS/SI Program Managers to develop comprehensive DT&E strategies to support capability development and acquisition. Review and approve all TEMPs submitted to support major acquisition reviews. -Develop the DT&E portion of the Joint Annual Report to Congress that provides an assessment of MDAP DT&E progress and assesses the T&E workforce. -Refine DT&E policies and methodologies addressing DT&E across all MDAP, MAIS and Special Interest programs. -Publish formal DT&E Assessments in support of Milestone C and Operational Test decision processes-Review and approve all TEMPs submitted to support major acquisition reviews for MDAPs. -Provide data-based assessments of system performance in support of all scheduled Defense Acquisition Board decisions. -Sustain the STAT COE. -Plan and conduct events that support DT&E Cybersecurity strategy. -Promote the application of sound DT&E and related technical disciplines across the Department's acquisition community and programs. <p><i>FY 2014 Plans:</i></p> <ul style="list-style-type: none"> -Work with MDAP Program Managers to develop comprehensive DT&E strategies to support the program development and acquisition. - Review and approve all TEMPs submitted to support major acquisition reviews for MDAPs. 					

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>		R-1 ITEM NOMENCLATURE PE 0605804D8Z: <i>Development Test & Evaluation</i>	PROJECT P804: <i>Development Test & Evaluation</i>
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
-Develop the DT&E Annual Report to Congress that provides an assessment of MDAP DT&E progress and assesses the T&E workforce. -Refine DT&E policies and methodologies addressing DT&E across all MDAP, MAIS and Special Interest programs. -Publish data-based DT&E assessments of system performance for all MDAP and MAIS programs in support of scheduled Defense Acquisition Board (DAB) decisions for each major milestone. -Review and approve all TEMPs submitted to support major acquisition reviews for MDAPs. -Sustain the STAT COE. -Plan and conduct additional Cybersecurity events that apply the DT&E Cybersecurity methodology. -Promote the application of sound DT&E and related technical disciplines across the Department's acquisition community and programs.			
Accomplishments/Planned Programs Subtotals		18.389	14.310
C. Other Program Funding Summary (\$ in Millions)			
N/A			
Remarks			
D. Acquisition Strategy			
N/A			
E. Performance Metrics			
<ul style="list-style-type: none"> • Engaged and conducted oversight on all AT&L-designated MDAP, MAIS, and Special Interest Programs. • Advised at Defense Acquisition Board (DABs), Overarching Integrated Product Teams (OIPs), and Nunn-McCurdy Reviews. • Reviewed and approved Test and Evaluation Master Plans (TEMs) for MDAP, MAIS, and AT&L-designated Special Interest programs. • Prepared formal DT&E assessments to inform Acquisition decision makers of readiness for Initial Operational Test & Evaluation. • Implemented the education requirements for the T&E career field to require a hard science degree to support the T&E of increasingly more complex systems. • Participated in the development of a major revision to the DoDI 5000.02. • Supported OSD led Peer Reviews. • Refined a DT&E cybersecurity strategy composed of four areas: process (policy and guidance), methodology (best test practices), workforce training, and infrastructure (enclosed and distributed ranges). • Sustained Scientific Test & Analysis Techniques Center of Excellence. • Planned and executed pilot events to focus on cybersecurity test infrastructure gaps and to examine different test methodologies. 			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>	R-1 ITEM NOMENCLATURE PE 0605804D8Z: <i>Development Test & Evaluation</i>	PROJECT P806: <i>Energy</i>
--------------------------------------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------	---------------------------------------

COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
P806: <i>Energy</i>	-	0.000	0.800	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles												

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

This project, co-sponsored by ASD(R&E) and ASD(OEPP), addresses advanced technology development of hybrid energy storage associated with providing the capability to enhance fuel efficiency, maximize performance and reliability, and enable future high power weapons and sensor systems on legacy and next generation Army and USMC battlefield generators and vehicles, Air Force and Navy aircraft, and Navy ships. The goals of this project are to demonstrate in each of these areas energy storage systems, with high power and energy densities, high rate capability, scalable to all power levels, that reduces total logistics replenishment of fuel and material, increases platform and vehicle ability to sustain operations during engagement, and reduce non mission capable and maintenance events. Once demonstration is complete, this technology will be further sustained by the Services. In collaboration, this program is closely coordinated with the Advanced Management and Protection of Energy-storage Devices (AMPED) program of the Department of Energy's Advanced Research Projects Agency – Energy (ARPA-E). AMPED technology will be used to potentially extend the operational performance benefits and safety for these applications beyond the hybrid storage module baseline design configurations.

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2012	FY 2013	FY 2014
Title: Hybrid Energy Storage Module Program	0.000	0.800	0.000
Description: This project, co-sponsored by ASD(R&E) and ASD(OEPP), addresses advanced technology development of hybrid energy storage associated with providing the capability to enhance fuel efficiency, maximize performance and reliability, and enable future high power weapons and sensor systems on legacy and next generation Army and USMC battlefield generators and vehicles, Air Force and Navy aircraft, and Navy ships. The goals of this project are to demonstrate in each of these areas energy storage systems, with high power and energy densities, high rate capability, scalable to all power levels, that reduces total logistics replenishment of fuel and material, increases platform and vehicle ability to sustain operations during engagement, and reduce non mission capable and maintenance events. Once demonstration is complete, this technology will be further sustained by the Services. In collaboration, this program is closely coordinated with the Advanced Management and Protection of Energy-storage Devices (AMPED) program of the Department of Energy's Advanced Research Projects Agency – Energy (ARPA-E). AMPED technology will be used to potentially extend the operational performance benefits and safety for these applications beyond the hybrid storage module baseline design configurations.			
FY 2013 Plans:			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>		R-1 ITEM NOMENCLATURE PE 0605804D8Z: <i>Development Test & Evaluation</i>	PROJECT P806: <i>Energy</i>
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
The key new initiatives in FY 2013 will be the initiation of Air Force and Navy aircraft, and Navy ships HESM demonstrator development. Further energy storage technology demonstration effort associated with safe operation of energy storage impacting all three military application areas will be initiated. The goal of this effort is to develop and demonstrate a safe energy storage structure which is capable of not only buffering against life-reducing high operating temperatures due to aggressive cycling operations but also preventing or limiting thermal runaway conditions.			
Accomplishments/Planned Programs Subtotals		0.000	0.800
C. Other Program Funding Summary (\$ in Millions) N/A			
Remarks			
D. Acquisition Strategy N/A			
E. Performance Metrics N/A			

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense	DATE: April 2013
-------------------------------------------------------------------------------------------------	-------------------------

APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE							
0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>					PE 0606100D8Z: <i>Budget and Program Assessments</i>							
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
Total Program Element	5.919	4.432	4.454	4.083	-	4.083	4.763	4.708	4.618	4.708	Continuing	Continuing
101: <i>Budget and Program Assessments</i>	5.919	4.432	4.454	4.083	-	4.083	4.763	4.708	4.618	4.708	Continuing	Continuing

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

This program supports the Office of the Director, Cost Assessment & Program Evaluation (CAPE). It funds assessments that help to resolve budget and programmatic issues across the full range of the Department's activities. Projects that support this effort help to inform the leadership on program alternatives, capability concept development, design and cost, the appropriate balance of capabilities across the force, and also to identify how well the Department's expenditures are meeting its goals, and how well the force can implement the Defense strategy.

This program provides for analytical research across a spectrum of issues and concerns. The research agenda is focused on near to long-term problems identified by the Secretary of Defense, and addresses difficult and complex questions linked to program alternatives for current and future capabilities and forces in order to enhance the senior leadership's deliberations and decision-making.

This program provides the scientific and technical engineering services needed for research studies in the development of models and simulations and the evaluation of current analytical tools and scientific methods used to evaluate and assess weapons systems and warfighting capabilities for warfighting environments and scenarios, and related force structure. Deliverables from this program will include reports, briefings, and analyses designed to illuminate critical issues facing the Department. Outcomes include recommendations for new modeling techniques, programmatic alternatives, and scenario development.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense				DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY		R-1 ITEM NOMENCLATURE			
0400: Research, Development, Test & Evaluation, Defense-Wide		PE 0606100D8Z: Budget and Program Assessments			
BA 6: RDT&E Management Support					
B. Program Change Summary (\$ in Millions)	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total
Previous President's Budget	4.432	4.454	4.508	-	4.508
Current President's Budget	4.432	4.454	4.083	-	4.083
Total Adjustments	0.000	0.000	-0.425	-	-0.425
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Baseline program adjustments	-	-	-0.425	-	-0.425
Change Summary Explanation					
Reflects realignment of funds for higher priorities within the department.					

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 6: RDT&E Management Support					R-1 ITEM NOMENCLATURE PE 0606100D8Z: Budget and Program Assessments				PROJECT 101: Budget and Program Assessments			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
101: Budget and Program Assessments	5.919	4.432	4.454	4.083	-	4.083	4.763	4.708	4.618	4.708	Continuing	Continuing
Quantity of RDT&E Articles												
# FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012												
## The FY 2014 OCO Request will be submitted at a later date												
A. Mission Description and Budget Item Justification												
This program supports the Office of the Director, Cost Assessment & Program Evaluation (CAPE). It funds assessments that help to resolve budget and programmatic issues across the full range of the Department's activities. Projects that support this effort help to inform the leadership on program alternatives, capability concept development, design and cost, the appropriate balance of capabilities across the force, and also to identify how well the Department's expenditures are meeting its goals, and how well the force can implement the Defense strategy.												
This program provides for analytical research across a spectrum of issues and concerns. The research agenda is focused on near to long-term problems identified by the Secretary of Defense, and addresses difficult and complex questions linked to program alternatives for current and future capabilities and forces in order to enhance DoD senior leadership's deliberations and decision-making.												
This program provides the scientific and technical engineering services needed for research studies in the development of models and simulations and the evaluation of current analytical tools and scientific methods used to evaluate and assess weapons systems and warfighting capabilities for warfighting environments and scenarios, and related force structure. Deliverables from this program will include reports, briefings, and analyses designed to illuminate critical issues facing the Department. Outcomes include recommendations for new modeling techniques, programmatic alternatives, and scenario development.												
B. Accomplishments/Planned Programs (\$ in Millions)									FY 2012	FY 2013	FY 2014	
Title: OSD Support for Programming Budget									4.432	4.454	4.083	
Description: This program provides for analytical research across a spectrum of issues and concerns. The research agenda is focused on near to long-term problems identified by the Secretary of Defense, and addresses difficult and complex questions linked to program alternatives for current and future capabilities and forces in order to enhance the senior leadership's deliberations and decision-making.												
FY 2012 Accomplishments: • Expanded mission and regional breadth of ISR-support studies, still using data intensive approach that quantitatively links ISR inputs to operational outcomes.												

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>	R-1 ITEM NOMENCLATURE PE 0606100D8Z: <i>Budget and Program Assessments</i>	PROJECT 101: <i>Budget and Program Assessments</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
<ul style="list-style-type: none"> Improved the accuracy of combat adjudication models and other simulation tools for studying the full range of combat operations from irregular warfare to large, full scale force-on-force combat. Developed techniques to explicitly account for dependencies and the constraints imposed by spatial and temporal (space and time) separations distinguishing combatants. Assessed capacity needed within DoD, as well as the role of agencies and allies in a range of scenarios against Force Planning Construct of homeland defense, irregular warfare/war on terror, and conventional conflict across steady state and surge environments. Determined the contribution of DoD forces as part of a local, state, and federal interagency response to current and future homeland defense consequence management scenarios. Assessed technologies and strategies for space and cyberspace security. <p>FY 2013 Plans:</p> <ul style="list-style-type: none"> Continue to expand mission and regional breadth of ISR-support studies, using a data intensive approach that quantitatively links ISR inputs to operational outcomes. Improve the accuracy of combat adjudication models and other simulation tools for studying the full range of combat operations from irregular warfare to large, full scale force-on-force combat. The effort will explore and develop techniques to explicitly account for dependencies and the constraints imposed by spatial and temporal (space and time) separations distinguishing combatants. Assess capacity needed within DoD, as well as the role of agencies and allies in a range of scenarios against Force Planning Construct of homeland defense, irregular warfare/war on terror, and conventional conflict across steady state and surge environments. Determine the contribution of DoD forces as part of a local, state, and federal interagency response to current and future homeland defense consequence management scenarios. Continue assessments for technologies and strategies for space and cyberspace security. <p>FY 2014 Plans:</p> <p>Studies, analyses, and assessments will be focused on:</p> <ul style="list-style-type: none"> Evaluating and upgrading Strategic C4 and ISR programs to inform program, budget, and Defense Acquisition Board reviews Warfighting analysis and joint operations to support major defense reviews, including transformation initiatives, force and weapons systems requirements, and AoAs to support major acquisition decisions; land forces, including the manning, equipping, training, sustaining, and fighting these forces with special emphasis on the resources needed to accomplish these activities Mobility requirements and modernization decisions for airlift aircraft, sealift vessels, and tankers in support of the defense strategy; force structure and investment decisions for pre-positioning ashore and afloat and the impact of forward presence postures 			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>		R-1 ITEM NOMENCLATURE PE 0606100D8Z: <i>Budget and Program Assessments</i>	PROJECT 101: <i>Budget and Program Assessments</i>
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
<ul style="list-style-type: none"> - Scenarios for medium and long-term planning; evaluation of threat databases and forecasts for economic, demographic, and technological trends and developments to determine impact on national security resources - Irregular warfare analyses - Medical cost growth - Alternative cyber defense strategies 			
Accomplishments/Planned Programs Subtotals		4.432	4.454
C. Other Program Funding Summary (\$ in Millions)			
N/A			
Remarks			
D. Acquisition Strategy			
A mix of competitive contracts with commercial firms and research provided by university affiliated research centers (UARCs), and Federally Funded Research and Development Centers (FFRDCs).			
E. Performance Metrics			
The products or expected outcomes of this program are studies and analyses to support resource allocation decisions, major defense acquisition decisions, and issues of high interest to the Secretary of Defense. Performance is measured by the quality of the analyses and is monitored through the review of the organizational assessment process. The primary goal is to ensure that study and analytical products are timely, clear, complete, accurate, responsive, balanced, and objective.			

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE							
0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>					PE 0606301D8Z: <i>Aviation Safety Technologies</i>							
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
Total Program Element	18.172	6.877	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
901: <i>Aviation Safety Technologies</i>	18.172	6.877	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles												

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

This funding supports Secretary Gates direction to achieve a 75% reduction in accidents and supports the Defense Safety Oversight Council's (DSOC) pursuit of aviation safety technologies. The Guidance for the Development of the Force (GDF) directs DoD Components to pursue accident reduction and prevention initiatives that emphasize safety in the workplace and hold leaders accountable for their safety programs. In FY 2008, there were 89 Class A aviation accidents with 61 destroyed aircraft and 32 fatalities. The aviation accidents cost the Department over \$2.9 billion with indirect costs approximately four times that amount.

The DSOC used a data-driven approach to identify and evaluate the most effective hardware and software technologies to be implemented to reduce preventable aviation mishaps. The DSOC task force surveyed existing programs and provided an assessment of the viability and advisability of future resource investments. These investments will fund hardware and software technology to prevent helicopters and fighter aircraft mishaps.

Automatic Collision Avoidance Technologies (ACAT) has been developed by the Air Force to prevent the most prevalent causes of fighter/attack mishap fatalities and destroyed aircraft. An Automatic Ground Collision Avoidance (Auto-GCAS) component of ACAT has matured and is ready for fleet integration. FY 2010-FY 2012 money was used to leverage the successes of ACAT by furthering the development of Auto-ACAS, while retaining scarce technical expertise and flight test resources currently in use. As an unintended side benefit, Auto-ACAS may also hold a key to Unoccupied Aerial Vehicle access to the National Airspace.

The Secretary stated that we can not and should not tolerate the injuries, costs, and capability losses from preventable accidents.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense					DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>			R-1 ITEM NOMENCLATURE PE 0606301D8Z: <i>Aviation Safety Technologies</i>		
B. Program Change Summary (\$ in Millions)	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total
Previous President's Budget	6.879	0.000	0.000	-	0.000
Current President's Budget	6.877	0.000	0.000	-	0.000
Total Adjustments	-0.002	0.000	0.000	-	0.000
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-0.002	-			
• SBIR/STTR Transfer	-	-			
C. Accomplishments/Planned Programs (\$ in Millions)				FY 2012	FY 2013
Title: Aviation Safety Technologies				6.877	0.000
FY 2012 Accomplishments:					
• Completed algorithm development and began simulations.					
• Completed simulations and ground testing and advanced to F-16 flight test.					
Accomplishments/Planned Programs Subtotals				6.877	0.000
D. Other Program Funding Summary (\$ in Millions)					
N/A					
Remarks					
E. Acquisition Strategy					
N/A					
F. Performance Metrics					
• Class A aviation accident rates. Number of Class A aviation accidents, (resulting in damages of \$2 million or more; aircraft destroyed; and/or fatality or permanent disability), per 100,000 flying hours.					
• Number of destroyed aircraft.					
• Number of aviation fatalities.					
• A 75% reduction goal was assessed against a FY 2002 baseline.					

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY

0400: *Research, Development, Test & Evaluation, Defense-Wide*
BA 6: *RDT&E Management Support*

R-1 ITEM NOMENCLATURE

PE 0203345D8Z: *Defense Operations Security Initiative*

COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013[#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
Total Program Element	0.000	1.720	2.637	5.306	-	5.306	7.121	8.696	8.854	9.026	Continuing	Continuing
345: <i>Defense Operations Security Initiative</i>	0.000	1.720	2.637	5.306	-	5.306	7.121	8.696	8.854	9.026	Continuing	Continuing
Quantity of RDT&E Articles												

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

The Defense Operations Security (OPSEC) Initiative (DOSI) is an effort to revitalize DoD OPSEC capability and capacity across the Department to enable combatant commands (COCOMs), services and defense agencies with the capability and capacity to effectively plan, integrate, execute and assess OPSEC, particularly in concert with Military Deception (MILDEC) and other information-related capabilities used against adversaries or potential adversaries during military operations. The DOSI provides oversight, guidance and program management support for Defense OPSEC education, training, exercises, career force management, operational and programmatic assessment, capability development, intelligence, planning, analysis and operational employment in Defense military operations. RDT&E funds support the development, establishment and integration of OPSEC capabilities, next generation technologies, and Department activities. The objectives of the Defense Operations Security (OPSEC) Initiative are to:

1. Establish governance structures, processes and procedures for development and oversight of infrastructure, policy, authorities, and warfighter advocacy across the Joint community and the defense support agencies and for OPSEC intelligence integration that will focus on the incorporation of special intelligence requirements; intelligence and threat repository support; Open Source Intelligence, Human Intelligence, Counterintelligence and Signals Intelligence support; and intelligence support to Military Deception in Support of OPSEC (DISO).
2. Develop a concept for integrating OPSEC into critical plans, operations and activities that will clearly articulate OPSEC requirements and the means for fulfilling them.
3. Establish an OPSEC force structure to meet the Department's requirements by evaluating existing force structures, focusing on billets, personnel identifications and tracking, allocation, and operational employment.
4. Create an integrated OPSEC education, training and exercise program that can be incorporated with MILDEC and other information-related capabilities and that focuses on exercise support and formal education curricula review and development.
5. Develop a Technology and Tools Research, Testing, and Development Program to identify emerging physical, technical, and administrative technologies and tools.
6. Fully integrate OPSEC and MILDEC so that they synchronize efficiently and effectively.
7. Incorporate OPSEC and MILDEC as an integrated whole with other information-related capabilities such as Military Information Support Operations (MISO), Electronic Warfare (EW), Computer Network Operations (CNO), Intelligence, Counterintelligence (CI), Security, Special Technical Operations (STO) and Public Affairs (PA).

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense	DATE: April 2013
-------------------------------------------------------------------------------------------------	-------------------------

APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>	R-1 ITEM NOMENCLATURE PE 0203345D8Z: <i>Defense Operations Security Initiative</i>
--------------------------------------------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------

8. Establish assessment programs to assess friendly and adversary measures and countermeasures based on observable actions, indicators, or information that can provide a basis for identifying such control measures as Action Controls, Countermeasures, and Counter Analysis and for assessing revised policy, doctrine, force structure, training and governance processes to identify corrective actions.

B. Program Change Summary (\$ in Millions)	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total
Previous President's Budget	1.721	2.637	5.340	-	5.340
Current President's Budget	1.720	2.637	5.306	-	5.306
Total Adjustments	-0.001	0.000	-0.034	-	-0.034
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Department Adjustment	-	-	-0.034	-	-0.034
• Other Program Adjustment	-0.001	-	-	-	-

Change Summary Explanation

Adjustment to fund higher priorities.

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2012	FY 2013	FY 2014
Title: Defense Operations Security Initiative (DOSI)	1.720	2.637	5.306
Description: The Defense Operations Security (OPSEC) Initiative (DOSI) is an effort to revitalize DoD OPSEC capability and capacity across the Department to enable combatant commands (COCOMs), Services and Defense agencies with the capability and capacity to effectively plan, integrate, execute and assess OPSEC, particularly in concert with Military Deception (MILDEC) and other information-related capabilities used against adversaries or potential adversaries during military operations. The DOSI provides oversight, guidance and program management support for Defense OPSEC education, training, exercises, career force management, operational and programmatic assessment, capability development, intelligence, planning, analysis and operational employment in Defense military operations. RDT&E funds support the development, establishment and integration of OPSEC capabilities, next generation technologies, and Department activities.			
FY 2012 Accomplishments: -Developed a tailored DoD OPSEC training course focused on integrating OPSEC with warfighter operations.			

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>		R-1 ITEM NOMENCLATURE PE 0203345D8Z: <i>Defense Operations Security Initiative</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
<p>-Planned and developed a concept and strategy to refocus OPSEC as an operations function designed to reduce availability of critical information and indicators to adversary collection capabilities in order to enhance warfighter operations.</p> <p>-Worked with the Joint Staff to update the Chairman's Instruction on Joint OPSEC (CJCSI 3213.01C).</p> <p>-Worked with Under Secretary of Defense for Policy (USD(P)) to ensure the draft DoD Directive on Information Operations (DoDD 3600.01) effectively addressed OPSEC and MILDEC.</p> <p>-Developed and coordinated an update to the USD(I) chartering Directive (DoDD 5143.01) to specify USD(I) OPSEC and MILDEC responsibilities.</p> <p>-Completed an OPSEC Education and Training Needs Assessment (ETNA) of the COCOMs.</p> <p>-Drafted and informally coordinated a new DoD Instruction on Operational Integration of OPSEC (DoDI 3606.aa).</p> <p>-Coordinated and established a Defense-wide OPSEC governance structure.</p> <p>-Developed a concept for integrating OPSEC into critical plans, operations and activities throughout the Department.</p> <p>-Initiated evaluation of existing reported OPSEC force structure and worked with USD for Policy (USD(P)) and Cost Assessment and Program Evaluation (CAPE) to clarify force structure reporting requirements to better depict the Department's OPSEC capability and capacity.</p> <p>-Initiated an OPSEC Joint Concept Development and Experimentation (JCD&E) initiative to address joint force capability gaps and current/future security challenges.</p> <p>FY 2013 Plans:</p> <p>-Refine and implement the DoD OPSEC training course focused on integrating OPSEC with warfighter operations and examine requirements for additional service, agency and joint OPSEC education and training initiatives.</p> <p>-Refine and further develop the concept and strategy to refocus OPSEC as an operations function and implement viable portions of it.</p> <p>-Finalize and formally coordinate and publish a new DoD Instruction on Operational Integration of OPSEC (DoDI 3606.aa).</p> <p>-Complete evaluation of revised reporting on OPSEC force structures and draft/coordinate objective force structures for COCOMs, services and defense agencies to satisfy the Department's OPSEC capability and capacity requirements.</p> <p>-Work with the Joint Staff, COCOMs, Services and Combat Support Agencies to complete the OPSEC JCD&E initiative and address joint force capability gaps and current/future security challenges to the Joint Requirements Oversight Council (JROC).</p> <p>-Determine OPSEC technology and tools research, testing, and development requirements and advocate for the acquisition of emerging physical, technical, and administrative technologies and tools.</p> <p>-Integrate OPSEC and MILDEC so that they synchronize efficiently and effectively.</p> <p>-Initiate the incorporation of OPSEC and MILDEC as an integrated whole with other information-related capabilities such as Military Information Support Operations (MISO), Electronic Warfare (EW), Computer Network Operations (CNO), Intelligence, Counterintelligence (CI), Security, Special Technical Operations (STO) and Public Affairs (PA).</p>				

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>		R-1 ITEM NOMENCLATURE PE 0203345D8Z: <i>Defense Operations Security Initiative</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
<ul style="list-style-type: none"> -Establish a program to assess friendly and adversary measures and countermeasures based on observable actions, indicators, or information that can provide a basis for identifying such control measures as Action Controls, Countermeasures, and Counter Analysis. -Establish a program to assess revised policy, doctrine, force structure, training and governance processes to identify corrective actions. -Continue OPSEC Joint Concept Development and Experimentation (JCD&E) initiative to address joint force capability gaps and current/future security challenges. <p>FY 2014 Plans:</p> <ul style="list-style-type: none"> -Coordinate prioritization of OPSEC force structure requirements and advocate on the DoD Components' behalf to fill critical priorities and advocate to fill secondary and tertiary priorities as resources become available. -Coordinate with the COCOMs, services and agencies to integrate OPSEC education and training with appropriate information-related capability education and training programs. -Continue to examine OPSEC technology and tools research, testing, and development requirements and advocate for the acquisition of emerging physical, technical, and administrative technologies and tools. -Complete the incorporation of OPSEC and MILDEC as an integrated whole with other information-related capabilities such as MISO, EW, CNO, Intelligence, CI, Security, STO and PA. -Continue to execute a program to assess friendly and adversary measures and countermeasures based on observable actions, indicators, or information that can provide a basis for identifying such control measures as Action Controls, Countermeasures, and Counter Analysis. -Continue to execute a program to assess revised policy, doctrine, force structure, training and governance processes to identify corrective actions. -Continue OPSEC Joint Concept Development and Experimentation (JCD&E) initiative to address joint force capability gaps and current/future security challenges. 				
Accomplishments/Planned Programs Subtotals		1.720	2.637	5.306
D. Other Program Funding Summary (\$ in Millions) N/A				
Remarks				
E. Acquisition Strategy N/A				

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 6: RDT&E Management Support	R-1 ITEM NOMENCLATURE PE 0203345D8Z: Defense Operations Security Initiative	
F. Performance Metrics Performance metrics are measured through internal management controls and external assessments. Performance metrics include, but are not limited to, time, money, realism, and fidelity as defined below: Time - Enable the warfighter to speed up processes faster than current capabilities. Money - Enable the warfighter to reduce duplication of effort and to prepare and execute events at a more effective and efficient cost than current capabilities allow. Realism - Enable the warfighter to create an environment that is closer to the real world environment than current capabilities allow. Fidelity - Ensure unity of efforts throughout the Information Operations (IO), Cyber, and Intelligence Operations Integrations (IOI) Communities.		

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>	R-1 ITEM NOMENCLATURE PE 0303166D8Z: <i>Support to Information Operations Capabilities</i>
--------------------------------------------------------------------------------------------------------------------------------------------------------------	------------------------------------------------------------------------------------------------------

COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
Total Program Element	16.011	11.767	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	27.778
001: <i>IO Range</i>	4.708	9.000	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	13.708
002: <i>IO Capability Activities</i>	11.303	2.767	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	14.070

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

This program was part of the Defense Department's coordinated effort to integrate Information Operations (IO), Cyber, and Intelligence Operations Integrations (IOI) test and evaluation capabilities to assess IO, Cyber, and IOI technologies and tactics in a representative operational environment against realistic targets. The Defensewide IO Program Review revalidated a suite of automated data analysis and decision support software tools to facilitate joint-IO. The advent of critical Cyberspace Operations mandate Cyber Technologies be assessed in a like environment. In addition, joint warfighter requirements were driving the integration of intelligence and operations capabilities/capacities. This program enabled users to accomplish Joint Intelligence Preparation of the Operational Environment (JIPOE), develop effective IO, Cyber, and operational strategies and candidate campaign targets, plan missions, and monitor and assess execution of operations. The objectives of this program were to create a flexible, seamless and persistent environment enabling Combatant Commanders to achieve the same level of confidence and expertise in employing IO and Cyber capabilities that they have in kinetic weapons; to lead the development of joint IOI capabilities and capacity that facilitate operational and intelligence planning activities by the Services and COCOMs; and to transform IO, Cyber, and IOI activities to support joint IO training, education, and exercises.

B. Program Change Summary (\$ in Millions)	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total
Previous President's Budget	11.771	0.000	0.000	-	0.000
Current President's Budget	11.767	0.000	0.000	-	0.000
Total Adjustments	-0.004	0.000	0.000	-	0.000
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Program Adjustment	-0.004	-	-	-	-

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>	R-1 ITEM NOMENCLATURE PE 0303166D8Z: <i>Support to Information Operations Capabilities</i>	PROJECT 001: <i>IO Range</i>
--------------------------------------------------------------------------------------------------------------------------------------------------------------	------------------------------------------------------------------------------------------------------	----------------------------------------

COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
001: <i>IO Range</i>	4.708	9.000	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	13.708
Quantity of RDT&E Articles												

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

The National Military Strategy of the United States stressed the importance of integrating Information Operations (IO) capabilities for the success of Joint Operations and Decision Superiority. The Defense-Wide IO Program Review revalidated a requirement for an integrated range supporting “exercises, testing, and development of IO capabilities.” Further direction by the Office of the Secretary of Defense (OSD) identified the need for an “integrated IO test and evaluation capability to assess IO technologies and tactics in a representative operational environment against realistic targets.” The 2006 National Security Strategy identified "Strengthening Alliances to Defeat Global Terrorism and Work to Prevent Attacks Against Us and Our Friends", which involves significant Information Operations (IO) and Cyber operations as a goal. Through the Defense Planning Guidance (DPG) and the Integrated Priority Lists, COCOMs repeatedly stated the need to expand IO/Cyber training and education for the developing cadre of IO/Cyber professionals and provide an environment for analysis, testing, training, combat assessments, and measures of effectiveness for more reliable IO/Cyber capabilities. The Deputy Secretary of Defense Memorandum on the IO Range had established the requirement for creating a cooperative IO range among the Military Services.

The IO Range provided a secure, flexible, and seamless environment for the Military Services and Joint warfighters to test, train, develop tactics, and exercise selected IO/Cyber capabilities. The basis of the functional structure of the IO Range was the integration of existing ranges, laboratories, information warfare centers, and other Government facilities that currently support IO/Cyber test, training, exercise, and experimentation events. Capabilities at the selected sites were securely connected and integrated into the IO Range. A key feature of this concept was a persistent, secure connection that linked the sites together, allowing the exchange of data and the visualization of effects as we employed capabilities. Creation of a “virtual range” based on persistent connections significantly reduced the amount of lead-time required to set up each new warfighter event. The IO Range was a full spectrum IO/Cyber Range supporting: operations security (OPSEC), computer network operations (CNO), electronic warfare (EW), military information support operations (MISO), and military deception (MILDEC). This environment enabled warfighters to visualize non-kinetic weapons effects, understand the intricate and interactive effects generated by kinetic and non-kinetic weapons and achieve the same level of confidence and expertise in employing IO/Cyber capabilities as they have with kinetic capabilities.

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2012	FY 2013	FY 2014
Title: IO Range	9.000	0.000	0.000
FY 2012 Accomplishments:			
- Developed, tested and evaluated IO Range concepts during events based on a list of prioritized requirements and available funding.			
- Moved toward full spectrum IO and Cyber and evolved with the addition of a more robust set of targets.			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>		R-1 ITEM NOMENCLATURE PE 0303166D8Z: <i>Support to Information Operations Capabilities</i>	PROJECT 001: <i>IO Range</i>
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
<p>- Implemented IO and Cyber capabilities at field sites. This effort supported progress toward reaching full capability in which more than 90 persistent IO Range sites were connected and integrated for IO Range use.</p> <p>FY 2013 Plans: N/A</p> <p>FY 2014 Plans: N/A</p>			
Accomplishments/Planned Programs Subtotals		9.000	0.000
C. Other Program Funding Summary (\$ in Millions) N/A			
Remarks			
D. Acquisition Strategy The acquisition, management, and contracting strategy followed guidance outlined in DoD 5000 series directives, Federal Acquisition Regulation (FAR), and FAR supplement policies and procedures. Management used project management tools and meetings to ensure delivery of stated capabilities performance criteria.			
E. Performance Metrics Performance metrics were measured through internal management controls and external assessments. Performance metrics included, but were not limited to time, money, realism, and fidelity as defined below:			
<ul style="list-style-type: none"> • Time – Enabled the warfighter to speed up processes faster than past capabilities allowed. • Money – Enabled the warfighter to reduce duplication of effort and to prepare and execute events at a more effective and efficient cost than past capabilities allowed. • Realism – Enabled the warfighter to create an environment that was closer to the real world environment than past capabilities allowed. • Fidelity – Ensured unity of efforts throughout the IO, Cyber, and IOI Communities. 			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>					R-1 ITEM NOMENCLATURE PE 0303166D8Z: <i>Support to Information Operations Capabilities</i>				PROJECT 002: <i>IO Capability Activities</i>			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013[#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
002: <i>IO Capability Activities</i>	11.303	2.767	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	14.070
Quantity of RDT&E Articles												
[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012 ^{##} The FY 2014 OCO Request will be submitted at a later date												
A. Mission Description and Budget Item Justification												
This project supported new and cutting-edge operational activities that addressed the issues of rapidly changing technology and the complex inter-relationships associated with data exchange and analysis. This included support of data analysis tools for assessment of machine-based and electromagnetic spectrum-based information transmittal.												
B. Accomplishments/Planned Programs (\$ in Millions)										FY 2012	FY 2013	FY 2014
Title: IO Capability Activities										2.767	0.000	0.000
FY 2012 Accomplishments: Supported development of IO, cyber and IOI cutting-edge capabilities that supported COCOMs and Services executing operations during current and future conflicts.												
FY 2013 Plans: N/A												
FY 2014 Plans: N/A												
Accomplishments/Planned Programs Subtotals										2.767	0.000	0.000
C. Other Program Funding Summary (\$ in Millions)												
N/A												
Remarks												
D. Acquisition Strategy												
IO Capability Activities acquisition, management, and contracting strategy followed guidance outlined in DoD 5000 series directives, Federal Acquisition Regulation (FAR), and FAR supplement policies and procedures. Management used project management tools and meetings to ensure delivery of stated capabilities performance criteria.												

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>	R-1 ITEM NOMENCLATURE PE 0303166D8Z: <i>Support to Information Operations Capabilities</i>	PROJECT 002: <i>IO Capability Activities</i>
E. Performance Metrics <p>Performance metrics were measured through internal management controls and external assessments. Performance metrics included, but were not limited to time, money, realism, and fidelity as defined below:</p> <ul style="list-style-type: none">• Time – Enabled the warfighter to speed up processes faster than past capabilities allowed.• Money – Enabled the warfighter to reduce duplication of effort and to prepare and execute events at a more effective and efficient cost than past current capabilities allowed.• Realism – Enabled the warfighter to create an environment that was closer to the real world environment than past capabilities allowed.• Fidelity – Ensured unity of efforts throughout the IO, Cyber, and IOI Communities.		

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense	DATE: April 2013
-------------------------------------------------------------------------------------------------	-------------------------

APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>	R-1 ITEM NOMENCLATURE PE 0303169D8Z: <i>Information Technology Rapid Acquisition</i>
--------------------------------------------------------------------------------------------------------------------------------------------------------------	------------------------------------------------------------------------------------------------

COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
Total Program Element	0.000	4.146	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
169: <i>IT Rapid Acquisition</i>	0.000	4.146	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles												

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

This PE is dedicated to Rapid Acquisition Incentives – Net Centricity (RAI-NC) which serves DoD by providing RDT&E proof-of-concept early implementation of key initiatives targeted at advancing and moving the Mission Areas of DoD towards Net Centricity. The PE permits accelerating domain support processes through rapid proof of concept development and early implementation.

RAI-NC provides funding for Net Centric initiatives that directly support and facilitate the transformation of the DoD enterprise. This effort is consistent with the Department's strategic goals to: enable net-centric operations and warfare, reduce costs; improve efficiency; increase effectiveness by improving the efficiency and effectiveness of process redesign; business systems modernization; strategic sourcing; infrastructure reductions; and optimal-sized inventories. The scope of Rapid Acquisition Incentives – Net Centricity encompasses defense policies, processes, people, technologies, and systems that guide, perform, or support aspects of warfighter support processes within the Department. Successful implementation will result in more reliable, accurate, and timely net-centric management information upon which managers can make more effective business decisions in a timely manner for the Department. Successful initiatives with supporting business cases demonstrating the achieved goals and outcomes and mission area support will be allowed to enter full deployment. This program is funded under BA-6, Management Support because it includes studies and analyses in support of R&D efforts.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense				DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY		R-1 ITEM NOMENCLATURE			
0400: Research, Development, Test & Evaluation, Defense-Wide BA 6: RDT&E Management Support		PE 0303169D8Z: Information Technology Rapid Acquisition			
B. Program Change Summary (\$ in Millions)	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total
Previous President's Budget	4.147	0.000	0.000	-	0.000
Current President's Budget	4.146	0.000	0.000	-	0.000
Total Adjustments	-0.001	0.000	0.000	-	0.000
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Program Adjustment	-0.001	-	-	-	-
Change Summary Explanation					
Program Change Explanation:					
FY 2012: Program Adjustment -0.001 million.					
FY 2013: No change.					
FY 2014 No change.					
C. Accomplishments/Planned Programs (\$ in Millions)	FY 2012	FY 2013	FY 2014		
Title: IT Rapid Acquisition Plans and Accomplishments	4.146	0.000	0.000		
FY 2012 Accomplishments:					
• Provided oversight and guidance to DISA in developing/refining the NIPRNet/SIPRNet infrastructures to achieve full IPv6 capability.					
• Collaborated with the National Security Agency (NSA) and the Intelligence Community (IC) to obtain IPv6 security requirements and guidance documents.					
• Monitored the DoD IPv6 Address Plan implementation to allocate IPv6 address space to DoD Components and the Director of National Intelligence (DNI).					
• Collaborated with DoD and Federal agencies on IPv6 Test and Evaluation (T&E) and standards issues, as well as DoD and National Institute for Standards and Technology (NIST) IPv6 certification processes.					
• Implemented the DoD UC Master Plan (MP) to establish UC planning guidelines for the DoD Components.					
• Performed industry and government outreach efforts to facilitate development/implementation of DoD UC/IPv6 policy and processes.					
• Oversaw the implementation of the ITIORA for the Joint bases and expand the IT Infrastructure Reference Architecture to support installations across DoD.					

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>		R-1 ITEM NOMENCLATURE PE 0303169D8Z: <i>Information Technology Rapid Acquisition</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
<ul style="list-style-type: none"> Produced DoD CUI Transition Plan based upon NARA policy and emerging guidance. Implemented new techniques and tools to support implementation and use of CUI markings within the DoD Data Strategy for metadata marking and use in attribute-based access control for Identity, Credential, and Access Management. <p>FY 2013 Plans: This program was identified as a Department Efficiency and has been terminated.</p> <p>FY 2014 Plans: N/A.</p>				
Accomplishments/Planned Programs Subtotals		4.146	0.000	0.000
D. Other Program Funding Summary (\$ in Millions) N/A				
Remarks				
E. Acquisition Strategy N/A				
F. Performance Metrics <ul style="list-style-type: none"> Timely development and issuance of policy, guidance, processes, and technologies to build, populate, govern, operate, and protect the Network. Development of plans and implementation activities for net centric data and IPv6 transformation capabilities. 				

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense	DATE: April 2013
-------------------------------------------------------------------------------------------------	-------------------------

APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE							
0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>					PE 0305193D8Z: <i>Cyber Intelligence</i>							
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
Total Program Element	20.987	14.997	16.041	7.624	-	7.624	7.681	7.544	7.576	7.616	Continuing	Continuing
001: <i>Cyber and Intelligence Operations Integration</i>	20.987	14.997	16.041	7.624	-	7.624	7.681	7.544	7.576	7.616	Continuing	Continuing

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

- The program element encompasses those activities pertaining to operations support and intelligence integration, cyber technology innovation, intelligence and related activities in Cyberspace, and strategic assessments.
- This program is a part of the overall Department effort to implement best practices and DoD doctrinal processes which require shared responsibility and close synchronization among intelligence, operations and associated planning elements. Joint Warfighter requirements are driving the need for the integration of intelligence and operations capabilities/capacities.
- The objective of this program is the rapid development and institutionalization, by leveraging research and development investments, of new cyber intelligence and Intelligence Operations Integration (IOI) technology, concepts and capabilities for Joint and Coalition Warfighters.

B. Program Change Summary (\$ in Millions)	<u>FY 2012</u>	<u>FY 2013</u>	<u>FY 2014 Base</u>	<u>FY 2014 OCO</u>	<u>FY 2014 Total</u>
Previous President's Budget	15.002	16.041	15.591	-	15.591
Current President's Budget	14.997	16.041	7.624	-	7.624
Total Adjustments	-0.005	0.000	-7.967	-	-7.967
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Department Adjustment	-	-	-7.967	-	-7.967
• Program Adjustment	-0.005	-	-	-	-

Change Summary Explanation

Decrease is due to mission change and subsequent completion/transition of Cyber Intelligence projects.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 6: RDT&E Management Support					R-1 ITEM NOMENCLATURE PE 0305193D8Z: Cyber Intelligence				PROJECT 001: Cyber and Intelligence Operations Integration			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
001: Cyber and Intelligence Operations Integration	20.987	14.997	16.041	7.624	-	7.624	7.681	7.544	7.576	7.616	Continuing	Continuing
Quantity of RDT&E Articles												
# FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012												
## The FY 2014 OCO Request will be submitted at a later date												
A. Mission Description and Budget Item Justification												
The Cyber and Intelligence Operations Integration Project will integrate intelligence activities in the information environment and Cyberspace with conventional and asymmetric military operations; furthermore, they will provide new technologies, methodologies and processes to increase the delivery of actionable intelligence from the Defense Intelligence Enterprise to the Warfighter.												
B. Accomplishments/Planned Programs (\$ in Millions)										FY 2012	FY 2013	FY 2014
Title: Cyber and Intelligence Operations Integration										14.997	16.041	7.624
FY 2012 Accomplishments: - Developed cyber and IOI capabilities and capacity to support Combatant Commands (COCOMs) and Services to execute cyber and asymmetric operations activities. - Supported the development of critical and emerging cyber, cyber intelligence, and IOI technologies that support warfighter needs.												
FY 2013 Plans: - Develop cyber and IOI capabilities and capacity to support COCOMs and Services to execute cyber and asymmetric operations activities. - Support the development of critical and emerging cyber, cyber intelligence, and IOI technologies that support warfighter needs.												
FY 2014 Plans: - Continue to develop cyber and IOI capabilities and capacity to support COCOMs and Services to execute cyber and asymmetric operations activities. - Continue to support the development of critical and emerging cyber, cyber intelligence, and IOI technologies that support warfighter needs.												
Accomplishments/Planned Programs Subtotals												
C. Other Program Funding Summary (\$ in Millions)												
N/A												

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>	R-1 ITEM NOMENCLATURE PE 0305193D8Z: <i>Cyber Intelligence</i>	PROJECT 001: <i>Cyber and Intelligence Operations Integration</i>
C. Other Program Funding Summary (\$ in Millions)		
Remarks		
D. Acquisition Strategy The Cyber and Intelligence Operations Integration acquisition, management, and contracting strategy follows guidance outlined in DoD 5000 series directives, Federal Acquisition Regulation (FAR), and FAR supplement policies and procedures. Management uses project management tools and meetings to ensure delivery of stated capabilities performance criteria.		
E. Performance Metrics Performance metrics are measured through internal management controls and external assessments. Performance metrics include, but are not limited to time, money, realism, and fidelity as defined below: <ul style="list-style-type: none">• Time – Enable the warfighter to speed up processes faster than current capabilities allow.• Money – Enable the warfighter to reduce duplication of effort and to prepare and execute events at a more effective and efficient cost than current capabilities allow.• Realism – Enable the warfighter to create an environment that is closer to the real world environment than current capabilities allow.• Fidelity – Ensure unity of efforts throughout the cyber and IOI Communities.		

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE							
0400: Research, Development, Test & Evaluation, Defense-Wide					PE 0305400D8Z: Warfighting and Intelligence-Related Support							
BA 6: RDT&E Management Support												
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
Total Program Element	0.838	0.861	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	1.699
400: Warfighting and Intelligence-Related Support	0.838	0.861	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	1.699
Quantity of RDT&E Articles												
[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012												
^{##} The FY 2014 OCO Request will be submitted at a later date												
A. Mission Description and Budget Item Justification												
This program supported the alignment of policies and programs with current operational requirements, oversight and sufficiency of special access programs, conduct of various intelligence-related activities and warfighter support efforts, strategies and assessments, and alignment of cutting-edge and emerging technologies for warfighter needs. In FY 2013, funds were realigned to O&M for proper execution.												
B. Program Change Summary (\$ in Millions)				FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total				
Previous President's Budget				0.861	0.000	0.000	-	0.000				
Current President's Budget				0.861	0.000	0.000	-	0.000				
Total Adjustments				0.000	0.000	0.000	-	0.000				
• Congressional General Reductions				-	-							
• Congressional Directed Reductions				-	-							
• Congressional Rescissions				-	-							
• Congressional Adds				-	-							
• Congressional Directed Transfers				-	-							
• Reprogrammings				-	-							
• SBIR/STTR Transfer				-	-							
C. Accomplishments/Planned Programs (\$ in Millions)									FY 2012	FY 2013	FY 2014	
Title: Warfighting and Intelligence-Related Support									0.861	0.000	0.000	
FY 2012 Accomplishments:												
Developed new concepts, and conducted studies and assessments that developed aligning strategies, created policies, and technological exploration in support of Defense Intelligence Enterprise oversight.												
FY 2013 Plans:												

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>		R-1 ITEM NOMENCLATURE PE 0305400D8Z: <i>Warfighting and Intelligence-Related Support</i>	
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
N/A			
FY 2014 Plans: N/A			
Accomplishments/Planned Programs Subtotals		0.861	0.000
D. Other Program Funding Summary (\$ in Millions) N/A			
Remarks			
E. Acquisition Strategy N/A			
F. Performance Metrics N/A			

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY

0400: *Research, Development, Test & Evaluation, Defense-Wide*
BA 6: *RDT&E Management Support*

R-1 ITEM NOMENCLATURE

PE 0804767D8Z: *COCOM Exercise Engagement and Training Transformation (CE2T2)*

COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013[#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
Total Program Element	37.534	37.255	77.475	43.247	-	43.247	44.008	43.086	43.919	44.906	Continuing	Continuing
758: <i>Joint National Training Capability (JNTC)</i>	17.921	21.245	24.381	23.211	-	23.211	26.256	27.908	31.074	31.849	Continuing	Continuing
761: <i>Joint Simulations Systems (JSS)</i>	7.208	0.000	3.017	3.098	-	3.098	2.193	2.333	0.000	0.000	0.000	17.849
769: <i>Joint Knowledge Development & Distribution Capability (JKDDC)</i>	2.194	2.181	4.656	4.000	-	4.000	4.000	4.000	4.000	4.066	Continuing	Continuing
770: <i>U.S. Forces Korea Training and Exercise Support</i>	10.211	7.342	6.497	6.451	-	6.451	4.483	1.378	1.378	1.401	Continuing	Continuing
754: <i>Immersive Simulation</i>	0.000	0.000	32.900	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	32.900
701: <i>Air Force JNTC</i>	0.000	2.955	2.041	2.307	-	2.307	2.716	2.794	2.794	2.840	Continuing	Continuing
772: <i>Navy JNTC</i>	0.000	3.532	3.983	4.180	-	4.180	4.360	4.673	4.673	4.750	Continuing	Continuing

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

These programs support readiness of the joint force by creating a Joint Training Environment to replicate the complex and ever changing operational environment. These investments support the Secretary of Defense's (SECDEF) Combatant Commanders Exercise Engagement and Training Transformation (CE2T2) initiative to enable and enhance Joint Warfighting readiness by training as we intend to fight. The elements associated with this coordinated effort consist of:

- Joint National Training Capability (JNTC)
- Joint Simulation Systems (JSS)
- Joint Knowledge Development & Distribution Capability (JKDDC)
- U.S. Forces Korea Training & Exercise Support (USFK)
- Air Force JNTC
- Navy JNTC

JNTC: The Joint National Training Capability (JNTC) program adds joint/integrated context to existing Service and Combatant Commander (COCOM) training programs. This is accomplished through integrated live, virtual, and constructive training environment and prepares units, and commanders for operations in joint/

PE 0804767D8Z: *COCOM Exercise Engagement and Training Transformation...*

Office of Secretary Of Defense

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>		R-1 ITEM NOMENCLATURE PE 0804767D8Z: <i>COCOM Exercise Engagement and Training Transformation (CE2T2)</i>
<p>integrated operational environments. JNTC can train against a general or mission focused threat; test doctrine, tactics, techniques, procedures, Joint Operational Concepts, and equipment. As the integrating environment, JNTC provides training to the full complement of defense, inter-agency and multi-national audiences. Active and reserve forces train in a realistic joint context with other Services and joint/integrated battle staffs. Battle staffs from joint, component, and tactical headquarters train and rehearse using real-world command and control systems, with tactical forces represented through simulation support.</p> <p>JSS: The Joint Simulation System provides the joint models and simulation enabling trained, capable, and interoperable Joint Forces. This effort provides warfighters with the joint simulation to keep pace with operational environment supporting the Joint Force 2020 and ensure the Joint Training Environment reacts to strategic guidance such as training in anti-access anti-denial environments.</p> <p>JKDDC: Joint Knowledge Online (JKO) is the DOD unique and authoritative source for online joint training. They are tasked to develop a Joint Individual Training Toolkit of web-enabled individual and small group training products and services. Products and services are developed in response to OSD(P&R) CE2T2 Program Goals & Objectives guidance, CJCS High Interest Training Items, Joint Staff J7 training priorities, and JKDDC Joint Knowledge Online (JKO) Stakeholder (CCMDs, Services, and Combat Support Agencies) prioritized training requirements. JKDDC JKO supports a career-long joint learning continuum, joint professional military education and tailored common training standards to Service members for tasks that are jointly executed, resulting in trained, capable, and interoperable joint forces. JKDDC JKO technology initiatives principally include Small Group Scenario Trainer (SGST) desk top modeling & simulation based training, OSD requested virtual worlds prototype, and mobile “pilot” courseware training devices. These capabilities facilitate the training and preparation of tens of thousands of military and civilian personnel deploying to CCMD theaters of operation prior to serving in their assigned Combined/Joint Task Force (C/JTF) billets. Specifically, C/JTF ‘battle staffs’ will be adequately trained, as individuals and the staffs collectively, based on SGST development and implementation throughout the joint training enterprise. JKO mobile “pilot” courseware training device development facilitates the global distribution of web-based joint training content on portable, hand-held platforms for joint warriors. The future virtual worlds learning environment will provide training and learning to promote adaptability and agility in the workforce with the capability to tailor and adapt instructional material to fit the learner's strengths and weaknesses, learning style, and level of proficiency.</p> <p>USFK: This program provides to Joint Training Environment to support the 2015 stand-up of KORCOM as a sub-unified command under PACOM. This program is developing a Jointly Accredited and Supported Modeling & Simulation federation of constructive simulations capable of satisfying all joint exercise training requirements in the Korean Theater of Operations. This simulation system is also interoperable with the Republic of Korea developed Korean Simulation System. This solution will be capable of interoperating in a common battle space that realistically represents the operating environment to all levels of training audiences, tactical to strategic, in Korean theater exercises. While supporting USFK’s specific requirements, this solution will contain enhancements that will benefit all users of the JLVC.</p> <p>Air Force JNTC: Supports the SECDEF's Transformation in Training/Joint National Training Capability (JNTC). Develops capabilities that integrate live, virtual, and constructive elements into a seamless joint training environment. Using a scientific and phased approach and focusing on modeling air and space capabilities, researches new technologies and methods that provide a crucial technology-based foundation supporting all JNTC operations.</p> <p>Navy JNTC: Supports SECDEF Transformation of DoD training and Joint National Training Capability. These funds enable Navy in developing unique maritime capabilities that integrate live, virtual, and constructive elements into a seamless joint training environment. Navy continues to develop and integrated joint training technologies that play a crucial role in its ability to address current and future joint operational training requirements. Navy program activities include conducting</p>		

PE 0804767D8Z: *COCOM Exercise Engagement and Training*
Transformat...

Office of Secretary Of Defense

UNCLASSIFIED

Page 2 of 31

R-1 Line #178

Volume 3 - 832

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense	DATE: April 2013
-------------------------------------------------------------------------------------------------	-------------------------

APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>	R-1 ITEM NOMENCLATURE PE 0804767D8Z: <i>COCOM Exercise Engagement and Training Transformation (CE2T2)</i>
--------------------------------------------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------------------

research, development, test and evaluation and cross-service architecture certification on all T2 capable systems, developing cross-domain architectures for US and Coalition Forces as well as ensure sister service modeling/simulation and instrumentation efforts follow a common unified standard.

B. Program Change Summary (\$ in Millions)	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total
Previous President's Budget	37.255	77.475	59.060	-	59.060
Current President's Budget	37.255	77.475	43.247	-	43.247
Total Adjustments	0.000	0.000	-15.813	-	-15.813
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Immersive Simulation terminated as part of Secretary of Defense efficiencies	-	-	-15.813	-	-15.813

Change Summary Explanation

Immersive Simulation terminated as part of Secretary of Defense ten percent efficiency reduction and also reflects a reduction in the CE2T2 fiscal guidance topline.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 6: RDT&E Management Support					R-1 ITEM NOMENCLATURE PE 0804767D8Z: COCOM Exercise Engagement and Training Transformation (CE2T2)				PROJECT 758: Joint National Training Capability (JNTC)			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
758: Joint National Training Capability (JNTC)	17.921	21.245	24.381	23.211	-	23.211	26.256	27.908	31.074	31.849	Continuing	Continuing
Quantity of RDT&E Articles												
# FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012												
## The FY 2014 OCO Request will be submitted at a later date												
A. Mission Description and Budget Item Justification												
OSD P&R established the JNTC to improve readiness of the force by developing a robust Joint training environment that represents the complexities of the operational environment through the seamless integration of Live, Virtual, and Constructive (LVC) elements. JNTC creates Joint warfighting conditions through a networked collection of interoperable training sites, ranges, and nodes that synthesize personnel, doctrine, and technology to deliver and achieve “Joint Context” for CCMD and Service training requirements. JNTC provides RDT&E within an LVC distributed test-bed supporting the advancement of training technologies in the context of a Joint integrated battle space. The test bed operates as a continuous training RDT&E environment, providing the foundation for a distributed and deployable Mission Rehearsal System, integrating live Intelligence, Surveillance and Reconnaissance feeding the Common Operational Picture. These funds provide critical Joint/Coalition Service members and interagency partners enhanced training to allow requisite enhancements to existing training systems, capabilities, and technologies. These enhancements improve training efficiencies and provide an integrated LVC environment. This capability minimizes the necessity for conducting large-scale live exercises to achieve the SECDEF’s Combatant Commanders Exercise Engagement and Training and Transformation (CE2T2) vision.												
B. Accomplishments/Planned Programs (\$ in Millions)										FY 2012	FY 2013	FY 2014
Title: Joint National Training Center (JNTC)										21.245	24.381	23.211
Description: Initially established in 2003, JNTC continues to develop and integrate Advanced Training Technologies into a seamless Joint training environment. JNTC establishes the overarching Joint framework and context necessary for CCMDs and Services to achieve a Joint training environment through an integrated network of training sites and nodes. JNTC provides the common standards, architecture, and development processes required to link Joint training programs. By leveraging existing training programs or initiating specific actions, JNTC is developing credible opposing force capabilities and expanded access to assets typically unavailable to the training audience by developing and integrating modeled and simulated representations of these capabilities. This furthers the integration of Joint training objectives into Service training events, while capturing the objective data necessary to provide a complete and accurate after action review. This program develops and enhances current and future Joint training enterprise capabilities.												
FY 2012 Accomplishments:												

PE 0804767D8Z: *COCOM Exercise Engagement and Training Transformat...*

Office of Secretary Of Defense

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>	R-1 ITEM NOMENCLATURE PE 0804767D8Z: <i>COCOM Exercise Engagement and Training Transformation (CE2T2)</i>	PROJECT 758: <i>Joint National Training Capability (JNTC)</i>

B. Accomplishments/Planned Programs (\$ in Millions)

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2012	FY 2013	FY 2014
<ul style="list-style-type: none"> • Developed the Joint Live Virtual Constructive 2020 modeling and simulation strategy, roadmap, and conceptual design working with the Services, Combatant Commands, Coalition partners, Agencies, and the Department of Defense Modeling and Simulation community to deliver a future modeling and simulation training environment reliant on cloud-enabled modular services with an initial operating capability in fiscal year 2016, and operational capability in fiscal year 2019. The current modeling and simulation federation supporting joint and coalition training is unsustainable and unable to keep pace with the rapidly changing joint operational environment training requirements of the future. In order comply with Department of Defense guidance on cloud computing and meet warfighter training needs, the Joint Live Virtual Constructive modeling and simulation federation must be re-engineered to be adaptive, agile, and affordable. • Began collaborative planning efforts with the Services and Defense Information Systems Agency to create a future adaptive and agile Joint Training Enterprise Architecture enabling an affordable joint training environment that emulates the complexity, uncertainty, and dynamic nature of the Joint Force 2020 operating environment. • Demonstrated a second use case for extension of the Combined Enterprise Regional Information Exchange System International Security Assistance Force Training Federation into Australia. • Completed redesign and implementation of the Australia, Canada, Great Britain, and United States Training Enclave, and operationalized this enclave for training. • Demonstrated proof of concept for Navy requirements in Joint Staff J7/Navy/Air Force Cross Domain Solution Pilot Program, a consolidation of requirements necessary to achieve an enterprise and eliminate artificial boundaries between disparate organizations with similar requirements. Redirected focus to Air Force requirements. • Continued Joint Training Enterprise Network Test Bed systems certification, product evaluation, problem replication and troubleshooting, to be conducted off the production network. The test bed significantly mitigates risk to the operational network, permitting simultaneous test & evaluation without impact to training events, and permits fielding capabilities at a much quicker rate than waiting for windows of availability on the production network. • Transitioned Joint Training Enterprise Network 2.0 technology upgrade to operational use to replace old network sites with new technology (version 2.0) and increasing the capacity, throughput, efficiency, and security of the network. • Completed the installation of a new Joint Exercise Control Group capability in Pentagon to provide initial Interagency integration home station support for participation of Joint and Combatant Command collective training events. • Completed planning phase of the Virtual Collective Training Environment project. This project will capitalize on emerging capabilities in Department of Defense's Virtual World Framework and 21st century Web technologies to deliver an initial capability release (prototype) of a three-dimensional Virtualized Collective Training Environment that supports the ability to exercise command and control systems and tactical voice radio systems in a Cloud enabled virtual environment supporting Joint, Service, Combatant Command, and experimentation/test communities. The prototype is an initial subset of emulated real world command and control systems embedded in a virtual world environment that mirrors the capabilities and facilities of a live Joint Operations 			

PE 0804767D8Z: COCOM Exercise Engagement and Training Transformat...

Office of Secretary Of Defense

UNCLASSIFIED

Page 5 of 31

R-1 Line #178

Volume 3 - 835

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>	R-1 ITEM NOMENCLATURE PE 0804767D8Z: <i>COCOM Exercise Engagement and Training Transformation (CE2T2)</i>	PROJECT 758: <i>Joint National Training Capability (JNTC)</i>

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2012	FY 2013	FY 2014
<p>Center. This virtual Joint Operations Center will be a prototype for future capabilities integrated into the next generation joint training environment.</p> <ul style="list-style-type: none"> • Completed communication technologies research and development initiative to facilitate the distribution of mixed reality training around the globe. This facilitates home-station operations vice having to relocate operators to remote locations. The technologies ensure warfighter's pre-deployment training closely replicates real-world operations. • Continued development of the Joint After Action Review Resource Library to improve stability and usability to enhance near-real time and post event Live-Virtual-Constructive assessment of Joint Warfighter's performance. Completed development planning and investment roadmap to deliver a web-based user interface and Joint After Action Review Resource Library as an enterprise service via cloud computing in fiscal year 2016 integrated within the Joint Training Enterprise Architecture. • Completed integration of the Marine Air-Ground Task Force Tactical Warfare Simulation into the Joint Live Virtual Constructive modeling and simulation federation. Completed research and testing of a prototype solution for a web services framework that will enable seamless information exchange between Joint Staff training information systems and Net-Centric Enterprise Services information services available on the Global Information Grid. • Developed a rapid synthetic civilian environment capability to support service level tactical gaming. • Completed the All Things Missile initial capabilities document and established the initial operational capability by fielding the prototype for a scalable, dynamic, low cost and low overhead technical solution in support of strategic to tactical missile mission training for Combatant Command and Service stakeholders. • Completed software modification of the National Security Agency's Joint Cryptologic Mission Simulation system in order to integrate with the Joint Live Virtual Construction modeling and simulation training federation. When completely integrated this will deliver the full capability of the National Security Agency into the Joint training environment thus providing an enhanced capability to train all Service Signals Intelligence analysts and allow Joint and Service staffs to integrate these capabilities into training events prior to deployment. • Completed research and development efforts to mitigate identified Joint training cross-domain information sharing issues and release Increment 1 of a cross domain enterprise solution for Joint training environment. • Researched services in the area of system-of-system interoperability in joint training including command and control, sensor and robotic to simulation interoperability leading to preparation of Coalition Battle Management Services capabilities for integration into North Atlantic Treaty Organization Research Technology Organization Model and Simulation Group 085 "C2 to Simulation Interoperability," the Technical Cooperation Program Coalition Attack Guidance Experiment due to execute in fiscal year 2013, and other North Atlantic Treaty Organization Allied Command Transformation demonstrations and integration events. • Initiated engagements with Combatant Commands to determine their exercise cyber training requirements and objectives through participation in exercise planning conferences. • Began development of cyber training capabilities to support Combatant Commands exercise programs. 			

PE 0804767D8Z: *COCOM Exercise Engagement and Training Transformat...*

Office of Secretary Of Defense

UNCLASSIFIED

Page 6 of 31

R-1 Line #178

Volume 3 - 836

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>	R-1 ITEM NOMENCLATURE PE 0804767D8Z: <i>COCOM Exercise Engagement and Training Transformation (CE2T2)</i>	PROJECT 758: <i>Joint National Training Capability (JNTC)</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
<ul style="list-style-type: none"> Initiated Information Assurance certification and accreditation of cyber software application on Non-Secure Internet Protocol Router Network. <p>FY 2013 Plans:</p> <p>To have a relevant post Operation Enduring Freedom joint training environment, continue development and refinement of the Joint Live Virtual Constructive 2020 modeling and simulation strategy, roadmap, and conceptual design working with the Services, Combatant Commands, Coalition partners, Agencies, and the Department of Defense (DOD) Modeling and Simulation community. To comply with DOD IT enterprise direction, deliver a future modeling and simulation training environment reliant on cloud-enabled modular services with an initial capability in fiscal year 2016, and operational capability in fiscal year 2019.</p> <p>Conduct Joint Live Virtual Constructive 2020 Integration Event #1.</p> <ul style="list-style-type: none"> Research and define the future joint training enterprise communications and information services construct of the Joint Training Enterprise Architecture and develop a Systems Engineering Plan supporting the architecture development effort. The goal is to align the joint training enterprise with Department of Defense Joint Information Enterprise project to comply with Department guidance and provide agile and adaptive Joint training capabilities supporting warfighter requirements while reducing overall operating and sustainment costs. Continue planning, research, and development of a prototype cloud computing and virtualization environment supporting the Joint Training Enterprise Architecture. <p>In coordination with the Services and Combatant Commands, develop a Joint Training Enterprise Architecture concept of operations document to describe how the future Joint Training Environment will support Joint Force Development in 2020.</p> <ul style="list-style-type: none"> Develop modular mix and match integration of simulation activity and Master Scenario Event List events to simplify and reduce manpower through automation within the Joint Live, Virtual, and Constructive modeling and simulation federation. Continue to enhance Joint Logistics modeling within the Joint Live Virtual Constructive modeling and simulation federation to increase realism of logistics planning and execution in training by providing simulated in transit visibility of logistics Demonstrate Joint Training Enterprise Network capability from the Pentagon in a scheduled Joint, Service, or Combatant Command event that has interagency involvement. This proof of concept demonstration allows interagency organizations to participate from the Pentagon rather than from a down range location. Virtual Collective Training Environment will complete Phase 2, Proof of Concept. The primary objectives of this phase are to refine the requirements established in Phase 1, develop and deliver additional architectural products, perform the bulk of the project's systems engineering and software development, and conduct a proof of concept demonstration. This demonstration investigates Virtual World Framework capabilities, assesses these capabilities against mission requirements, and conducts a comparative analysis. The fundamental questions to be answered are how well virtual world technologies satisfy collective joint 			

PE 0804767D8Z: *COCOM Exercise Engagement and Training Transformat...*

Office of Secretary Of Defense

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 6: RDT&E Management Support	R-1 ITEM NOMENCLATURE PE 0804767D8Z: COCOM Exercise Engagement and Training Transformation (CE2T2)	PROJECT 758: Joint National Training Capability (JNTC)		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
<p>training requirements; how these technologies can be quickly adapted to meet new training requirements; and what the overall cost is to employ these technologies compared to current practices within collective joint training.</p> <ul style="list-style-type: none">Continue Joint Training Enterprise Network Test Bed systems certification, product evaluation, network problem replication and troubleshooting, to be conducted off the production network. The test bed significantly mitigates risk to the operational network, permits simultaneous test and evaluation without impact to exercise events, and permits fielding capabilities at a much quicker rate than waiting for windows of availability on the production network.Expand the visibility, accessibility and reuse of modeling and simulation data by developing an initial operating capability that provides consumers the ability to search for and down load Order Of Battle data from different sources.Evaluate the potential of standard web-based services combined with Virtual World type technologies to support Joint Training using emulated command and control systems.Research services in the area of system-of-system interoperability in joint training and experimentation including command and control, sensor and robotic to simulation interoperability.Evaluation and development of methods supporting initialization, orchestration and composition of Live, Virtual, and Constructive systems using Coalition Battle Management Services. <p>FY 2014 Plans:</p> <p>Continue development and refinement the Joint Live Virtual Constructive 2020 modeling and simulation strategy, roadmap, and conceptual design working with the Services, Combatant Commands, Coalition partners, Agencies, and the Department of Defense Modeling and Simulation community to deliver a future modeling and simulation training environment reliant on cloud-enabled modular services with an initial capability in fiscal year 2016, and an operational capability in fiscal year 2019.</p> <p>Conduct Joint Live Virtual Constructive 2020 Integration Events #2 and #3 to prepare for initial limited operational capability in fiscal year 2015.</p> <ul style="list-style-type: none">Continue to build the Joint Training Enterprise Architecture decomposing modeling and simulation, networking and Information Technology applications into a cloud-enabled modular service supporting Combatant Command and Service Joint training requirements.Virtual Collective Training Environment will complete development of the prototype system: Phase 3 will focus on development and delivery of a prototype Virtual Worlds Framework capability (Capability Release 1). In anticipation that Joint Staff J7's proposal for the Modeling and Simulation Coordination Office High Level Task is approved, Capability Release 1 will be realized through the Command and Control Systems in Virtual Environments initiative. Command and Control Systems in Virtual Environments will integrate the Virtual Worlds Framework into the emerging next generation joint training environment to create an adaptive virtual environment that enables joint force development for Commanders, staffs, units, and personnel. Command and				

PE 0804767D8Z: *COCOM Exercise Engagement and Training Transformat...*

Office of Secretary Of Defense

UNCLASSIFIED

Page 8 of 31

R-1 Line #178

Volume 3 - 838

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>	R-1 ITEM NOMENCLATURE PE 0804767D8Z: <i>COCOM Exercise Engagement and Training Transformation (CE2T2)</i>	PROJECT 758: <i>Joint National Training Capability (JNTC)</i>

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2012	FY 2013	FY 2014
Control Systems in Virtual Environments will employ cloud-enabled modular simulation services that will provide joint warfighters the ability to rapidly access and compose M&S capabilities to meet specific joint requirements, and then deliver that capability how, when and where required. <ul style="list-style-type: none"> Based on discovery identified with the initial cloud capabilities research, continue development on next phase of cloud-enabled modular services in support of delivering modeling and simulation services supporting Joint Force Development and Joint Live Virtual Constructive 2020 modeling and simulation capability. This effort will contribute to the long range modeling and simulation development and training strategy. Based on discovery identified with the initial data strategy on reuse of modeling and simulation data by developing and initial operating capability that provides consumers the ability to search for and down load Order Of Battle data from different sources; expand development into geospatial services. Based on discovery identified with research on web-based services using Virtual World type technologies to support Joint Training using emulated command and control systems, expand research to support additional Joint Training use cases. Based on discovery identified with system of system interoperability using Coalition Battle Management Services, continue research to establish CBMS as an modeling and simulation standard that promotes interoperability between command and control, sensor, and robotic to simulation systems. 			
Accomplishments/Planned Programs Subtotals	21.245	24.381	23.211

C. Other Program Funding Summary (\$ in Millions)

Line Item	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
• 0804767D8Z: <i>JNTC O&M Funding</i>	37.817	24.756	25.427		25.427	25.110	27.240	27.966	27.966	Continuing	Continuing
• 0804767D8Z-: <i>JNTC Procurement Funding</i>	5.252	2.531	0.000		0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

RDT&E development efforts are evaluated based on performance metrics. This ensures the Joint Force Trainer capabilities development effort synchronizes with warfighter requirements. Performance metrics include, but are not limited to; time, money, realism, and fidelity as defined below:

PE 0804767D8Z: *COCOM Exercise Engagement and Training Transformat...*

Office of Secretary Of Defense

UNCLASSIFIED

Page 9 of 31

R-1 Line #178

Volume 3 - 839

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>	R-1 ITEM NOMENCLATURE PE 0804767D8Z: <i>COCOM Exercise Engagement and Training Transformation (CE2T2)</i>	PROJECT 758: <i>Joint National Training Capability (JNTC)</i>
<ul style="list-style-type: none"> • Time – Will the effort enable the Joint Force Trainer to prepare and execute training more timely than current capabilities allow? • Cost – Will the effort enable the Joint Force Trainer to prepare and execute training at a more effective and efficient cost than current capabilities allow? • Realism – Will the effort enable the Joint Force Trainer to create a training environment that is closer to the real world environment than current capabilities allow? • Fidelity – Will the effort enable the Joint Force Trainer to create more detailed capabilities in the training environment than current capabilities allow? <p>Measures:</p> <ul style="list-style-type: none"> • Achieve a ten percent increase per year in Joint Training Data Scenario production builds / downloads from FY 12 through FY 14. • Reduction in joint training environment Operation & Sustainment costs achieving a threshold goal of 30% reduction by FY 19. • Provide enhanced cyber capabilities meeting 45% of CCMD exercises cyber requirements. • Joint training enterprise event preparation time is reduced by 15%. 		

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 6: RDT&E Management Support					R-1 ITEM NOMENCLATURE PE 0804767D8Z: COCOM Exercise Engagement and Training Transformation (CE2T2)				PROJECT 761: Joint Simulations Systems (JSS)			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
761: Joint Simulations Systems (JSS)	7.208	0.000	3.017	3.098	-	3.098	2.193	2.333	0.000	0.000	0.000	17.849
Quantity of RDT&E Articles												
# FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012												
## The FY 2014 OCO Request will be submitted at a later date												
A. Mission Description and Budget Item Justification												
This effort provides warfighters with Joint Simulations and Tools that enhance and enable Joint training across Services, CCMDs, Agencies and Coalition partners. These Joint Simulations and Tools are part of an overall Joint Live, Virtual, and Constructive (JLVC) baseline of training capabilities resident in the Joint Force Trainer Toolkit (JFTT). The JFTT is a set of training enablers, and “certified systems” that are interoperable and acceptable for usage within the Joint training environment. The Joint Simulations and Tools provided by JSS are critical enablers that support the delivery of trained, capable, and interoperable Joint Forces.												
B. Accomplishments/Planned Programs (\$ in Millions)										FY 2012	FY 2013	FY 2014
Title: Joint Simulation System (JSS)										0.000	3.017	3.098
Description: This effort provides warfighters with Joint Simulations and Tools that enhance and enable Joint training across Services, CCMDs, Agencies and Coalition partners. These Joint Simulations and Tools are part of an overall Joint Live, Virtual, and Constructive (JLVC) baseline of training capabilities resident in the Joint Force Trainer Toolkit (JFTT). The JFTT is a set of training enablers, and “certified systems” that are interoperable and acceptable for usage within the Joint training environment. The Joint Simulations and Tools provided by JSS are critical enablers that support the delivery of trained, capable, and interoperable Joint Forces.												
FY 2013 Plans:												
• Continue the integration, verification, validation, accreditation , and delivery of a stable and reliable software version of the Joint Live Virtual Constructive Federation version 6.0 to support current Combatant Command and Service joint training requirements.												
• Develop Civilian infrastructure network models in simulations to increase realism to the training audience.												
• Develop modeling and simulation web-services, cloud computing and virtualization to comply with Department of Defense guidance.												
• Joint Live Virtual Constructive 2020 prototyping of cloud enabled modular services. Prototyping of a future architecture for Joint modeling and simulation involving decoupling simulation processes that can be shared by multiple simulations within the Joint Training Enterprise Architecture to decrease operating and sustainment costs and produce agile and adaptable training capabilities that meet future Warfighting training requirements.												

PE 0804767D8Z: *COCOM Exercise Engagement and Training Transformat...*

Office of Secretary Of Defense

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>	R-1 ITEM NOMENCLATURE PE 0804767D8Z: <i>COCOM Exercise Engagement and Training Transformation (CE2T2)</i>	PROJECT 761: <i>Joint Simulations Systems (JSS)</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2012	FY 2013	FY 2014
<ul style="list-style-type: none"> Develop terrain service prototype (static and streaming) to demonstrate how the cloud-based modular service concept can be applied to Joint training. Develop enhancements in the Joint Live Virtual Constructive modeling and simulation federation to address hybrid warfare and Anti-Access Area Denial defense training capabilities to comply with Chairman Joint Chiefs of Staff training priorities. <p>FY 2014 Plans:</p> <ul style="list-style-type: none"> Federate Anti-Access Area Denial and Hybrid threats modeling and simulation capabilities. Develop hybrid threat effects on civilian population and Anti-Access Area Denial modeling to comply with Chairman Joint Chiefs of Staff training priorities. <p>Continue Joint Live Virtual Constructive 2020 prototyping of cloud enabled modular services. Prototyping of a future architecture for Joint Modeling and Simulation involving decoupling simulation processes that can be shared by multiple simulations within the Joint Training Enterprise Architecture to decrease operating and sustainment costs and produce agile and adaptable training capabilities that meet future Warfighting training requirements.</p>			
Accomplishments/Planned Programs Subtotals	0.000	3.017	3.098

C. Other Program Funding Summary (\$ in Millions)

Line Item	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
• 0804767D8Z: <i>JSS O&M Funding</i>		1.007	1.026		1.026	1.050	1.062	1.088	1.109	Continuing	Continuing

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

RDT&E development efforts are evaluated based on performance metrics. This ensures the Joint Force Trainer capabilities development effort synchronizes with warfighter requirements. Performance metrics include, but are not limited to; time, money, realism, and fidelity as defined below:

- Time – Will the effort enable the Joint Force Trainer to prepare and execute training more timely than current capabilities allow?
- Cost – Will the effort enable the Joint Force Trainer to prepare and execute training at a more effective and efficient cost than current capabilities allow?
- Realism – Will the effort enable the Joint Force Trainer to create a training environment that is closer to the real world environment than current capabilities allow?
- Fidelity – Will the effort enable the Joint Force Trainer to create more detailed capabilities in the training environment than current capabilities allow?

PE 0804767D8Z: *COCOM Exercise Engagement and Training Transformat...*

Office of Secretary Of Defense

UNCLASSIFIED

Page 12 of 31

R-1 Line #178

Volume 3 - 842

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>	R-1 ITEM NOMENCLATURE PE 0804767D8Z: <i>COCOM Exercise Engagement and Training Transformation (CE2T2)</i>	PROJECT 761: <i>Joint Simulations Systems (JSS)</i>
<p>Measures</p> <ul style="list-style-type: none">• Provide the JLVC Federation version 6.0 by 30 September 2013 to enable Services, CCMDs, Agencies and Coalition partners to deploy trained, capable, and interoperable joint forces.• JLVC version 6.0 is delivered on time with less than ten priority one, and two problem trouble reports.• JLVC version 6.0 has an exercise availability rating of 95%• Enhance Joint model and simulation capabilities to meet 65% of CCMD training requirements in hybrid threats and Anti-access Area-Denial functional areas.• One major software release to implement emerging technologies supporting enterprise architecture development.		

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>					R-1 ITEM NOMENCLATURE PE 0804767D8Z: <i>COCOM Exercise Engagement and Training Transformation (CE2T2)</i>				PROJECT 769: <i>Joint Knowledge Development & Distribution Capability (JKDDC)</i>			
--------------------------------------------------------------------------------------------------------------------------------------------------------------	--	--	--	--	---------------------------------------------------------------------------------------------------------------------	--	--	--	-------------------------------------------------------------------------------------------------	--	--	--

COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013[#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
769: <i>Joint Knowledge Development & Distribution Capability (JKDDC)</i>	2.194	2.181	4.656	4.000	-	4.000	4.000	4.000	4.000	4.066	Continuing	Continuing
Quantity of RDT&E Articles												

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

JKDDC Joint Knowledge Online (JKO) is the DOD unique and authoritative source for online joint training. They are tasked to develop a Joint Individual Training Toolkit of web-enabled individual and small group training products and services. Products and services are developed in response to OSD(P&R) CE2T2 Program Goals & Objectives guidance, CJCS High Interest Training Items, Joint Staff J7 training priorities, and JKDDC Joint Knowledge Online (JKO) Stakeholder (CCMDs, Services, and Combat Support Agencies) prioritized training requirements. JKDDC JKO supports a career-long joint learning continuum, joint professional military education and tailored common training standards to Service members for tasks that are jointly executed, resulting in trained, capable, and interoperable joint forces. JKDDC JKO technology initiatives principally include Small Group Scenario Trainer (SGST) desk top modeling & simulation based training, OSD requested virtual worlds training prototype, and mobile "pilot" courseware training devices. These capabilities facilitate the training and preparation of tens of thousands of military and civilian personnel deploying to CCMD theaters of operation prior to serving in their assigned Combined/Joint Task Force (C/JTF) billets. Specifically, C/JTF 'battle staffs' will be adequately trained, as individuals and the staffs collectively, based on SGST development and implementation throughout the joint training enterprise. JKO mobile "pilot" courseware training device development facilitates the global distribution of web-based joint training content on portable, hand-held platforms for joint warriors. The future virtual worlds learning environment will provide training and learning to promote adaptability and agility in the workforce with the capability to tailor and adapt instructional material to fit the learner's strengths and weaknesses, learning style, and level of proficiency.

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2012	FY 2013	FY 2014
Title: Joint Knowledge Development & Distribution Capability (JKDDC)	2.181	4.656	4.000
Description: JKDDC JKO technology initiatives principally include Small Group Scenario Trainer (SGST) desk top modeling and simulation based training, OSD requested virtual worlds training prototype, and mobile "pilot" courseware training devices. These capabilities facilitate the training and preparation of tens of thousands of military and civilian personnel deploying to CCMD theaters of operation prior to serving in their assigned Combined/Joint Task Force (C/JTF) billets. Specifically, C/JTF 'battle staffs' will be adequately trained, as individuals and the staffs collectively, based on SGST development and implementation throughout the joint training enterprise. JKO mobile "pilot" courseware training device development facilitates the global distribution of web-based joint training content on portable, hand-held platforms for joint warriors. The future virtual worlds learning environment will			

PE 0804767D8Z: *COCOM Exercise Engagement and Training Transformat...*
Office of Secretary Of Defense

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>	R-1 ITEM NOMENCLATURE PE 0804767D8Z: <i>COCOM Exercise Engagement and Training Transformation (CE2T2)</i>	PROJECT 769: <i>Joint Knowledge Development & Distribution Capability (JKDDC)</i>
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012
provide training and learning to promote adaptability and agility in the workforce with the capability to tailor and adapt instructional material to fit the learner's strengths and weaknesses, learning style, and level of proficiency.		FY 2013
<p><i>FY 2012 Accomplishments:</i></p> <ul style="list-style-type: none"> Developed Virtual Culture Awareness Trainer (VCAT) South America Phase II web-based training game. Based on the FY11 success with VCAT South America training utility in the SOUTCHCOM AOR, SOUTHCOM required an enhanced training product focusing on 5 expanded mission scenarios, in the Andean Ridge geographic region, integrating Defense Language Institute (DLI) approved language training content, while simultaneously demonstrating an improved capability to deliver training via an innovative training technique on JKO. Continued to operationalize JKO training simulation by developing SGST version 3, a small group training capability focused on improving the training readiness of individuals and small joint headquarters staffs. Version 2 enhanced joint warrior provided recommendations from version 1, and targeted development of six additional SGST scenario use cases for representative JTF staffs, all designed to complement existing Combatant Command mission rehearsal exercises in preparation for deployment to their respective theaters of operation. Version 3 increased training audience participant size to 40 concurrent players (vice current 8-10). Additionally, users are now able to create their training scenarios more efficiently with minimal resources. Thousands of joint, interagency, intergovernmental and multinational participants will be better trained as individuals and collectively as small teams prior to and during deployment in CCMD environments. Developed mobile "pilot" training device capabilities based on JKO high payoff courseware. Completed courses include Cross Culture Competency Trainer, Virtual Cultural Awareness Trainer + Language Afghanistan, US Army's Headstart2 Language Training, US Forces Korea Theater Specific Training, US SOUTHCOM's Human Rights Awareness, & Operational Swahili training products. These joint training courses will be playable from the JKO web-based desktop and from iOS and Android operating systems based portable, hand-help devices (phones and tablets). <p><i>FY 2013 Plans:</i></p> <ul style="list-style-type: none"> Craft and begin implementing a comprehensive plan to develop mobile "pilot" training device capabilities focused on JKO's entire Joint Individual Training Toolkit. Plan components include existing JKO courseware conversion to portable, hand-held devices; emerging training courseware requirements interoperable with portable, hand-held devices; and the leveraging of other DoD agencies, Interagency, and Multinational training courseware ported to mobile training devices. Develop a future virtual worlds learning prototype that will provide training and learning environments (software agents) that are consistent with the virtual worlds framework (VWF). The prototype will demonstrate how online training can be delivered via the VWF. <p><i>FY 2014 Plans:</i></p>		FY 2014

PE 0804767D8Z: *COCOM Exercise Engagement and Training Transformat...*

Office of Secretary Of Defense

UNCLASSIFIED

Page 15 of 31

R-1 Line #178

Volume 3 - 845

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense								DATE: April 2013			
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>				R-1 ITEM NOMENCLATURE PE 0804767D8Z: <i>COCOM Exercise Engagement and Training Transformation (CE2T2)</i>				PROJECT 769: <i>Joint Knowledge Development & Distribution Capability (JKDDC)</i>			

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2012	FY 2013	FY 2014
<ul style="list-style-type: none"> Assess, refine and continue implementing comprehensive plan to develop mobile “pilot” training device capabilities focused on JKO’s entire Joint Individual Training Toolkit. Plan components include existing JKO courseware conversion to portable, hand-held devices; emerging training courseware requirements interoperable with portable, hand-held devices; and the leveraging of other DoD agencies, Interagency, and Multinational training courseware ported to mobile training devices. Refined plan will include eBook, Podcast, and video capabilities in addition to current courseware capabilities. 			
Accomplishments/Planned Programs Subtotals	2.181	4.656	4.000

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
• 0804767D8Z: JKDDC O&M Funding	4.548	6.348	6.810		6.810	6.982	7.134	7.174	7.174	Continuing	Continuing
• 0804767D8Z-: JKDDC Procurement Funding	0.284									Continuing	Continuing
Remarks											
D. Acquisition Strategy N/A											
E. Performance Metrics <p>Joint Staff prescribed performance metrics include, but are not limited to; time, money, realism, and fidelity as defined below:</p> <ul style="list-style-type: none"> Time – Will the effort enable the Joint Force Trainer to prepare and execute training more timely than current capabilities allow? Cost – Will the effort enable the Joint Force Trainer to prepare and execute training at a more effective and efficient cost than current capabilities allow? Realism – Will the effort enable the Joint Force Trainer to create a training environment that is closer to the real world environment than current capabilities allow? Fidelity – Will the effort enable the Joint Force Trainer to create more detailed capabilities in the training environment than current capabilities allow? <p>Measures:</p> <ul style="list-style-type: none"> Augment the ability to provide cultural context training for CCMD’s Joint Mission Essential Task functional areas by one geographic area of responsibility, and two mission areas per year. Provide small group training focused on Joint Exercise Life Cycle specified mission areas for pre-requisite in exercise augmentation, or post exercise remediation training for three exercise response cells per year. 											

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>	R-1 ITEM NOMENCLATURE PE 0804767D8Z: <i>COCOM Exercise Engagement and Training Transformation (CE2T2)</i>	PROJECT 769: <i>Joint Knowledge Development & Distribution Capability (JKDDC)</i>
<ul style="list-style-type: none"> • Add context sensitive remediation to five existing Joint Distributed Learning courses per year. • Provide a systematic, steady-state process for integrating cultural context, small group training, and intelligent remediation requirements into the Joint Training System Phase I of the initiative, resulting in improved training and readiness for the warfighter. • Provide cost model for evaluating level of effort, additional conditions and standards for cultural context, small group training, and intelligent remediation to Joint Mission Essential Task training solutions for the Joint Training System Phase II, resulting in improved readiness, while providing improved training to the warfighter, will be in place by year five of the initiative. 		

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense	DATE: April 2013
----------------------------------------------------------------------------------------------	-------------------------

APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>	R-1 ITEM NOMENCLATURE PE 0804767D8Z: <i>COCOM Exercise Engagement and Training Transformation (CE2T2)</i>	PROJECT 770: <i>U.S. Forces Korea Training and Exercise Support</i>
--------------------------------------------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------

COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
770: <i>U.S. Forces Korea Training and Exercise Support</i>	10.211	7.342	6.497	6.451	-	6.451	4.483	1.378	1.378	1.401	Continuing	Continuing
Quantity of RDT&E Articles												

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

USFK's current federation of models, including the overarching Joint Training Transformation Initiative Korea is used only at USFK, does not meet Coalition interoperability requirements, and cannot fully utilize the Joint Live Virtual Constructive (JLVC) Federation's capabilities. Joint Staff J-7, in collaboration with USFK and appropriate Republic of Korea agencies, integrate Warfighters' Simulation (WARSIM) into the JLVC Training Federation in order to field a functioning JLVC federation to USFK. This new training environment will support the extensive ground order of battle required to accurately simulate operations on the Korean Peninsula. It also maximizes existing JLVC training standards and investments, and fully leverages Service training capabilities and roadmaps. This solution will provide the initial effort to link coalition training architectures into the JLVC as well. It will also promotes the Joint Training Environment vision and goals and implement selected pieces of recommendations identified in the LVC report, the Flagship Study.

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2012	FY 2013	FY 2014
Title: USFK Training & Exercise Description: This program provides to Joint Training Environment to support the 2015 stand-up of KORCOM as a sub-unified command under PACOM. This program develops a jointly accredited, supported, and funded federation of constructive models and simulations which are capable of satisfying all joint exercise training requirements in the Korean Theater of Operations, and which is interoperable with the Republic of Korea developed Korean Simulation System. While supporting U.S. Forces Korea specific training requirements, this solution also is inextricably linked to the Next Generation Joint Live Virtual Constructive modeling and simulation capability via Cloud Enabled Modular Services which will provide a simulated common, interoperable battlespace which realistically represents the operating environment to all levels of training audiences, tactical to strategic, in Korean theater exercises and across the Combatant Commands, Services, and Coalition Partners. FY 2012 Accomplishments: <ul style="list-style-type: none"> Continued Joint Training Data Services development to support U.S. Army Warfare Simulation Intelligence Model, and to provide rapid scenario generation in support of Joint Training Exercises and short notice mission rehearsal capabilities. 	7.342	6.497	6.451

PE 0804767D8Z: *COCOM Exercise Engagement and Training Transformat...*

Office of Secretary Of Defense

UNCLASSIFIED

Page 18 of 31

R-1 Line #178

Volume 3 - 848

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>	R-1 ITEM NOMENCLATURE PE 0804767D8Z: <i>COCOM Exercise Engagement and Training Transformation (CE2T2)</i>	PROJECT 770: <i>U.S. Forces Korea Training and Exercise Support</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
<ul style="list-style-type: none"> Continued process mapping of Joint Live Virtual Construction modeling and simulation federation operations and procedures to provide systems engineering approaches to improve U.S. Forces Korea - Joint Live Virtual Construction modeling and simulation federation capabilities. Continued development of Joint Live Virtual Constructive modeling and simulation Joint Conflict and Tactical Simulation-Joint Low Overhead Drive scalability. Continued design and development of Graphical Interface Aggregate Control Bridge to provide a technical interface to interoperate with Joint Live Virtual Constructive 2020 cloud-based modular services. Initial development for Integrated Air and Missile Defense Training Support System training capabilities to provide synthetic environment, trainer controls and external interfaces for holistic training environment to United States Forces Korea. Continued Joint Semi-Automated Forces modeling and simulation software design enhancements to fully support United States Forces Korea joint training requirements and computer assisted exercise events, which have maritime components and involve response cells of mixed Republic of Korea and United States personnel in close cooperation. Initial research to develop portable software applications ("apps") of the existing Joint Staff J7 land maneuver models and simulations (JCATS and JTDS), to expand current capabilities of Joint, Live, Virtual, and Constructive Federation and integration of United States Forces Korea modeling and simulations. <p>FY 2013 Plans: Research, develop, test and evaluate for U.S. Forces Korea ROK (Joint Live Virtual Constructive 6.x modeling and simulation federation and Korean simulations) bridge.</p> <ul style="list-style-type: none"> Continue development and integration of Marine Air-Ground Task Force Tactical Warfare Simulation High Level Architecture 1516 Laissez-Faire to engineer interoperability the Korean modeling and simulation federation and the Joint Live Virtual Constructive 6.x modeling and simulation federation. Research, development, test of Marine Air-Ground Task Force Tactical Warfare Simulation aggregated composable models. Complete Joint Exercise Control Suite Cross Federation testing tool. Complete Warfighter Simulation Intelligence Model integration into the Joint Live Virtual Constructive 6.x modeling and simulation federation. Initial development of refugee and civilian traffic modeling and simulations into the Joint Live Virtual Constructive 6.x modeling and simulation federation. Initial development of U.S. Forces Korea civilian infrastructure modeling and simulations into the Joint Live Virtual Constructive 6.x modeling and simulation federation. Initial development of targeting networks and visualization modeling and simulations into the Joint Live Virtual Constructive 6.x modeling and simulation federation to enable visualization of intended targeting effects. Continue Air Force Modeling and Simulation Training Toolkit database support. 			

PE 0804767D8Z: *COCOM Exercise Engagement and Training Transformat...*

Office of Secretary Of Defense

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>	R-1 ITEM NOMENCLATURE PE 0804767D8Z: <i>COCOM Exercise Engagement and Training Transformation (CE2T2)</i>	PROJECT 770: <i>U.S. Forces Korea Training and Exercise Support</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2012	FY 2013	FY 2014
<ul style="list-style-type: none"> Initial development of U.S. Forces Korea Staff Process Model. Complete Joint Conflict and Tactical Simulation Low Overhead Driver High Level Architecture 1516 Modular Federated Object Model migration. Continue Joint Land Component Constructive Training Capability database support. Initial Navy Continuous Training Environment Modular Federation Object Model and Dynamic Data Model implementation. Initial Modular Federation Object Model design. Initial Marine Air-Ground Task Force Tactical Warfare Simulation Modular Federation Object Model migration. Complete Coalition releasable Joint Semi-Automated Forces baseline. Continue Korean Battle Simulation Center Terrain support. Initial Defense Training Network Guard for Joint Live Virtual Constructive 6.x modeling and simulation federation. Continue enterprise architecture subject matter expertise research analysis to facilitate delivery of state of the art USFK training capability. Start development of the Joint Terrain Data Services specific dataset and server to meet U.S. Forces Korea exercise training requirements. <p><i>FY 2014 Plans:</i></p> <ul style="list-style-type: none"> Enhance Army, Air Force, Navy, and Marine Corps Live, Virtual, and Constructive capabilities and fully integrate these into the Joint Live Virtual Constructive 2020 modeling and simulation capability to meet U.S. Forces Korea theater specific, Combatant Command, Service, and Coalition training requirements. Achieve full interoperability of joint service and Republic of Korea modeling and simulations, capable of supporting large (e.g. 1M entities), high-intensity combat scenarios by 2016. 			
Accomplishments/Planned Programs Subtotals	7.342	6.497	6.451

C. Other Program Funding Summary (\$ in Millions)

Line Item	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
• 0804767D8Z: <i>U.S. Forces Korea Training & Exercise Proc</i>	0.255	0.307	0.309		0.309	0.299	0.304	0.304	0.304	Continuing	Continuing

Remarks

D. Acquisition Strategy

N/A

PE 0804767D8Z: *COCOM Exercise Engagement and Training Transformat...*

Office of Secretary Of Defense

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>	R-1 ITEM NOMENCLATURE PE 0804767D8Z: <i>COCOM Exercise Engagement and Training Transformation (CE2T2)</i>	PROJECT 770: <i>U.S. Forces Korea Training and Exercise Support</i>
E. Performance Metrics <p>RDT&E development efforts are evaluated based on performance metrics. This ensures the Joint Force Trainer capabilities development effort synchronizes with warfighter requirements. Performance metrics include, but are not limited to; time, money, realism, and fidelity as defined below:</p> <ul style="list-style-type: none">• Time – Will the effort enable the Joint Force Trainer to prepare and execute training more timely than current capabilities allow?• Cost – Will the effort enable the Joint Force Trainer to prepare and execute training at a more effective and efficient cost than current capabilities allow?• Realism – Will the effort enable the Joint Force Trainer to create a training environment that is closer to the real world environment than current capabilities allow?• Fidelity – Will the effort enable the Joint Force Trainer to create more detailed capabilities in the training environment than current capabilities allow? <p>Measures:</p> <ul style="list-style-type: none">• Develop software for interoperability of Joint Live Virtual Constructive (JLVC) 6.x simulations, with initial integration of the Army's WARSIM Intelligence Model, along with a validated approach for Cross Domain Information Sharing technologies, and Korea Battle Simulation Center (KBSC)simulations, to provide a joint training enterprise, realistic warfighter training environment, to meet the training requirements of the United States Forces Korea.		

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense	DATE: April 2013
----------------------------------------------------------------------------------------------	-------------------------

APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>	R-1 ITEM NOMENCLATURE PE 0804767D8Z: <i>COCOM Exercise Engagement and Training Transformation (CE2T2)</i>	PROJECT 754: <i>Immersive Simulation</i>
--------------------------------------------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------------------	----------------------------------------------------

COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
754: <i>Immersive Simulation</i>	0.000	0.000	32.900	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	32.900
Quantity of RDT&E Articles												

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

A state of the art simulated close combat environment will enable enhanced decision-making by squads and platoons, increasing their military effectiveness, reducing friendly and non-combatant casualties and increasing lethality against foes. It will contribute to combat team proficiency and decision making across the full range of military operations, from irregular to conventional. This training capability will increase survival and success rates in first and subsequent combat actions.

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2012	FY 2013	FY 2014
Title: Immersive Simulation Description: Accelerate fielding of immersive training systems and capabilities inclusive of integrated hardware with virtual enhancements, modular systems and video capture within individual and collective tracking systems. Accelerate development of autonomous behavior capabilities through development of Opposing Force and Blue Force Behavior, Common SAF in Synthetic Environment, and enhancement of current software (Virtual Battlespace 2). These expenditures will improve 119 behaviors models, establish 50 new entities, 50 new visual models/year, 50 BLUEFOR Behaviors, improve Avatar capability and enhance interactions. FY 2013 Plans: <ul style="list-style-type: none"> Highly Detailed Scenarios. Develop scenario data that is sufficiently detailed to satisfy training requirement. Develop training scenarios that replicate the contemporary operating environment. Develop a comprehensive set of IW tasks, conditions and standards to enable training relevant to ethical and tactical decision making. Develop specific scenario requirements that support mission-specific rehearsal, including representation of second and third order effects of ethical and tactical decisions made under conditions simulating combat stress. Geo-typical Data Repositories. Develop standardized repositories for geo-typical data such as terrain features, vegetation, population appearance, cultural behaviors (i.e., correct form of greeting in a specific location), language and dialect. External Enablers Representation. Identify and create processes to leverage a pool of expertise for each external capability to be represented. Develop training standards for controllers representing external enablers. Enhance automated responses for 	0.000	32.900	0.000

PE 0804767D8Z: *COCOM Exercise Engagement and Training Transformat...*

Office of Secretary Of Defense

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>	R-1 ITEM NOMENCLATURE PE 0804767D8Z: <i>COCOM Exercise Engagement and Training Transformation (CE2T2)</i>	PROJECT 754: <i>Immersive Simulation</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2012	FY 2013	FY 2014
<p>required external enablers. Establish habitual relationships with organizations representing and or providing external enablers at the tactical level, in order to enhance interoperability, maintain currency and ensure validity of the scenario.</p> <ul style="list-style-type: none"> • Natural Verbal and Non-Verbal Communication. Develop a broader selection of gestures available through a range of interface devices. Further develop Voice over Internet Protocol (VOIP) technology for use with live, virtual and gaming technologies. Further develop natural gesture recognition capabilities. Further develop natural voice recognition capabilities. • Autonomous Behavior. Develop methodology to characterize and organize entity behaviors. Expand library of scripted behaviors and supporting animations (including individuals, cells and units) to allow limited interactions with trainees. Develop improved game engine and virtual Semi-Automated Forces (SAF) behaviors in order enhance tactical and ethical decision making. Develop a detailed response library for certain conditions and behaviors. Develop virtual human with capability to perceive and understand the environment. • Sensory Stimulation. Further develop and integrate current olfactory systems for both live and virtual environments. Further develop and integrate current haptic feedback devices for both live and virtual environments. Further develop and integrate higher resolution display technologies for both live and virtual environments. Further develop and integrate enhanced audio technologies for both live and virtual environments. Integrate all sensory stimulation capabilities in order to maximize overall effectiveness within the training environment. Conduct research into best methods to stimulate the senses in a training environment. Conduct research into the effectiveness and value of sensory stimulation in a training environment. • Interactions. Conduct research to determine optimal level of interaction within the training environment, with respect to the training requirements. Develop tools to eliminate the capability gaps in Sensory Stimulation, Natural Verbal and Non-Verbal Communication Methods, Visual Representation of Terrain, and Visual Representation of Individuals. • Visual Representation of Terrain. Develop a central repository of correct textures, models and objects. Leverage technology advancements from the commercial gaming industry to improve visualization engines. • Visual Representation of Individuals. Develop a library of common body 3D frameworks to represent a variety of visual characteristics. Develop and utilize body-mapping technology to enable live role-players to drive avatar movement. Develop and utilize facial mapping technology to enable live role players to provide realistic avatar facial expressions. Develop a library of cut scenes and pre-recorded video segments for common human motions and movements. Develop and maintain a database of highly realistic animations. Leverage commercial gaming technology to allow rapid generation of unique avatars. Leverage technology resident in the entertainment industry to enhance immersive training. 			
Accomplishments/Planned Programs Subtotals	0.000	32.900	0.000

C. Other Program Funding Summary (\$ in Millions)

N/A

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>	R-1 ITEM NOMENCLATURE PE 0804767D8Z: <i>COCOM Exercise Engagement and Training Transformation (CE2T2)</i>	PROJECT 754: <i>Immersive Simulation</i>
C. Other Program Funding Summary (\$ in Millions) Remarks D. Acquisition Strategy N/A E. Performance Metrics Program terminated as part of Secretary of Defense efficiency cuts.		

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 6: RDT&E Management Support					R-1 ITEM NOMENCLATURE PE 0804767D8Z: COCOM Exercise Engagement and Training Transformation (CE2T2)				PROJECT 701: Air Force JNTC			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
701: Air Force JNTC	0.000	2.955	2.041	2.307	-	2.307	2.716	2.794	2.794	2.840	Continuing	Continuing
Quantity of RDT&E Articles												

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

Supports the SECDEF's Transformation in Training/Joint National Training Capability (JNTC). Develops capabilities that integrate live, virtual, and constructive elements into a seamless joint training environment. Using a scientific and phased approach and focusing on modeling air and space capabilities, researches new technologies and methods that provide a crucial technology-based foundation supporting all JNTC operations. In particular, the Air Force JNTC funding has provided a focused upgrade to developing models for Space Based capabilities and integrated them into the Joint Live Virtual Constructive capabilities. We have also supported development of cross domain solutions allowing linking of systems with differing security requirements, extending the breadth of the training audiences to additional Joint and Coalition participants. The Air Force intends to support the President's priorities by developing cyber simulations as well as developing deployable ranges which will allow for training to Anti-Access/Area Denial (A2/AD) tasks.

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2012	FY 2013	FY 2014
Title: AF JNTC	2.955	2.041	2.307
Description: Supports the Secretary of Defense (SECDEF) Transformation in Training/Joint National Training Capability (JNTC). Develops capabilities that integrate live, virtual, and constructive elements into a seamless joint training environment. Using a scientific and phased approach and focusing on modeling air and space capabilities, researches new technologies and methods that provide a crucial technology-based foundation supporting all JNTC operations. In particular, the Air Force JNTC funding has provided a focused upgrade to developing models for Space Based capabilities and integrated them into the Joint Live Virtual Constructive (JLVC) capabilities. We have also supported development of cross domain solutions allowing linking of systems with differing security requirements, extending the breadth of the training audiences to additional Joint and Coalition participants. The Air Force intends to support the President's priorities by developing cyber simulations as well as developing deployable ranges which will allow for training to Anti-Access/Area Denial (A2/AD) tasks.			
FY 2012 Accomplishments: <ul style="list-style-type: none"> Integrated Space System Generator Version 3.0 and Global Position System (GPS) Environment Generator Version 2.5 into JLVC. Distributed Mission Operations Center-Space (DMOC-S) has expanded on Joint Air and Space Operations Center (JSpOC) Mission System (JMS) stimulation for testing and integration, leading to its inclusion in future exercise events. 			

PE 0804767D8Z: *COCOM Exercise Engagement and Training Transformat...*

Office of Secretary Of Defense

UNCLASSIFIED

Page 25 of 31

R-1 Line #178

Volume 3 - 855

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>	R-1 ITEM NOMENCLATURE PE 0804767D8Z: <i>COCOM Exercise Engagement and Training Transformation (CE2T2)</i>	PROJECT 701: <i>Air Force JNTC</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
<ul style="list-style-type: none"> • Demonstrated the capability to remotely stimulate the Upgraded Early Warning Radar (UEWR) Integrated Trainer (UIT) and engaged in the operational acceptance of the capability as the trainer develops. • Introduced GPS jamming effects into weapons systems modeling and simulation. <p>CONTINUE: Multi-Level Security (MLS): Enables Virtual and Constructive entities of various classification levels to be accessed by users with different security clearances and needs-to-know, and prevent users from obtaining access to information for which they lack authorization.</p> <p>FY 2013 Plans:</p> <ul style="list-style-type: none"> • Develop a Cyber Simulator to creating a Live Virtual Constructive environment to train/exercise offensive/defensive tactical cyber operators. • Modify current JLVC Federations to simulate Blue Cyber effects on adversary networks. Enhanced exercise environment will simulate the execution of operational and strategic plan/orders in a constructive environment to better train cyber warriors. • Develop a Multinational Aviation Live Virtual Constructive Training System (MALTS). This portable theater electronic warfare system will present aircrews with a highly realistic threat system. Will provide the opportunity for aircrews to neutralize/suppress Red Integrated Air Defense Systems (IADS). • CONTINUE: Multi-Level Security (MLS): Enables Virtual and Constructive entities of various classification levels to be accessed by users with different security clearances and needs-to-know, and prevent users from obtaining access to information for which they lack authorization. <p>FY 2014 Plans:</p> <p>CONTINUE: Cyber Simulator: Expand the capability to create a Live Virtual Constructive environment to train/exercise offensive/defensive tactical cyber operators.</p> <p>CONTINUE: Blue Cyber Effects: Expand the capability to train cyber personnel on Blue cyber-attack on adversary networks.</p> <p>CONTINUE: Multinational Aviation Live Virtual Constructive Training System (MALTS): Continue development of a deployable electronic warfare range to train/exercise aircrew capabilities.</p> <p>CONTINUE: Multi-Level Security (MLS): Enables Virtual and Constructive entities of various classification levels to be accessed by users with different security clearances and needs-to-know, and prevent users from obtaining access to information for which they lack authorization.</p>			
Accomplishments/Planned Programs Subtotals		2.955	2.041
		2.307	

PE 0804767D8Z: *COCOM Exercise Engagement and Training Transformat...*

Office of Secretary Of Defense

UNCLASSIFIED

Page 26 of 31

R-1 Line #178

Volume 3 - 856

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense			DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>	R-1 ITEM NOMENCLATURE PE 0804767D8Z: <i>COCOM Exercise Engagement and Training Transformation (CE2T2)</i>	PROJECT 701: <i>Air Force JNTC</i>	

C. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2012</u>	<u>FY 2013</u>	<u>FY 2014</u> <u>Base</u>	<u>FY 2014</u> <u>OCO</u>	<u>FY 2014</u> <u>Total</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• 0804767D8Z: <i>Air Force JNTC O&M Funding</i>	15.849	14.455	14.127		14.127	14.030	13.000	12.747	12.747	Continuing	Continuing
• 0804767D8Z-: <i>Air Force JNTC Procurement Funding</i>	0.255									0.000	0.255

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

RDT&E development efforts are evaluated based on performance metrics. This ensures the Joint Force Trainer capabilities development effort synchronizes with warfighter requirements. Performance metrics include, but are not limited to; time, money, realism, and fidelity as defined below:

- Time – Will the effort enable the Joint Force Trainer to prepare and execute training more timely than current capabilities allow?
- Cost – Will the effort enable the Joint Force Trainer to prepare and execute training at a more effective and efficient cost than current capabilities allow?
- Realism – Will the effort enable the Joint Force Trainer to create a training environment that is closer to the real world environment than current capabilities allow?
- Fidelity – Will the effort enable the Joint Force Trainer to create more detailed capabilities in the training environment than current capabilities allow?

The Performance Improvement and Information Management Board is the strategic forum where the outcomes of performance relative to our external customers, stakeholders, and strategic stewardship of resources are the focus of discussion. Performance against the targets will be assessed and reported monthly, briefed quarterly to the FMB/CAMB, and rolled up into the JCW Joint Training End-of-Fiscal Year Performance Report to ensure transparency and accountability.

USAFE ULTrA:

- Feasibility study of six (6) month duration to determine optimum configuration and suggest acquisition strategy.
- Contract award within four (4) months of funds receipt.
- Engineering design complete (software integration/hardware integration/mobile platform developed) within six (6) months of contract award.
- Initial Operational Capability (IOC) (system tested and capability validated) within two (2) years of contract award.
- Full Operational Capability (FOC) (field use meeting requirements of all accepted missions) eighteen (18) months after IOC.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 6: RDT&E Management Support					R-1 ITEM NOMENCLATURE PE 0804767D8Z: COCOM Exercise Engagement and Training Transformation (CE2T2)				PROJECT 772: Navy JNTC			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
772: Navy JNTC	0.000	3.532	3.983	4.180	-	4.180	4.360	4.673	4.673	4.750	Continuing	Continuing
Quantity of RDT&E Articles												

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

These funds enable Navy in developing unique maritime capabilities that integrate live, virtual, and constructive elements into a seamless joint training environment. Navy continues to develop and integrate joint training technologies that play a crucial role in its ability to address current and future joint operational training requirements.

Navy JNTC RDT&E program conducts cross-service architecture certification on all T2 capable systems, developing cross-domain architectures for US and Coalition Forces as well as ensure other military service modeling/simulation and instrumentation efforts follow a common unified standard.

B. Accomplishments/Planned Programs (\$ in Millions)

Title: Navy Joint National Training Center	FY 2012	FY 2013	FY 2014
<p>Description: Supports the Secretary of Defense (SECDEF) Transformation in Training/Joint National Training Capability (JNTC). Develops unique maritime capabilities that integrate live, virtual, and constructive elements into a seamless joint training environment. Using a scientific and phased approach and focusing on modeling ground, air, space and maritime capabilities, researches new technologies and methods that provide a crucial technology-based foundation supporting all JNTC T2 operations.</p> <p>Navy JNTC T2 RDT&E efforts (JSAF M&S Development & JNTC/JLVC Navy Federation Object Model (FOM) Integration) directly support the Unified Command Plan (UCP) and is aligned with the DOD information Operations (IO) Roadmap.</p> <p>FY 2012 Accomplishments:</p> <ul style="list-style-type: none"> Continued integration of over 20 Navy programs and coalition countries into Fleet Synthetic Training - Joint (FST-J), a JNTC accredited joint training program Continued alignment of NAVY Live Virtual Constructive (LVC) training standards with JLVC training standards Continued development of interoperable data models and FOM specifications of emerging integrated CONOPS and Tactics, Techniques, and Procedures (TTP's) of Navy, Joint, Service, Interagency, and Coalition participants Integration of new and updated joint ballistic missile defense (BMD) training systems including Aegis BMD baseline version 4.0.1, Aegis Ashore, Patriot, THAAD, Ground Based Interceptor (GBI), and TPY-2 	3.532	3.983	4.180

PE 0804767D8Z: *COCOM Exercise Engagement and Training Transformat...*

Office of Secretary Of Defense

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense			DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>		R-1 ITEM NOMENCLATURE PE 0804767D8Z: <i>COCOM Exercise Engagement and Training Transformation (CE2T2)</i>		PROJECT 772: <i>Navy JNTC</i>	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2012	FY 2013	FY 2014
<ul style="list-style-type: none"> • Development of enhanced IO/Cyberspace training architecture standards for electronic warfare • Continued development BLUFOR training capabilities for use in joint training exercises, including AWACS, CRC, JSTARS, E-2C, E-2D, Ep-3DDG-1000, Littoral Combat Ship (LCS), P-8A, Surface Warfare Enterprise Advanced Capability Build (ACB), P-8A, MH-60R/S, SH-60B, and P-3C • Development of advanced coalition integration technology while keeping pace with coalition partner integration, including AUS FFG/FFH, JA Aegis BMD, and GE PATRIOT • Development of JSAF to improve upon realistic OPFOR threat representation to meet the goals of 1) realistic combat training for EW and OPFOR threats 2) realistic opposing force representations in the areas of EW, SIGINT, ELINT and COMINT • Development of Integrated Air and Missile Defense (IAMD) improvements and additional features in support of Ballistic Missile Defense objectives for the Fleet, services and Joint and coalition partners • Development of Maritime Domain Awareness to interface with command and control systems • Development of capabilities to address ASW improvements from a Joint perspective • Development of releasable software and parametric data in support of the Korean Simulation Battle Center (KSBC) integration <p>FY 2013 Plans:</p> <ul style="list-style-type: none"> • Continue alignment of NAVY LVC training standards with JLVC training standards, particularly next generation JLVC architecture • Provide capabilities that support BMD training - tailored to the Navy's DDG/CG onboard BMD capability. This effort involves continuous integration and development of numerous BMD models at the Missile Defense Agency (MDA) as well as the communication links/data paths that allow us to provide this training to DDG/CG even while at sea • Further address additional Coalition Partner Integration, Aegis BMD 5.0, Aegis Ashore Team Trainer, Integrated Undersea Surveillance System (IUSS)/Surveillance Towed Array Sensor System (SURTASS) integration, Combined Armed Forces (CAF) -Distributed Mission Operations (DMO) integration, Cooperative Engagement Capability (CEC), and Naval Integrated Fires Capability - Counter Air (NIFC-CA) • Navy will make significant improvements to JSAF's representation of a realistic threat environment to address high priority training gaps. These threat environment improvements include a more tactically-realistic electronic signals environment; unmanned Intelligence, Surveillance and Reconnaissance (ISR) platform representation and employment; support and stimuli for US signals collection models, training systems and combat systems; Electronic Attack (EA) representation; and an improved threat common operational picture representation for two-sided event support • Continue to invest in capabilities that mitigate joint training gaps in joint exercises and home station training • Extend and integrate virtual and augmented reality into training to facilitate the mastery of tasks not easily addressed in live training • Continue the development of JSAF's representations to OPFOR, ASW, EW, SIGINT, ELINT, COMINT, IAMD, MDA and BMD capabilities in support of the Fleet, Joint and Coalition missions 					

PE 0804767D8Z: *COCOM Exercise Engagement and Training Transformat...*

Office of Secretary Of Defense

UNCLASSIFIED

Page 29 of 31

R-1 Line #178

Volume 3 - 859

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense							DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>				R-1 ITEM NOMENCLATURE PE 0804767D8Z: <i>COCOM Exercise Engagement and Training Transformation (CE2T2)</i>			PROJECT 772: <i>Navy JNTC</i>		

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2012	FY 2013	FY 2014
<ul style="list-style-type: none"> • Continue development in support of KSBC integration, including releasable parametrics and KSBC specific enhancements • Sustain and improve knowledge of and capabilities to build the capacity and competence of U.S., allied and partner forces for internal and external defense <p><i>FY 2014 Plans:</i></p> <ul style="list-style-type: none"> • Continue alignment of NAVY LVC training standards with JLVC training standards, particularly next generation JLVC architecture • Continue development of BMD training capabilities, including Aegis Ashore and numerous EUCOM/CENTCOM BMD models • Integration of new Cyber and Information Operations training systems, including STALLION IO trainer and UAS streaming video generation and distribution • Integration of additional Coalition Partner nation capabilities including Japanese PATRIOT and Air Defense Ground Environment (JADGE) • Continue to invest in capabilities that mitigate joint training gaps in joint exercises and home station training • Extend and integrate virtual and augmented reality into training to facilitate the mastery of tasks not easily addressed in live training • Continue the development of JSAF's representations to OPFOR, ASW, EW, SIGINT, ELINT, COMINT, IAMD, MDA and BMD capabilities in support of the Fleet, Joint and Coalition missions • Continue development in support of KSBC integration, including releasable parametrics and KSBC specific enhancements 			
Accomplishments/Planned Programs Subtotals	3.532	3.983	4.180

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
• 0804767D8Z: <i>Navy JNTC O&M Funding</i>	9.069	7.636	7.540		7.540	7.548	7.164	7.163	7.163	Continuing	Continuing
• 0804767D8Z: <i>Navy JNTC Procurement Funding</i>	0.650									0.000	0.650
Remarks											
D. Acquisition Strategy											
N/A											

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>	R-1 ITEM NOMENCLATURE PE 0804767D8Z: <i>COCOM Exercise Engagement and Training Transformation (CE2T2)</i>	PROJECT 772: <i>Navy JNTC</i>

E. Performance Metrics

RDT&E development efforts are evaluated based on performance metrics. This ensures the Joint Force Trainer capabilities development effort synchronizes with warfighter requirements. Performance metrics include, but are not limited to; time, money, realism, and fidelity as defined below:

- Navy will produce one JSAF software release to include documentation; will design and implement upgrades to JSAF consistent with approved requirements and CRs and document the effects of JSAF capabilities (robustness) and stability. Will design, implement, test, and integrate JSAF enhancements in accordance with requirements.
- Navy will produce one Navy Training Federation Object Model (FOM) (NTF) release to include applicable documentation updates for the Guidance, Rational, and Interoperability Manual (GRIM) and Federation Agreement document (FAD). Will implement JSAF capability enhancements to support evolving joint and Coalition training requirements.
- Navy will deliver a JSAF/JNTC-JLVC FOM interoperability Guide.
- Navy will facilitate integration by providing dedicated support to the effort, improving the quality of participation and documentation of Navy efforts in the JNTC. Refine and mature the Navy Training Federation Object Model (NTF), it is improving interoperability and integration with other services and the Joint community. Provides a standardized FOM for integration across the Navy training simulations.
- Navy's current Joint Live-Virtual-Constructive (JLVC) and other federation simulation distribution is accomplished by tying simulation data to multicast groups. This is neither a scalable solution nor is it an effective one as federates are not able to publish and subscribe with fine enough precision. The Simulation Aware Software Router will address this shortcoming, and additionally provide a flexible solution for federating heterogeneous networks and on-the-wire protocols without forcing all federates onto a single, uniform, lowest common denominator solution for each training event. Ultimately, a simulation aware router will allow simulation users to optimize the network for both simulation scalable traffic and for voice and Command, Control, Communications, (Computers), Intelligence (C4I) traffic.

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense	DATE: April 2013
-------------------------------------------------------------------------------------------------	-------------------------

APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>	R-1 ITEM NOMENCLATURE PE 0909999D8Z: <i>Financing for Cancelled Account Adjustments</i>
--------------------------------------------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------

COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
Total Program Element	0.814	0.657	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
546: <i>Financing for Cancelled Account Adjustments</i>	0.814	0.657	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles												

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

Not applicable for this item

<u>B. Program Change Summary (\$ in Millions)</u>	<u>FY 2012</u>	<u>FY 2013</u>	<u>FY 2014 Base</u>	<u>FY 2014 OCO</u>	<u>FY 2014 Total</u>
Previous President's Budget	0.000	0.000	0.000	-	0.000
Current President's Budget	0.657	0.000	0.000	-	0.000
Total Adjustments	0.657	0.000	0.000	-	0.000
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	0.657	-			
• SBIR/STTR Transfer	-	-			

<u>C. Accomplishments/Planned Programs (\$ in Millions)</u>	<u>FY 2012</u>	<u>FY 2013</u>	<u>FY 2014</u>
<i>Title:</i> Not applicable for this item.	0.657	0.000	0.000
<i>FY 2012 Accomplishments:</i> Funding used to adjust cancelled accounts from prior years.			
Accomplishments/Planned Programs Subtotals	0.657	0.000	0.000

D. Other Program Funding Summary (\$ in Millions)

N/A

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>		R-1 ITEM NOMENCLATURE PE 0909999D8Z: <i>Financing for Cancelled Account Adjustments</i>
D. Other Program Funding Summary (\$ in Millions)		
Remarks		
E. Acquisition Strategy N/A		
F. Performance Metrics Not applicable for this item.		

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE							
0400: Research, Development, Test & Evaluation, Defense-Wide BA 7: Operational Systems Development					PE 0607210D8Z: Industrial Base Analysis and Sustainment Support							
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
Total Program Element	-	0.000	0.000	14.000	-	14.000	12.000	8.000	4.000	2.000	Continuing	Continuing
819: Industrial Base Analysis and Sustainment	-	0.000	0.000	14.000	-	14.000	12.000	8.000	4.000	2.000	Continuing	Continuing

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

Note

This is a new start program with a strategic goal of strengthening the industrial base in support of DoD supply chain and defense manufacturing requirements.

A. Mission Description and Budget Item Justification

The Defense-wide Industrial Base Analysis and Sustainment (IBAS) program element provides the Department with a comprehensive ability to achieve the strategic goal of strengthening the industrial base in support of DoD supply chain and defense manufacturing requirements. This program maintains or improves the health of essential parts of the defense industry to avoid reconstitution costs for capability after a Defense procurement hiatus on major investment programs or critical supply chain products where affordable and innovative mechanisms are available to work with the producers in the interim.

A stated purpose of the program is to provide for sustainment of the industrial base through a break in production. Criteria for project selection will include factors such as 1) identifiable path of preservation, transformation or innovation between an existing capability and a capability with a very high probability of being needed in the short to medium term (< 5 years); 2) loss of the capability is likely in the absence of the proposed project; 3) analysis showing that the project results in a lower overall cost to the department than if capability is developed from scratch when needed; and 4) preference is given to projects supporting multiple programs or services with no clearly identifiable principle beneficiary.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense	DATE: April 2013
-------------------------------------------------------------------------------------------------	-------------------------

APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 7: <i>Operational Systems Development</i>	R-1 ITEM NOMENCLATURE PE 0607210D8Z: <i>Industrial Base Analysis and Sustainment Support</i>
-----------------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------

B. Program Change Summary (\$ in Millions)	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total
Previous President's Budget	0.000	0.000	0.000	-	0.000
Current President's Budget	0.000	0.000	14.000	-	14.000
Total Adjustments	0.000	0.000	14.000	-	14.000
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Industrial Base Sustainment (new start program)	-	-	14.000	-	14.000

Change Summary Explanation

FY 2014 \$14.0 Industrial Base Sustainment: Funds realigned to this DoD high priority issue to achieve the strategic goal of strengthening the industrial base in support of DoD supply chain and defense manufacturing requirements.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE				PROJECT			
0400: Research, Development, Test & Evaluation, Defense-Wide BA 7: Operational Systems Development					PE 0607210D8Z: Industrial Base Analysis and Sustainment Support				819: Industrial Base Analysis and Sustainment			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
819: Industrial Base Analysis and Sustainment	-	0.000	0.000	14.000	-	14.000	12.000	8.000	4.000	2.000	Continuing	Continuing
Quantity of RDT&E Articles												

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

OSD Acquisition, Technology and Logistics (AT&L) investments under this program are informed by the Department's industrial assessment tools to include the Sector by Sector, Tier by Tier (S2T2) repository of defense industrial base information maintained by Deputy Assistant Secretary of Defense (Manufacturing and Industrial Base Policy) (DASD(MIBP)). These tools collaboratively identify elements of the industrial base where current acquisition programs will not invest enough in production and/or research to support the minimum sustaining rate that would keep critical suppliers viable. While industrial base risks identified through these assessment tools are to be mitigated primarily through direct engagement with military departments, agencies, and industry, exceptional cases will require defense-wide intervention via investment accounts, often in collaboration with multiple Services and agencies, to ensure adequate industrial capability to support future defense needs.

This funding is a key tool for addressing supply chain risks and diminishing manufacturing sources. Investments are prioritized through a careful analysis at every tier of the supply chain according to a numerical scale of risk-area's fragility and criticality. Criticality examines characteristics that make a specific product or service difficult to replace if disrupted; fragility examines characteristics that make small deviations in the status quo likely to have substantial effects on an industry / supplier. These concepts underpin AT&L's core mission and inform critical investment, budgetary, and programmatic decision-making.

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2012	FY 2013	FY 2014
Title: Industrial Base Sustainment	0.000	0.000	14.000
Description: Under Industrial Base Sustainment (IBS), fragility and criticality analysis would be applied across the DoD enterprise to invest in priority areas, closely integrating the results of S2T2 with applied research to enhance industrial productivity and sustain essential defense design teams. Projects will have impact across all industrial base sectors: aircraft; Command, Control, Communications and Computers (C4); missiles; ground vehicles; radar & Electronic Warfare (EW) and others. Projects will be improvements of existing capabilities with a very high probability of success.			
FY 2014 Plans: Address supply chain vulnerabilities and early indicators of program risk and make corrective and innovative investments in essential defense supply chains.			
Accomplishments/Planned Programs Subtotals	0.000	0.000	14.000

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 7: <i>Operational Systems Development</i>	R-1 ITEM NOMENCLATURE PE 0607210D8Z: <i>Industrial Base Analysis and Sustainment Support</i>	PROJECT 819: <i>Industrial Base Analysis and Sustainment</i>
C. Other Program Funding Summary (\$ in Millions) N/A		
Remarks		
D. Acquisition Strategy N/A		
E. Performance Metrics Goal is to insert industrial base considerations consistently in program review To make informed investment and production decisions To avoid reconstitution costs for capability that we will need again soon		

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 7: Operational Systems Development				R-1 ITEM NOMENCLATURE PE 0607210D8Z: Industrial Base Analysis and Sustainment Support				PROJECT 819: Industrial Base Analysis and Sustainment			
-----------------------------------------------------------------------------------------------------------------------------------------------	--	--	--	-------------------------------------------------------------------------------------------------	--	--	--	-----------------------------------------------------------------	--	--	--

Product Development (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Projects - Selection in Process	C/TBD	Leverage Current Efforts:TBD	-	-		-		12.650		-		12.650	Continuing	Continuing	
Subtotal			0.000	0.000		0.000		12.650		0.000		12.650			

Remarks

All efforts directly supporting system development and delivery to include primary contracts, major component contracts, contracted services, in-house support provided by the Services/Agencies, and government furnished property

Management Services (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Management Services for DASD(MIBP)	C/TBD	DASD(MIBP):Washington, dc	-	-		-		1.350		-		1.350	Continuing	Continuing	
Subtotal			0.000	0.000		0.000		1.350		0.000		1.350			

Remarks

Efforts associated with services provided in support of program office management and administration processes such as: program oversight, resource justification, budget and programming, milestone and schedule tracking

	All Prior Years	FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	0.000		0.000		14.000		0.000		14.000			

Remarks

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE							
0400: Research, Development, Test & Evaluation, Defense-Wide BA 7: Operational Systems Development					PE 0607310D8Z: Operational Systems Development							
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
Total Program Element	-	0.000	0.000	1.955	-	1.955	4.988	7.667	5.383	8.518	Continuing	Continuing
P112: Operational System Development	-	0.000	0.000	1.955	-	1.955	4.988	7.667	5.383	8.518	Continuing	Continuing

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

Note

This is a new start program that will fund development efforts to upgrade systems that have been fielded or provide planned product improvements.

A. Mission Description and Budget Item Justification

This program addresses developing an integrated and interconnected Countering Weapons of Mass Destruction (CWMD) capabilities-based system that defines and enables a comprehensive, global awareness and readiness for CWMD steady-state and surge postures. The diverse and complex Countering Weapons of Mass Destruction (CWMD) – nuclear, biological and chemical threats – mission space requires an integrated approach towards capability development. Capability development must be based on a systems perspective that links strategic objectives with interrelated tasks and associated capabilities. The broad CWMD military strategic objectives and mission areas encompass many nontraditional capabilities for the Warfighter, and CWMD is not an isolated mission set unique to DoD – it is intertwined with counter-terrorism and homeland defense. Accordingly, developing an overall CWMD capability should and must leverage complementary capabilities through integration and synchronization. A global CWMD situational awareness capability will be established and deployed worldwide via current communications systems and common operating pictures in support of this mission. This program will incorporate portfolio management tools and comprehensive analyses to enable a balanced and integrated CWMD systems portfolio, an optimized CWMD force structure, and the integration with and utilization of existing military assets to fill intelligence, sensor and reconnaissance gaps in CWMD.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense	DATE: April 2013
-------------------------------------------------------------------------------------------------	-------------------------

APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 7: <i>Operational Systems Development</i>	R-1 ITEM NOMENCLATURE PE 0607310D8Z: <i>Operational Systems Development</i>
-----------------------------------------------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------

B. Program Change Summary (\$ in Millions)	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total
Previous President's Budget	0.000	0.000	0.000	-	0.000
Current President's Budget	0.000	0.000	1.955	-	1.955
Total Adjustments	0.000	0.000	1.955	-	1.955
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• New Program Element established through Internal realignment	0.000	0.000	1.955	-	1.955

Change Summary Explanation

This is a new start program that will fund development efforts to upgrade systems that have been fielded or provide planned product improvements.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 7: Operational Systems Development					R-1 ITEM NOMENCLATURE PE 0607310D8Z: Operational Systems Development				PROJECT P112: Operational System Development			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
P112: Operational System Development	-	0.000	0.000	1.955	-	1.955	4.988	7.667	5.383	8.518	Continuing	Continuing
Quantity of RDT&E Articles												

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

This program addresses developing an integrated and interconnected CWMD capabilities-based system that defines and enables a comprehensive, global awareness and readiness for CWMD steady-state and surge postures. The diverse and complex Countering Weapons of Mass Destruction (CWMD) – nuclear, biological and chemical threats – mission space requires an integrated approach towards capability development. Capability development must be based on a systems perspective that links strategic objectives with interrelated tasks and associated capabilities. The broad CWMD military strategic objectives and mission areas encompass many nontraditional capabilities for the Warfighter, and CWMD is not an isolated mission set unique to DoD – it is intertwined with counter-terrorism and homeland defense. Accordingly, developing an overall CWMD capability should and must leverage complementary capabilities through integration and synchronization. A global CWMD situational awareness capability will be established and deployed worldwide via current communications systems and common operating pictures in support of this mission. This program will incorporate portfolio management tools and comprehensive analyses to enable a balanced and integrated CWMD systems portfolio, an optimized CWMD force structure, and the integration with and utilization of existing military assets to fill intelligence, sensor and reconnaissance gaps in CWMD.

This PE will fund development efforts to upgrade systems that have been fielded or provide planned product improvements.

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2012	FY 2013	FY 2014
Title: Countering Weapons of Mass Destruction (CWMD) Systems	0.000	0.000	1.955
Description: • A global CWMD situational awareness system and concept of operation to enable a common operating picture and framework for CWMD that will integrate C4ISR, multi-modality intelligence, and other data to support simultaneous operations worldwide and address operational capability gaps. • A portfolio management capability based on an integrated system of systems architectural framework to evaluate potential CWMD investments. • Enhancements to major defense acquisition programs to address CWMD mission and systems' gaps. • A CWMD organizational capabilities review and update as required.			
FY 2012 Accomplishments:			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 7: <i>Operational Systems Development</i>		R-1 ITEM NOMENCLATURE PE 0607310D8Z: <i>Operational Systems Development</i>	PROJECT P112: <i>Operational System Development</i>
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
N/A			
FY 2013 Plans: N/A			
FY 2014 Plans: <ul style="list-style-type: none"> • This PE will fund development efforts to upgrade systems that have been fielded or provide planned product improvements. • Address the prioritized capabilities required of existing platforms to augment, upgrade and enhance core CWMD capabilities. • Provide upgrades and enhancements to previous capability package deliveries providing continuity and compatibility across the portfolio of GCAS systems. 			
Accomplishments/Planned Programs Subtotals		0.000	1.955
C. Other Program Funding Summary (\$ in Millions) N/A			
Remarks			
D. Acquisition Strategy Utilize a knowledge based approach to achieve an operational prototype in FY13 with capability packages that provided upgraded CWMD situational awareness and capabilities with deliveries every 12-18 months utilizing agile software development processes.			
E. Performance Metrics Success in this area is measured by compliance with various statutes and DoD directives that govern the conduct of the affairs within the Office of ASD/NCB. Maintain cost, schedule, and performance reporting, review, and adjudication. Maintain requirements traceability matrix.			

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 7: <i>Operational Systems Development</i>	R-1 ITEM NOMENCLATURE PE 0607310D8Z: <i>Operational Systems Development</i>	PROJECT P112: <i>Operational System Development</i>
-----------------------------------------------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------	---------------------------------------------------------------

Product Development (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Global CWMD Situational Awareness Upgrades	TBD	To be determined:To be determined	-	-		-		1.955		-		1.955	Continuing	Continuing	
Subtotal			0.000	0.000		0.000		1.955		0.000		1.955			

Remarks

Funding will be used to upgrade the required infrastructure for the GCAS operations home base to include hardware and software for computational and processing capabilities, training, and organizational support to support IOC and attain enhanced operational capability.

	All Prior Years	FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total		Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	0.000		0.000		1.955		0.000		1.955				

Remarks

This is a new Program Element starting in FY14.

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense	DATE: April 2013
-------------------------------------------------------------------------------------------------	-------------------------

APPROPRIATION/BUDGET ACTIVITY

0400: *Research, Development, Test & Evaluation, Defense-Wide*
 BA 7: *Operational Systems Development*

R-1 ITEM NOMENCLATURE

PE 0607828D8Z: *Joint Integration & Interoperability*

COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
Total Program Element	-	28.935	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
P818: <i>Joint Integration & Interoperability</i>	-	28.935	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

Note

The Joint Integration and Interoperability Program Element 0607828D8Z is transferring from OUSD (AT&L) to the Joint Staff in FY13.

A. Mission Description and Budget Item Justification

The Joint Integration & Interoperability (JI&I) Program Element underwrites the Department's core joint Command and Control (C2) efforts for military needs development and validation, for development of associated Doctrine, Organization, Training, Material, Leadership, Personnel, Facilities (DOTMLPF), and for operational assessment of materiel solutions proposed and delivered by the Defense acquisition enterprise. Funds from the JI&I Program are used to address joint capabilities including, but not limited to operational through tactical level joint integration of the following capabilities: Common Operational and Tactical Pictures; Combat Identification; Situational Awareness; Adaptive Mission Planning and Rehearsal; Interoperability among Service/ Agency intelligence systems; Interoperable Joint Fires, Maneuver, and Intelligence; and Integrated Joint Battle Management Command and Control. Activities funded by the JI&I Program aim to:

- Identify, and/or develop mission capable solutions for COCOM interoperability and integration capability shortfalls with emphasis on non-materiel elements;
- Assess operational suitability and sufficiency of materiel solutions identified by the Defense acquisition enterprise in response to validated joint C2 needs;
- Provide Combatant Commanders with interoperable combat identification and situational awareness capabilities among United States Interagencies, and Allied and Coalition Forces in support of Overseas Contingency Operations;
- Develop joint requirements supporting C2-intensive joint missions such as Joint Close Air Support and Joint Fires;
- Develop joint integrated architectures that guide service capability mapping to achieve joint interoperability;
- Establish fundamental joint data standards and cross domain solutions to facilitate future system interoperability and integration; and,
- Undertake other activities to resolve emergent operational and tactical needs associated with joint C2.

Volume

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense				DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY		R-1 ITEM NOMENCLATURE			
0400: Research, Development, Test & Evaluation, Defense-Wide		PE 0607828D8Z: Joint Integration & Interoperability			
BA 7: Operational Systems Development					
B. Program Change Summary (\$ in Millions)	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total
Previous President's Budget	29.059	0.000	0.000	-	0.000
Current President's Budget	28.935	0.000	0.000	-	0.000
Total Adjustments	-0.124	0.000	0.000	-	0.000
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-0.124	-			
• SBIR/STTR Transfer	-	-			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 7: Operational Systems Development					R-1 ITEM NOMENCLATURE PE 0607828D8Z: Joint Integration & Interoperability				PROJECT P818: Joint Integration & Interoperability			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
P818: Joint Integration & Interoperability	-	28.935	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles												

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

Joint Integration and Interoperability Program (JI&I) funds efforts to identify critical characteristics of joint military capabilities and synchronize Doctrine, Organization, Training, Materiel, Leadership and Education, Personnel and Facilities (DOTMLPF) capability elements into a coherent package for employment by joint commanders. The JI&I Program provide resources for a wide range of efforts to define, refine, and deploy integrated joint capabilities. JI&I-funded endeavors aim to improve US and coalition capabilities to conduct coordinated operations. Necessarily, JI&I-funded projects most frequently address Command & Control (C2) and Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR) - the capstone capabilities for integrating disparate elements of military force for joint and coalition operations. The JI&I Program supports tasks and projects associated with integration & interoperability of the C2 Portfolio including coordination of C2 operational architectures, standards, and policies. Likewise, JI&I partially funds integration and decision support activities associated with DOD executive level C4 management and oversight.

The JI&I Program delivers outcomes conforming to joint integration missions:

- In concert with the separately funded Joint Systems Integration Command (JSIC) and Joint Fires Integration Interoperability Team (JFIIT), JI&I resources investigate joint C2/C4ISR shortfalls and ascertain characteristics of DOTMLPF remedies to meet mission requirements. The remedies are then pursued through partnerships with Component force development authorities and acquisition sponsors.
- Consistent with the role as operational sponsor for joint C2, JI&I underwrites Joint Combat Capability Developer (JCCD) activities compiling operational requirements for C2/C4ISR capability development and integrated testing.
- Delivers assessment and recommendations for improvement of interoperable Combat Identification (CID) and Situational Awareness (SA) capabilities among United States forces, interagency organizations, and allied/coalition forces.
- Establishes joint data standards and cross domain solutions to facilitate future system interoperability and integration. Joint Integration and Interoperability Program (JI&I) funds efforts to identify critical characteristics of joint military capabilities and synchronize Doctrine, Organization, Training, Materiel, Leadership and Education, Personnel and Facilities (DOTMLPF) capability elements into a coherent package for employment by joint commanders.

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2012	FY 2013	FY 2014
Title: Joint C2 Capability Development and Integration	1.401	0.000	0.000
Description: Description: Primary objective is the resolution of C2 warfighter requirements and interoperability shortfalls; development, oversight, and execution of the DoD C2 Strategic and Implementation Plan objectives for:			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense			DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 7: <i>Operational Systems Development</i>		R-1 ITEM NOMENCLATURE PE 0607828D8Z: <i>Joint Integration & Interoperability</i>		PROJECT P818: <i>Joint Integration & Interoperability</i>	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2012	FY 2013	FY 2014
1) Improved, integrated, interoperable, and networked joint force; 2) Reduction in duplicative C2 systems/programs across the DoD portfolio; and 3) Improved decisions and recommendations regarding capability trade-off investment strategies and development efforts.					
FY 2012 Accomplishments: Provided DoD Components with prioritized C2 capability needs and investment recommendations (materiel and non-materiel) to minimize risks associated with C2 capability shortfalls. Evaluated the current mix of C2 capabilities against COCOM validated gaps and requirements to identify the best mix of capabilities with proposed changes in policies, standards and training. Led the requirements definition and implementation framework necessary to evolve the DoD Future Mission Network (FMN) capability; follow-on to the Afghanistan Mission Network (AMN). Conducted studies, analyses and operational assessments for the development of C2 capability solutions necessary to satisfy warfighting requirements and inform Fiscal Year 2014 resourcing deliberations.					
Title: Combat Capability Developer (CCD) Description: Primary objective is to meet joint warfighter command and control (C2) needs through a flexible and responsive capability-needs development and oversight process across the full spectrum of C2 development; strategic-to-tactical. The CCD will: 1) Serve as DoD's operational/capability sponsor, capability developer, and Warfighter advocate for Joint C2 family of programs, Global Command and Control System-Joint (GCCS-J) capabilities, Global Theater Security Cooperation Management Information System (G-TSCMIS), Multi-National and Mission Partner (MNMP), and Unclassified Information Sharing Services (UISS) requirements development. Collaborates with C2 stakeholders to develop and manage requirements for Future Mission Network (FMN) core capabilities. 2) Sustain relevant fielded capabilities and synchronize C2 development efforts by working closely with USD(AT&L), Service and Agency materiel developers to annually create the Joint C2 Sustainment and Modernization Plan to sequence requirements, materiel solution development schedules, and resource availability/allocation to achieve optimum Joint C2 capability releases. 3) Generate, for subsequent JROC approval, the annual Joint C2 Requirements Prioritization and Sequence Plan (encompassing sustainment and modernization requirements) as the warfighter's operational priorities demand signal for required capability needs. 4) Identify, coordinate and synchronize sustainment and modernization requirements definition and decomposition to support system analysis, programming, development, testing, certification, and fielding of joint C2 capabilities. Collaboratively develop and coordinate appropriate requirements documentation, to include Initial Capabilities Documents (ICD), Capability Development Documents (CDD), Capability Definition Packages (CDP) and Capability Packages (CP) that articulate decomposed requirements with an operational context for specific capabilities.			5.528	0.000	0.000

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 7: Operational Systems Development	R-1 ITEM NOMENCLATURE PE 0607828D8Z: Joint Integration & Interoperability	PROJECT P818: Joint Integration & Interoperability		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
FY 2012 Accomplishments: Conducted C2 capability prioritization and sequencing via the CCD's and USD(AT&L)'s agile Joint C2 Sustainment and Modernization Plan process, with follow-on C2 capability production and deployment for FY12-14. Provided direct 'hands-on' engagement with Component materiel developers to operationally shape C2 products and solutions while ensuring requirements traceability. Sustained and synchronized critical GCCS FoS capabilities while transitioning joint C2 to agile, objective capabilities. Oversaw the development and approval of: the JROC-approved Joint C2 Capability Development Document (CDD) Change 3, JROC-approved Future Mission Network (FMN) Initial Capabilities Document (ICD), JROC-approved Information Systems (IS) IT Box process codified in CJCSI 3170.01, JCB-approved FY13 Joint C2 Operational Priorities, JS J8 RMD-approved Joint C2 Capability Definition Package (CDP)/Capability Package (CP) Executive Guide & process utilized as DoD's exemplar for IS requirements development, Joint C2 Common User Interface (CUI) CP, Global-Theater Security Cooperation Management Information System (G-TSCMIS) Release 1 CP, APEX Course of Action Wargaming CP, APEX Force List & Force Flow Development CP, Planning and Execution Enterprise Framework CDP, and Coalition Mission Partner Network (CMNT) CP. Provided operational oversight to the development and fielding of capabilities to warfighters: Joint C2 CUI widgets - IED Event Summary, Casualty Summary, 7-Day Attack/IED Event Average graph, and fuel and ammo watchboards, etc.); Agile Client - improved user effectiveness by tailoring capabilities & data to specific missions; Cross Domain Services - improved quality and consistency of GCCS-J Common Operational Picture (COP) data flows and interoperability between SCI, Collateral & Coalition networks; GCCS-J Global v4.2.0.9 - software now loaded off an image--reduced load time from 4 weeks to 24 hours; and GCCS-J JOPES v4.2.0.2 - provided machine-generated, 'FedEx-like' tracking numbers to enable tracking of manpower & logistics status in JOPES. Spearheaded the shutdown of 3 GCCS-J applications providing no operational utility while applying resource savings to higher priority C2 needs. Updated and developed capability analysis tools.				
Title: Data & Service Strategy Description: Primary objective is to ensure C2 data assets at enterprise level are visible, accessible, understandable and interoperable, by: 1) Leading an effective C2 Data & Services Strategy management construct to include guidance and policy recommendations; 2) Developing and refining C2 Data Standards and Best Practices; 3) Managing, tracking and verifying Authoritative Data Source (ADS) inventories generate utilization metrics and synchronize ADS exposure with C2 Capability development; 4) Supporting C2 Data Pilots, Joint Capability Technology Demonstrations (JCTDs), and other Data & Service Strategy implementation activities in order to increase the warfighter's access to C2 information; and 5) Maintaining oversight of DOD's tactical information exchange standards to ensure bi-level interoperability.		5.273	0.000	0.000
FY 2012 Accomplishments:				

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 7: <i>Operational Systems Development</i>	R-1 ITEM NOMENCLATURE PE 0607828D8Z: <i>Joint Integration & Interoperability</i>	PROJECT P818: <i>Joint Integration & Interoperability</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
<p>Led configuration management of C2 Core Version 2.0+ and chaired the C2 Core Configuration Control Board. Monitored and reported C2 Core implementation progress based upon a C2 Core Implementation Plan and refined, as needed. Continued mapping C2 Core elements and authoritative data sources (ADS) to Joint Mission Threads. Executed FY 2012 authoritative data source (ADS) Annual Review Board in conjunction with the Joint C2 Build/Plan process to synchronize data exposure with capability development. Demonstrated operational priorities' ADS dependencies through the combat capability developers' decision support toolkit (DST). Maintained C2 ADS information in the DoD Enterprise ADS Registry, and compiled, tracked, and reported ADS exposure across the enterprise. Developed and assessed prototype utilization metrics, and implemented same in the quarterly exposure tracking report. Executed Operational Utility Assessments (OUAs) for the Common Ground JCTD and the TEDS JCTD Increment III and began transition of the solutions to identified programs of record. Supported the NATO Modeling & Simulation Center of Excellence technical demonstration of passing C2 Core formatted messages between US and Italian C2 systems. Provided data & service strategy reviews and recommendations for ISPs, capabilities development documents, and guidance and policy documents. Initiated the expansion of the C2 ADS management approach in coordination with all functional capability boards (FCBs). Led the C2 Data and Services Steering Committee, which provides a formal process to establish C2 data sharing priorities and standards for C2 capabilities. Maintained oversight of DOD's tactical information exchange standards. Oversaw refinement and implementation of the Interoperability Enhancement Process (IEP) to ensure data interoperability in the field.</p>			
<p>Title: Joint Integrated Fires</p> <p>Description: Primary objective is the integration of Joint Fires Capabilities for US and Coalition Partners to improve combat / mission effectiveness while minimizing fratricide and collateral damage.</p> <p>1) Focus areas: Joint Fires, Joint Close Air Support (JCAS), Friendly Force Tracking (FFT), Combat Identification (CID), and related Joint Command and Control Capabilities.</p> <p>2) Conduct BOLD QUEST Coalition Capability Demonstration and Assessment.</p> <p>FY 2012 Accomplishments:</p> <p>Led JROC-directed Joint Fires Joint Mission Thread development. Planned BOLD QUEST 2013 Joint Operational Test Approach for Mark XII Mode 5 Interoperability test and conducted limited risk-mitigation events. Continued JFS/JCAS and CID-FFT Action Plan execution. Completed Forward Air Controller (Airborne) and JTAC MOA updates. Implemented Digitally Aided Close Air Support (DACAS) actions across Services. Conducted nine JTAC Stan Team Accreditation visits (four U.S. and five partner nation); four Joint Fires Observer (JFO) Accreditation visits (three U.S. and one partner nation); and one FAC (A) Program Review; hosted JTAC, FAC (A) and JFO Curriculum Review for 27 Schoolhouses (12 U.S. and 15 partner nation)- which collectively produced over 95 percent of all ISAF JTAC/FACs; 100 percent of all ISAF JFCOs' and 100 percent of all ISAF FAC(A)s. Conducted a Joint Fire/JCAS/ Symposium (attended by over 350 representtves from the US military and DOD, and 19 partner nations. Played significant role in rewrite of NATO Standardization Agreement (STANAG) 3797 (Minimum Qualifications</p>		8.800	0.000
			0.000

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 7: <i>Operational Systems Development</i>	R-1 ITEM NOMENCLATURE PE 0607828D8Z: <i>Joint Integration & Interoperability</i>	PROJECT P818: <i>Joint Integration & Interoperability</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
for Forward Air Controllers (FAC) and Laser Operators). Led the Joint Cooperative Target Identification – Ground (JCTI-G) Analysis of Alternatives (AoA) follow-on initiatives: Fielded and Programmed Capability Improvement (FPCI) analysis; non-materiel alternatives Capabilities Based Assessment. Reported Tactical Information Classification and Security (TICS) Study recommendation compliance to Joint Capabilities Board (JCB). Certified, accredited and fielded the Combat Identification Server in CENTCOM theater of operations in support of USAFCENT Joint Urgent Operational Need. Led Bold Quest 12 Demonstration at Camp Atterbury, Indiana with 450 participants from 11 nations. Initiatives included: Digital exchange of targeting information between strike aircraft and terminal controllers; joint fire support joint mission threat vignettes; integrated Army and USMC UAS platforms/teams (RQ-7B Shadow) into DACAS strike missions; and cyber initiatives.			
Title: Joint Architecture Integration and Development		7.933	0.000
Description: The primary effort for this objective is to develop and integrate joint architectures and conduct analysis for multiple C2 and related warfighting mission areas. There are four foundational efforts that provide the architecture, analysis, and services to the warfighters and supporting elements: Joint Force Architecture, Standards, and Analysis; Architecture Driven Analysis (Joint Mission Threads); Joint Combat Capability Development Architecture; and Joint Architecture Federation and Integration.			
FY 2012 Accomplishments: Joint Force Architectures, Standards, and Analysis: Developed the Future Mission Network (FMN) Capabilities Analysis, FMN Integrated Architectures, (both are JROC approved) and FMN Humanitarian Assistance Disaster Relief Use Case. Developed the Family of Advanced beyond Line of Sight Terminals (FAB-T) integrated architecture. AID developed the Senior Leaders Command and Control Airborne architecture. Assisted in the development of the Global Force Management Increment I and II integrated architectures. AID developed the Joint Common Functions List (JCSFL) Version 5.0. AID refined Command and Control On-the-Move (C2OTM) Reference Architecture. Analyzed and provided recommendations on approximately 80 JCIDS documents and 30 Information Support Plans (ISPs). Provided recommendations to 8 DoD Architecture and Standards policy documents. Developed the process for NR KPP waiver analysis and provided recommendations to JS J6 on five requests for waivers. AID updated the NR KPP Manual.			
Architecture Driven Analysis (Joint Mission Threads - JMTs): Managed the Joint Fires Support (JFS) Tier 1, 2, and 3 JMT work, leading to Engineering Change Proposal (ECP) recommendations to be coordinated across Service program offices in FY-13. Supported JS J7 Joint Concept Development and Experimentation (CD&E) Joint Warfighter Challenges (WFCs): Homeland Defense BMD Analysis (SWA) (HDBAS); Ballistic Missile Defense Command and Control (BMD C2); Conduct Civil Affairs Planning Ops for Steady State Operations (CAPOSSO); Littoral Maritime Defense (LMD); Building Partnerships - Planning Synchronization Framework (BP-PSF), and CYBER Command and Control. Digital Aided Close Air Support (DACAS), Joint Fires Support, and Joint Personnel Recovery ECPs have matured and were demonstrated and assessed in Bold Quest '12 and other risk reduction activities. ECPs were designed in partnership			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 7: <i>Operational Systems Development</i>	R-1 ITEM NOMENCLATURE PE 0607828D8Z: <i>Joint Integration & Interoperability</i>	PROJECT P818: <i>Joint Integration & Interoperability</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
<p>with over 25 Service program offices, generating solutions for the warfighter at reduced costs and fully interoperable based on the J6 system-of-systems engineering process. Added four JMTs to the JS JMT repository, including a Maritime Interception Tier 1 JMT constructed in partnership with Department of Homeland Security. Provided support to the JROC-directed Future Mission Network (FMN) 90-day Study by leading the FMN Architecture Syndicate (with C/S/A participation), and providing mission thread data development and analysis. Led the JMT Architecture and Testing Working Group as tasked in CJCSI 6212.01(F).</p> <p>Joint Combat Capability Development Architectures: Identified over 60 initiatives and Programs that either currently or are planned to play a role in Coalition Information Sharing. to provide the FMN Stakeholder WG with a clearer understanding of the number and specific programs and representatives that should be participating in the FMN discussion. Supported the FMN Initial Capabilities Document (ICD) Integrated Architecture development and reviewed and provided comments on draft FMN documents (CONOPS, TOR, ICD, etc.). Gathered, cataloged, and refined data in support of the development of architecture products for the Joint C2 Capability Development Document (CDD) focused update and developed an initial SV-1 (System Interface Description) architecture view. Produced an initial All View 1 (AV-1) and Operational View 1 (OV-1) for the JC2 Objective Architecture Core Team (ACT). Provided specific architectural and analysis products that supported the APEX ICD.</p> <p>Joint Architecture Federation and Integration: Completed a catalog of existing Warfighting Mission Area (WMA) reference architectures, including Joint Mission Thread, products and architecture elements, supported by Enterprise Content Search and Discovery Service. This enabled global discovery of this content by C/S/As to be able to readily identify WMA Reference Architectures, Operational Reference Architectures and Joint Mission Threads. Completed initial draft of Joint Integrated Dictionary of WMA architecture elements to provide architecture developers across all communities a quick reference guide of authoritative architecture elements to be used for the development of WMA architecture products. Developed foundational use cases to support capability analysis using architecture data and web services. These use cases are designed to automate Joint Staff (FCB, JROC and other) processes that use architecture analysis to support their workflow. By improving access to required architecture data and information significant improvements in the quality of data, speed of access and analysis processes are realized.</p>				
Accomplishments/Planned Programs Subtotals		28.935	0.000	0.000
C. Other Program Funding Summary (\$ in Millions)				
N/A				
Remarks				

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 7: <i>Operational Systems Development</i>	R-1 ITEM NOMENCLATURE PE 0607828D8Z: <i>Joint Integration & Interoperability</i>	PROJECT P818: <i>Joint Integration & Interoperability</i>
<p><u>D. Acquisition Strategy</u> Not applicable for this item.</p> <p><u>E. Performance Metrics</u> Interoperability and Integration:</p> <ul style="list-style-type: none"> • Develop coordinated joint C4 operational assessments, tests and evaluations to identify, prioritize and document interoperability deficiencies that produce Component plans and actions to reduce or eliminate identified deficiencies. • Provide mission capable solutions for joint interoperability and integration capability shortfalls to influence and resource joint C2 solutions. <p>Joint Fires:</p> <ul style="list-style-type: none"> • Provide situational awareness and cooperative / non-cooperative identification capabilities that enable U.S., NATO / coalition warfighters to identify friendly, enemy and neutral forces for “shoot/don’t shoot” decisions. • Synchronize Service testing, acquisition and fielding of Mode Five IFF capability, with an Initial Operating Capability (IOC) in FY 2014 and Full Operational Capability (FOC) in FY 2020. • Complete Definition Package for Block Two of Digitally Aided Close Air Support (DACAS) coordinated implementation in conjunction with participating Service programs of record. • Conduct Accreditation Biennial Visits for six Joint Terminal Attack Controller (JTAC) and 2 Joint Fires Observer (JFO) Schoolhouses. • Monitor compliance for Mode Five IOC in FY 2014 and FOC in FY 2020 <p>Combat Capability Development:</p> <ul style="list-style-type: none"> • Develop annual JROC approved plan to identify prioritized and synchronized capabilities sufficient for near-term development and fielding to warfighters (12-18 month delivery). • Develop annual assessment of impacts on GCCS Joint & Service Family of Systems (\$350M+ annual portfolio) to determine mission impacts in the geographic AORs. • Develop, as required, JROC requirements documentation (ICDs, CDDs, CPDs, CDPs, CONOPs, MOEs/MOPs) sufficient for agile/flexible use by the acquisition community. <p>Architectures:</p> <ul style="list-style-type: none"> • Continue development of reusable architecture products to provide capability developers an upfront, operational/systems view at the enterprise level to support of capability acquisition, requirements generation, development, and testing. <p>Data</p> <ul style="list-style-type: none"> • Establish common C2 data and service standards and enables access to authoritative data assets in order to provide the warfighter timely access to critical information. 		

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2014 Office of Secretary Of Defense													DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 7: <i>Operational Systems Development</i>							R-1 ITEM NOMENCLATURE PE 0607828D8Z: <i>Joint Integration & Interoperability</i>					PROJECT P818: <i>Joint Integration & Interoperability</i>			

Support (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
TBD	TBD	TBD:TBD	-	28.935		0.000		-		-		-	Continuing	Continuing	
Subtotal			0.000	28.935		0.000		0.000		0.000		0.000			

	All Prior Years	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	28.935	0.000	0.000	0.000	0.000			

Remarks

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2014 Office of Secretary Of Defense			DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 7: <i>Operational Systems Development</i>	R-1 ITEM NOMENCLATURE PE 0607828D8Z: <i>Joint Integration & Interoperability</i>	PROJECT P818: <i>Joint Integration & Interoperability</i>	

	FY 2012				FY 2013				FY 2014				FY 2015				FY 2016				FY 2017				FY 2018			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Jl&I Profile																												
Project Selections																												
Assessments																												
Project Funding																												
Project Development																												

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2014 Office of Secretary Of Defense			DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 7: <i>Operational Systems Development</i>	R-1 ITEM NOMENCLATURE PE 0607828D8Z: <i>Joint Integration & Interoperability</i>	PROJECT P818: <i>Joint Integration & Interoperability</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Jl&I Profile	1	2012	4	2013
Project Selections	1	2012	4	2012
Assessments	1	2012	4	2012
Project Funding	1	2012	3	2016
Project Development	1	2012	4	2016

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY

0400: *Research, Development, Test & Evaluation, Defense-Wide*
BA 7: *Operational Systems Development*

R-1 ITEM NOMENCLATURE

PE 0303140D8Z: *Information Systems Security Program*

COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
Total Program Element	-	11.348	11.780	10.673	-	10.673	12.867	11.620	11.164	11.588	Continuing	Continuing
140: <i>Information Systems Security Program</i>	-	11.348	11.780	10.673	-	10.673	12.867	11.620	11.164	11.588	Continuing	Continuing
Quantity of RDT&E Articles												

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

The NII Information Systems Security Program (ISSP) provides focused research, development, testing and integration of technology and technical solutions critical to the Defense Information Assurance Program (10 USC 2224) through pilot programs and technology demonstration; investment in high leverage, near-term programs that offer immediate Information Assurance (IA) benefit; federal and multi-national initiatives; and short-term studies and research critical to protecting and defending information systems by ensuring their availability, integrity, authentication, confidentiality, and non-repudiation. These efforts focus on Computer Network Defense (CND) and the restoration of information systems by incorporating protection, detection, analysis and reaction and response capabilities; emerging cryptographic technologies; technology transition and IA research capabilities. This program is designed to meet the requirements of 10 USC 2224 (Defense Information Assurance Program), 44 USC 3544, (Federal Information Security Management Act of 2002), OMB Circular A-130, and DoD Directives 8500.1, and 0-8530.1. This program is funded under Budget activity 7, Operational System Development because it integrates technology and technical solutions to the Defense Information Assurance Program.

B. Program Change Summary (\$ in Millions)

	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total
Previous President's Budget	11.352	11.780	12.163	-	12.163
Current President's Budget	11.348	11.780	10.673	-	10.673
Total Adjustments	-0.004	0.000	-1.490	-	-1.490
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Program Adjustment	-0.004	0.000	-1.490	-	-1.490

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 7: Operational Systems Development		R-1 ITEM NOMENCLATURE PE 0303140D8Z: Information Systems Security Program		
Change Summary Explanation Program Change Explanation: FY 2012: Program Adjustment -0.004 million.				
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
Title: Information Systems Security Program Plans and Accomplishments		11.348	11.780	10.673
FY 2012 Accomplishments: <ul style="list-style-type: none">• Refined IA architecture, policy, and IA capabilities necessary to support “end-to-end” IA capability for the Joint Information Environment (JIE), including enterprise services of discovery and collaboration, and IT modernization. Supported technology demonstrations and pilots focused on functions required in mid to long term increment of the IA Component of the JIE.• Provided essential support to DoD Information Assurance (IA) Risk Management (RM) Transformation that includes migrating the Defense IA RM process to comply with the mandated Federal (NIST) community RM standards, performing the functions of the DIACAP TAG Secretariat IAW DoD 8510.01, supporting enterprise-wide IA RM automation (eMASS) requirements identification and implementation, and managing DoD's single, virtual, authoritative Community of Interest (known as the DIACAP Knowledge Service) for DoD IA RM policies, activities, and initiatives.• Developed and refined the criticality analysis in support the DoD trusted defense system strategy (including Software and Hardware Assurance), to support its deployment.• Completed Phases 3 & 4 of the Inductive User Interface (aka: SAST) GUI to enhance ease of use and permit independent development, testing and maintenance of T&E, training and exercise scenarios. Improvements will support joint exercises, the Department’s international exercise program, and capstone events at Service schools.• Piloted International Cyber Defense Workshop (ICDW) training exercise for DoD agencies.• Completed Phase II of Cyber Challenge, the Department’s FY13 annual awareness training product.• Continued development of Automated Consolidated Exercise Metrics Assessment Tool (CEMAT) capabilities in the IA Range.• Developed 508 solutions for Virtual Training Environment (VTE) content.• Refined the DoD Mobile Device Strategy and Roadmap, to include policy and IA capabilities necessary to support "end-to-end" IA capability for the JIE.				

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 7: <i>Operational Systems Development</i>		R-1 ITEM NOMENCLATURE PE 0303140D8Z: <i>Information Systems Security Program</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
<ul style="list-style-type: none"> • Developed and refined the DoD policy for Digital Persona Protection to include the construction of an implementation plan based on the final policy to support workforce protection awareness, education, and training throughout the department. • Refined and updated DoD policies related to wireless, emerging technologies, and mobile computing while ensuring the security standards and policies are implemented with both legacy and cutting edge technologies in mind throughout their entire life-cycle. • Provided IA Mobile Enterprise Services support to further develop and refine the DoD-enterprise cloud computing strategy as the DoD Mobile Device Strategy and Roadmap will work in lockstep with the cloud computing strategy. • Supported and monitored implementation of the SHA-256 (an encryption algorithm) Cryptographic migration. • Provided policy and guidance for the use of Federal Personal Identity Verification (PIV) and non-Federal PIV-I credentials within the DoD for mission applications and business functions. • Responded to inquiries from DoD Customers and Information system owners regarding DoD PKI and Identity Management policy and guidance. • Collaborated with USCYBERCOM to develop implementation guidance for DoD PKI and Identity Management policy. • Expanded the International Cyber Defense Workshop virtual environment by moving the portals and Security Assessment Simulation Toolkit (SAST) to the .mil domain; concluded information sharing agreement with Finland and provide more IA/CND information in releasable form to all formal international partners (NATO, Five Eyes (FVEY), Japan, ROK, Singapore, France, Germany, Poland, and Sweden). <p>FY 2013 Plans:</p> <ul style="list-style-type: none"> • Develop products and test tools for a comprehensive cybersecurity awareness program. • Extend ICDW-like training exercises to all DoD agencies. • Continue Zanthanon GOTS API/SDK enhancements. • Continue to provide essential support to DoD Information Assurance (IA) Risk Management (RM) Transformation that includes migrating the Defense IA RM process to comply with the mandated Federal (NIST) community RM standards, performing the functions of the DIACAP TAG Secretariat IAW DoD 8510.01, supporting enterprise-wide IA RM automation (eMASS) requirements 				

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 7: <i>Operational Systems Development</i>		R-1 ITEM NOMENCLATURE PE 0303140D8Z: <i>Information Systems Security Program</i>		
C. Accomplishments/Planned Programs (\$ in Millions) identification and implementation, and managing DoD's single, virtual, authoritative Community of Interest (known as the DIACAP Knowledge Service) for DoD IA RM policies, activities, and initiatives. <ul style="list-style-type: none"> • Continue refinement of the DoD Mobile Device Strategy and Roadmap, to include policy and IA capabilities necessary to support "end-to-end" IA capability for the GIG-including mobile enterprise services such as discovery, collaboration, messaging, mediation, data tagging, etc. Support mobile technology demonstrations, development and pilots focusing functions required in mid to long term increment of the IA Component of the GIG Architecture. • Further develop and refine the DoD policy for Digital Persona Protection to include the construction of an implementation plan based on the final policy to support workforce protection awareness, education, and training throughout the department. • Continue to refine and update DoD policies related to wireless, emerging technologies and mobile computing while to ensure the security standards and policies are implemented with legacy and cutting edge technologies in mind throughout their entire life-cycle. • Continue to provide IA Mobile Enterprise Services support to further develop and refine the DoD-enterprise cloud computing adoption strategy as the DoD Mobile Device Strategy and Roadmap will work in lockstep with the cloud computing strategy. • Develop Advanced Persistent Threat (APT) data standards and data collection capabilities • Pilot NIPRNet – INTERNET isolation capabilities. • Expand scope of International Cyber Defense Workshop to include more training modules and expanded IA range capabilities in SAST model; develop web portals for classified FVEY information sharing and methodologies for releasing IA/CND information to formal partners in near real time. • Perform Continuous Monitoring and Risk Scoring (CM/RS) by providing strategic management of CM/RS; develop the strategy and objectives for institutionalizing continuous monitoring across DoD; coordinate CM/RS capabilities; and prepare applicable CM/RS issuances. • Provide strategic management and oversight of the Computer Network Defense Service Provider (CNDSP) Program; and conduct trend analysis to identify systemic trends and associated gaps to the CNDSP program. FY 2014 Plans:		FY 2012	FY 2013	FY 2014

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 7: <i>Operational Systems Development</i>		R-1 ITEM NOMENCLATURE PE 0303140D8Z: <i>Information Systems Security Program</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
<ul style="list-style-type: none"> • Continue development of capabilities (test tools, etc.,) for a comprehensive cybersecurity awareness program. • Continue extension of ICDW-like training exercises to all DoD agencies. • Continue to provide essential support to DoD Information Assurance (IA) Risk Management (RM) Transformation: migrating the Defense IA RM process to comply with the mandated Federal (NIST) community RM standards; performing the functions of the DIACAP TAG Secretariat IAW DoD 8510.01; support for the enterprise-wide IA RM automation (eMASS) requirements identification and implementation; and management of the DoD single, virtual, and authoritative Community of Interest (known as the DIACAP Knowledge Service) for DoD IA RM policies, activities, and initiatives. • Continue the refinement of the DoD Mobile Device Strategy and Roadmap, to include policy and IA capabilities, necessary to support "end-to-end" IA capability for the GIG-including mobile enterprise services such as discovery, collaboration, messaging, mediation, data tagging, etc. Support mobile technology demonstrations, development, and pilots. • Continue the development and refinement of the DoD policy for Digital Persona Protection, to include research and development of an implementation plan IAW the final policy on workforce protection awareness, education, and training. • Continue to research and refine DoD policies on wireless, emerging technologies and mobile computing while ensuring security standards and policies are implemented with both legacy and emerging technologies in mind throughout their entire life-cycle. • Research and refine Advanced Persistent Threat (APT) data standards and data collection capabilities • Provide strategic management and oversight of the CNDSP Program; and conduct trend analysis to identify systemic trends and associated gaps to the CNDSP program. • Continue research and refinement of IPv6 compatibility across NIPRNet; and ensuing implementation guidance. • Continue participation in the research, development, and implementation of DoD DMZ Increment engineering plans, to include monitoring the on-going implementation of NIPRNet DMZs and migration of outward facing applications. • Continue implementation and refinement of NIPRNet and SIPRNet Mapping and Leak Detection Solution to identify vulnerabilities and develop risk mitigation strategy. 				

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 7: <i>Operational Systems Development</i>					R-1 ITEM NOMENCLATURE PE 0303140D8Z: <i>Information Systems Security Program</i>						

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2012	FY 2013	FY 2014
<ul style="list-style-type: none"> • Monitor the software engineering and implementation of the advanced Whitelisting database capability to reduce NIPRNet exposure to the Internet. • Continue collaborate with Combatant Commands (COCOMs) to support the identification and prioritization of cleared companies providing operational support and thereby assist and promote their full participation when the DIB CS/IA voluntary program opens to all cleared defense contractors. • Monitor the DIB CS/IA program expansion under FVEY CND MOU and any International amendments to the Framework Agreement. • Monitor the on-going implementation of SCRM key practices and test and evaluation processes across DoD. 			
Accomplishments/Planned Programs Subtotals	11.348	11.780	10.673

D. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
• 0303140D8Z O&M DW: <i>Information System Security Program</i>	15.480	13.253	13.178		13.178	13.178	13.848	14.102	14.378	Continuing	Continuing
Remarks											
E. Acquisition Strategy N/A											
F. Performance Metrics Zanethenon improvements available as a core enterprise IA/CND simulation tools. <ul style="list-style-type: none"> - CEMAT effectiveness in supporting the T&E community for data collection, reduction analysis, and reporting. - 508 solution available for VTE content. - Cyber Challenge being used DoD-wide. - DoD agency CIOs reporting of International Cyber Defense Workshop (ICDW)-like training exercises, enhancing the cybersecurity skills of personnel. 											

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 7: Operational Systems Development	R-1 ITEM NOMENCLATURE PE 0303140D8Z: Information Systems Security Program	PROJECT 140: Information Systems Security Program
-----------------------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------	-------------------------------------------------------------

Support (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Information System Security Support	C/Various	Various:Various	0.000	10.148	Jul 2012	10.280	Jul 2013	9.173	Jul 2014	-		9.173	Continuing	Continuing	Continuing
Subtotal			0.000	10.148		10.280		9.173		0.000		9.173			

Management Services (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
FFRDC Support	FFRDC	Various:Various	0.000	1.200	Jul 2012	1.500	Jul 2013	1.500	Jul 2014	-		1.500	Continuing	Continuing	Continuing
Subtotal			0.000	1.200		1.500		1.500		0.000		1.500			

	All Prior Years	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	11.348	11.780	10.673	0.000	10.673			

Remarks

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense	DATE: April 2013
-------------------------------------------------------------------------------------------------	-------------------------

APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE							
0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 7: <i>Operational Systems Development</i>					PE 0303260D8Z: <i>Defense Military Deception Program Office</i>							
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013[#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
Total Program Element	1.129	1.206	1.294	1.246	-	1.246	1.083	1.114	1.132	1.154	Continuing	Continuing
891: <i>Defense Military Deception Program</i>	1.129	1.206	1.294	1.246	-	1.246	1.083	1.114	1.132	1.154	Continuing	Continuing
Quantity of RDT&E Articles												

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

The Defense Military Deception Program (DMDP) is an effort to revitalize DoD Military Deception (MILDEC) capability and capacity across the Department to enable combatant commands (COCOMs) with the capability and capacity to effectively plan, integrate, execute and assess MILDEC. The Defense MILDEC Program Office (DMDPO) provides oversight, guidance and program management support for Defense MILDEC education, training, exercises, career force management, operational and programmatic assessment, capability development, intelligence, planning, analysis and operational employment in Defense military operations. RDT&E funds support the development, establishment and integration of MILDEC capabilities, next generation devices, and Department activities.

B. Program Change Summary (\$ in Millions)	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total
Previous President's Budget	1.206	1.294	1.254	-	1.254
Current President's Budget	1.206	1.294	1.246	-	1.246
Total Adjustments	0.000	0.000	-0.008	-	-0.008
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Department Adjustment	-	-	-0.008	-	-0.008

C. Accomplishments/Planned Programs (\$ in Millions)

	FY 2012	FY 2013	FY 2014
Title: Defense Military Deception Program Office (DMDPO)	1.206	1.294	1.246
Description: The Defense Military Deception Program (DMDP) is an effort to revitalize DoD Military Deception (MILDEC) capability and capacity across the Department to enable combatant commands (COCOMs) with the capability and capacity to			

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 7: <i>Operational Systems Development</i>		R-1 ITEM NOMENCLATURE PE 0303260D8Z: <i>Defense Military Deception Program Office</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
effectively plan, integrate, execute and assess MILDEC. The Defense MILDEC Program Office (DMDPO) provides oversight, guidance and program management support for Defense MILDEC education, training, exercises, career force management, operational and programmatic assessment, capability development, intelligence, planning, analysis and operational employment in Defense military operations. RDT&E funds support the development, establishment and integration of MILDEC capabilities, and next generation devices.				
FY 2012 Accomplishments:				
<ul style="list-style-type: none"> - Researched and identified emerging scientific research and technologies to develop future military MILDEC capabilities. - Developed an assessment to help guide DoD MILDEC investment strategy. - Created opportunities to influence the acquisition life cycle for military technology programs related to MILDEC. - Conducted a technical assessment on global technology advancements in the areas related to MILDEC within the science and technology new assessment program. - Developed MILDEC education curriculum focused on understanding and exploiting the information environment, with emphasis on adversary decision makers, decision making processes and enabling information infrastructure. - Executed an education and training needs assessment (ETNA) focused on the Department's MILDEC training and education gaps. 				
FY 2013 Plans:				
<ul style="list-style-type: none"> - Develop and establish experimentation, test and evaluation of emerging devices, decoys and technologies enabling MILDEC to meet COCOM commander, Service and Agency emergency, urgent and forecasted priorities. - Develop, integrate, and transition Department training and education curriculum focused on bridging gaps between available capabilities and COCOM commander staff, Service and Agency requirements. -Develop and institute analytical constructs which require intelligence and operational communities to characterize, forecast, target, wargame, and assess the information environment in support of the Department. -Research Department intelligence deficiencies with the information environment. -Research, develop and standardize information environment education and training content to field within Department curricula. 				
FY 2014 Plans:				
<ul style="list-style-type: none"> - Continue to develop and establish experimentation, test and evaluation of emerging devices, decoys and technologies enabling MILDEC to meet COCOM commander, Service and Agency emergency, urgent and forecasted priorities. - Continue to develop, integrate, and transition Department training and education curriculum focused on bridging gaps between available capabilities and COCOM commander staff, Service and Agency requirements. -Continue to develop and institute analytical constructs which require intelligence and operational communities to characterize, forecast, target, wargame, and assess the information environment in support of the Department. -Continue to research Department intelligence deficiencies with the information environment. 				

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 7: <i>Operational Systems Development</i>					R-1 ITEM NOMENCLATURE PE 0303260D8Z: <i>Defense Military Deception Program Office</i>							
C. Accomplishments/Planned Programs (\$ in Millions)										FY 2012	FY 2013	FY 2014
-Continue to research, develop and standardize information environment education and training content to field within Department curricula.												
- Establish a framework enabling MILDEC considerations in the Acquisition, Technology and Logistics (AT&L) RDT&E life cycle of key capabilities.												
Accomplishments/Planned Programs Subtotals										1.206	1.294	1.246
D. Other Program Funding Summary (\$ in Millions)												
Line Item	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost	
• 0303260D8Z O&M DW: <i>Defense Military Deception Program Office</i>	4.999	5.044	5.820		5.820	6.579	6.787	6.910	7.044	Continuing	Continuing	
Remarks												
N/A												
E. Acquisition Strategy												
The acquisition, management, and contracting strategy involves the following:												
• Adherence to guidance outlined in DoD 5000, Directive 7, Federal Acquisition Regulations (FAR), and FAR Supplement Policies and Procedures												
• Acquire and sustain MILDEC capabilities, systems, tools, products, and services through a disciplined, yet agile, process that enables the defense establishment to provide Information Operations, for the nation and the warfighters												
• Sustain an acquisition process that is responsive and responsible to internal and external customers and stakeholders												
• Continue to support the warfighter's need for capabilities that dominate today's dynamic, networked battlespace by providing support directly to the warfighter for planning and executing MILDEC missions												
F. Performance Metrics												
Performance metrics are measured through revitalization of MILDEC capability and capacity as a traditional military activity												
- Department possesses functionally relevant and timely analyses in support of MILDEC activities												
- Department possesses the authorities through policy to plan, resource and execute MILDEC												
- Department possesses functionally relevant and available training, education and exercises to support the Department's MILDEC activities												
- Department program, plans and resources MILDEC to enable the Department's MILDEC planning, integration and execution												

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 7: <i>Operational Systems Development</i>	R-1 ITEM NOMENCLATURE PE 0303260D8Z: <i>Defense Military Deception Program Office</i>	PROJECT 891: <i>Defense Military Deception Program</i>
-----------------------------------------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------	------------------------------------------------------------------

Support (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost		Cost To Complete	Total Cost	Target Value of Contract
Defense Military Deception Program	Option/ UCA	N/A:N/A	1.129	1.206		1.294		1.246		-		1.246		Continuing	Continuing	
Subtotal			1.129	1.206		1.294		1.246		0.000		1.246				

Remarks

N/A

	All Prior Years	FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total		Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	1.129	1.206		1.294		1.246		0.000		1.246				

Remarks

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense	DATE: April 2013
-------------------------------------------------------------------------------------------------	-------------------------

APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE							
0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 7: <i>Operational Systems Development</i>					PE 0305125D8Z: <i>Critical Infrastructure Protection (CIP)</i>							
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
Total Program Element	-	12.814	10.462	9.752	-	9.752	10.069	8.358	8.493	8.658	Continuing	Continuing
125: <i>CRITICAL INFRASTRUCTURE PROTECTION (CIP)</i>	-	12.814	10.462	9.752	-	9.752	10.069	8.358	8.493	8.658	Continuing	Continuing

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

The Defense Critical Infrastructure Program (DCIP) is a Department of Defense (DoD) risk management program that seeks to ensure the availability of networked assets critical to DoD missions, to include DoD and non-DoD, domestic and foreign infrastructures essential to planning, mobilizing, deploying, executing, and sustaining United States military operations on a global basis. Through identifying Defense Critical Assets, assessing them to determine vulnerabilities, incorporating specific threat and hazard information and analysis, and visually displaying relevant infrastructure data and analysis, DoD will be positioned to make risk management decisions to ensure the appropriate infrastructure is available, when needed, to support DoD missions.

Specifically, Combatant Commands (COCOMs) are responsible for identifying the mission capability requirements and coordinating with the Military Departments, Defense Agencies, DoD Field Activities, and Defense Sector Lead Agents to identify and assess Defense Critical Assets. As asset owners and capability providers, the Secretaries of the Military Departments and the Directors of Defense Agencies and DoD Field Activities, coordinate with the COCOMs to identify and prioritize the assets required to support mission-essential functions. Asset owners will also assess identified Defense Critical Assets to identify vulnerabilities and apply appropriate remediation and mitigation measures. The Defense Sector Lead Agents are responsible for identifying the specific functions, systems, assets (DoD and non-DoD owned), and interdependencies within the Defense Sector infrastructure networks supporting the identified critical missions.

Each Defense Sector Lead Agent, as identified in DoDD 3020.40, represents one of ten (10) functional areas that provide support to the Combatant Commanders and asset owners. These functional areas are as follows: defense industrial base (DIB); financial services; global information grid (GIG); health affairs; intelligence, surveillance, and reconnaissance (ISR); logistics; personnel; public works; space; and transportation.

In addition, DCIP manages specific analytic efforts in the identification and maintenance of specific inter- and intra-dependencies DoD has on the foundational commercial infrastructure networks supporting the identified critical missions. Specific analytic efforts are focused within six (6) commercial infrastructure areas: energy (electric power, natural gas); chemicals; transportation; telecommunications; water; and petroleum, oil, lubricants (POL).

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense	DATE: April 2013
-------------------------------------------------------------------------------------------------	-------------------------

APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 7: <i>Operational Systems Development</i>	R-1 ITEM NOMENCLATURE PE 0305125D8Z: <i>Critical Infrastructure Protection (CIP)</i>
-----------------------------------------------------------------------------------------------------------------------------------------------------------------	------------------------------------------------------------------------------------------------

B. Program Change Summary (\$ in Millions)	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total
Previous President's Budget	12.818	10.462	9.814	-	9.814
Current President's Budget	12.814	10.462	9.752	-	9.752
Total Adjustments	-0.004	0.000	-0.062	-	-0.062
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Other Program Adjustments	-0.004	-	-0.062	-	-0.062

Change Summary Explanation

FY 2012 baseline budget was reduced due to fiscal constraints and higher priorities within the Department.

FY 2014 baseline budget was reduced due to fiscal constraints and higher priorities within the Department..

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 7: Operational Systems Development					R-1 ITEM NOMENCLATURE PE 0305125D8Z: Critical Infrastructure Protection (CIP)				PROJECT 125: CRITICAL INFRASTRUCTURE PROTECTION (CIP)			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
125: CRITICAL INFRASTRUCTURE PROTECTION (CIP)	-	12.814	10.462	9.752	-	9.752	10.069	8.358	8.493	8.658	Continuing	Continuing
Quantity of RDT&E Articles												

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

The Defense Critical Infrastructure Program (DCIP) is a Department of Defense (DoD) risk management program that seeks to ensure the availability of networked assets critical to DoD missions, to include DoD and non-DoD, domestic and foreign infrastructures essential to planning, mobilizing, deploying, executing, and sustaining United States military operations on a global basis. Through identifying Defense Critical Assets, assessing them to determine vulnerabilities, incorporating specific threat and hazard information and analysis, and visually displaying relevant infrastructure data and analysis, DoD will be positioned to make risk management decisions to ensure the appropriate infrastructure is available, when needed, to support DoD missions.

Specifically, Combatant Commands (COCOMs) are responsible for identifying the mission capability requirements and coordinating with the Military Departments, Defense Agencies, DoD Field Activities, and Defense Sector Lead Agents to identify and assess Defense Critical Assets. As asset owners and capability providers, the Secretaries of the Military Departments and the Directors of Defense Agencies and DoD Field Activities, coordinate with the COCOMs to identify and prioritize the assets required to support mission-essential functions. Asset owners will also assess identified Defense Critical Assets to identify vulnerabilities and apply appropriate remediation and mitigation measures. The Defense Sector Lead Agents are responsible for identifying the specific functions, systems, assets (DoD and non-DoD owned), and interdependencies within the Defense Sector infrastructure networks supporting the identified critical missions.

Each Defense Sector Lead Agent, as identified in DoDD 3020.40, represents one of ten (10) functional areas that provide support to the Combatant Commanders and asset owners. These functional areas are as follows: defense industrial base (DIB); financial services; global information grid (GIG); health affairs; intelligence, surveillance, and reconnaissance (ISR); logistics; personnel; public works; space; and transportation.

In addition, DCIP manages specific analytic efforts in the identification and maintenance of specific inter- and intra-dependencies DoD has on the foundational commercial infrastructure networks supporting the identified critical missions. Specific analytic efforts are focused within six (6) commercial infrastructure areas: energy (electric power, natural gas); chemicals; transportation; telecommunications; water; and petroleum, oil, lubricants (POL).

B. Accomplishments/Planned Programs (\$ in Millions)

Title: DCIP	FY 2012	FY 2013	FY 2014
FY 2012 Accomplishments:	12.814	10.462	9.752

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense							DATE: April 2013				
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 7: Operational Systems Development				R-1 ITEM NOMENCLATURE PE 0305125D8Z: Critical Infrastructure Protection (CIP)			PROJECT 125: CRITICAL INFRASTRUCTURE PROTECTION (CIP)				
B. Accomplishments/Planned Programs (\$ in Millions)							FY 2012	FY 2013	FY 2014		
<div>- Updated DCIP Policy and Program Guidance.</div> <div>- Provided oversight of risk management process for identified defense critical infrastructure including analysis and tracking of remediation and mitigation efforts.</div> <div>- Coordinated and published DoD Mission Assurance Strategy.</div> <div>- Provided technical analysis and recommendations on infrastructure networks, points of service, interdependencies, and priority restoration for pre-event and post-event analysis for manmade or natural disaster incidents.</div> <div>FY 2013 Plans:</div> <div>- Provide DCIP Policy and Program Guidance</div> <div>- Oversee DoD Mission-Based Critical Asset Identification Process as outlined in DoD Manual 3020.45 V1.</div> <div>- Issue 2012 Defense Critical Asset List</div> <div>- Manage DPG directed Joint Mission Assurance Assessment Pilot (JMAAP)</div> <div>- Prioritize highest mission critical risks and monitor actions by asset owners to remediate identified vulnerabilities.</div> <div>- Provide oversight of risk management process for identifying defense critical infrastructure including the analysis and tracking of remediation and mitigation efforts.</div> <div>- Provide technical analysis and recommendations on infrastructure networks, points of service, interdependencies, and priority restoration for pre-event and post-event analysis for manmade or natural disaster incidents.</div> <div>FY 2014 Plans:</div> <div>- Provide DCIP Policy and Program Guidance.</div> <div>- Oversee DoD Mission-Based Critical Asset Identification Process as outlined in DoD Manual 3020.45 V1.</div> <div>- Provide oversight of risk management process for identifying defense critical infrastructure including the analysis and tracking of remediation and mitigation efforts.</div> <div>- Provide technical analysis and recommendations on infrastructure networks, points of service, interdependencies, and priority restoration for pre-event and post-event analysis for manmade or natural disaster incidents.</div>											
Accomplishments/Planned Programs Subtotals							12.814	10.462	9.752		
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
• 0902198D8Z: Critical Infrastructure Protection	7.582	7.582	7.582		7.582	7.582	7.582	7.582		7.582	7.582
Remarks											

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 7: <i>Operational Systems Development</i>	R-1 ITEM NOMENCLATURE PE 0305125D8Z: <i>Critical Infrastructure Protection (CIP)</i>	PROJECT 125: <i>CRITICAL INFRASTRUCTURE PROTECTION (CIP)</i>
<u>D. Acquisition Strategy</u> N/A		
<u>E. Performance Metrics</u> DCIP uses the performance metrics documented in the DCIP Program Plan. These metrics are based on the requirements and responsibilities listed in DoDD 3020.40 and DoDI 3020.45.		

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 7: <i>Operational Systems Development</i>	R-1 ITEM NOMENCLATURE PE 0305125D8Z: <i>Critical Infrastructure Protection (CIP)</i>	PROJECT 125: <i>CRITICAL INFRASTRUCTURE PROTECTION (CIP)</i>
-----------------------------------------------------------------------------------------------------------------------------------------------------------------	------------------------------------------------------------------------------------------------	------------------------------------------------------------------------

Management Services (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Defense Critical Infrastructure Program	MIPR	Various:Various	-	12.814	Jul 2012	10.462	Jul 2013	9.752	Jul 2014	-		9.752	Continuing	Continuing	Continuing
Subtotal			0.000	12.814		10.462		9.752		0.000		9.752			

Remarks

The Defense Critical Infrastructure Program (DCIP) is a Department of Defense (DoD) risk management program that seeks to ensure the availability of networked assets critical to DoD missions, to include DoD and non-DoD, domestic and foreign infrastructures essential to planning, mobilizing, deploying, executing, and sustaining United States military operations on a global basis. Through identifying Defense Critical Assets, assessing them to determine vulnerabilities, incorporating specific threat and hazard information and analysis, and visually displaying relevant infrastructure data and analysis, DoD will be positioned to make risk management decisions to ensure the appropriate infrastructure is available, when needed, to support DoD missions. Specifically, Combatant Commands (COCOMs) are responsible for identifying the mission capability requirements and coordinating with the Military Departments, Defense Agencies, DoD Field Activities, and Defense Sector Lead Agents to identify and assess Defense Critical Assets. As asset owners and capability providers, the Secretaries of the Military Departments and the Directors of Defense Agencies and DoD Field Activities, coordinate with the COCOMs to identify and prioritize the assets required to support mission-essential functions. Asset owners will also assess identified Defense Critical Assets to identify vulnerabilities and apply appropriate remediation and mitigation measures. The Defense Sector Lead Agents are responsible for identifying the specific functions, systems, assets (DoD and non-DoD owned), and interdependencies within the Defense Sector infrastructure networks supporting the identified critical missions. Each Defense Sector Lead Agent, as identified in DoDD 3020.40, represents one of ten (10) functional areas that provide support to the Combatant Commanders and asset owners. These functional areas are as follows: defense industrial base (DIB); financial services; global information grid (GIG); health affairs; intelligence, surveillance, and reconnaissance (ISR); logistics; personnel; public works; space; and transportation. In addition, DCIP manages specific analytic efforts in the identification and maintenance of specific inter- and intra-dependencies DoD has on the foundational commercial infrastructure networks supporting the identified critical missions. Specific analytic efforts are focused within six (6) commercial infrastructure areas: energy (electric power, natural gas); chemicals; transportation; telecommunications; water; and petroleum, oil, lubricants (POL).

	All Prior Years	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	12.814	10.462	9.752	0.000	9.752			

Remarks

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2014 Office of Secretary Of Defense			DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 7: Operational Systems Development	R-1 ITEM NOMENCLATURE PE 0305125D8Z: Critical Infrastructure Protection (CIP)	PROJECT 125: CRITICAL INFRASTRUCTURE PROTECTION (CIP)	

	FY 2012				FY 2013				FY 2014				FY 2015				FY 2016				FY 2017				FY 2018			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
FY 2012/2014																												
FY 2013/2015																												
FY 2014/2015																												

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2014 Office of Secretary Of Defense			DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 7: <i>Operational Systems Development</i>	R-1 ITEM NOMENCLATURE PE 0305125D8Z: <i>Critical Infrastructure Protection (CIP)</i>	PROJECT 125: <i>CRITICAL INFRASTRUCTURE PROTECTION (CIP)</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
FY 2012/2014	1	2012	4	2013
FY 2013/2015	1	2013	4	2014
FY 2014/2015	1	2014	4	2015

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense	DATE: April 2013
-------------------------------------------------------------------------------------------------	-------------------------

APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 7: <i>Operational Systems Development</i>	R-1 ITEM NOMENCLATURE PE 0305186D8Z: <i>Policy R&D Programs</i>
-----------------------------------------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------

COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
Total Program Element	-	6.718	6.360	3.210	-	3.210	8.042	5.962	4.764	4.856	Continuing	Continuing
186: <i>Policy R&D Programs</i>	-	6.718	6.360	3.210	-	3.210	8.042	5.962	4.764	4.856	Continuing	Continuing

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

Develop tools to overcome military security issues. Since the global environment is dynamic, research is necessary to continue understanding military structures, foreign cultures, and ethnic issues. Examines demographic data, investigates information awareness concerning catastrophic events, and develops links to information and data warehouses. Build partnership capabilities through analytical projects that counter organizational warfare and develops infrastructure and sanctuary denial options. Blends several disciplines including surveillance, operations, policy, information management, cyber policy, training and technology.

<u>B. Program Change Summary (\$ in Millions)</u>	<u>FY 2012</u>	<u>FY 2013</u>	<u>FY 2014 Base</u>	<u>FY 2014 OCO</u>	<u>FY 2014 Total</u>
Previous President's Budget	6.520	6.360	6.314	-	6.314
Current President's Budget	6.718	6.360	3.210	-	3.210
Total Adjustments	0.198	0.000	-3.104	-	-3.104
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	0.198	-			
• SBIR/STTR Transfer	-	-			
• Other Program Adjustments	-	-	-3.104	-	-3.104

Change Summary Explanation

FY14 program funding has been rephased to FY15 and FY16 to support department higher priorities. FY12 reprogramming funded a position that provided key interface between the Offices of the Under Secretary of Defense for Policy and the Under Secretary of Defense for Acquisition, Technology and Logistics (AT&L) to promote and support the development, demonstration, and rapid transition of special operations and counter terrorism technologies in response to critical Department of Defense (DoD) policy directives and warfighter requirements.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 7: Operational Systems Development					R-1 ITEM NOMENCLATURE PE 0305186D8Z: Policy R&D Programs				PROJECT 186: Policy R&D Programs			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
186: Policy R&D Programs	-	6.718	6.360	3.210	-	3.210	8.042	5.962	4.764	4.856	Continuing	Continuing
Quantity of RDT&E Articles												
# FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012												
## The FY 2014 OCO Request will be submitted at a later date												
A. Mission Description and Budget Item Justification												
Develop tools to overcome military security issues. Since the global environment is dynamic, research is necessary to continue understanding military structures, foreign cultures, and ethnic issues. Examines demographic data, investigates information awareness concerning catastrophic events, and develops links to information and data warehouses. Build partnership capabilities through analytical projects that counter organizational warfare and develops infrastructure and sanctuary denial options. Blends several disciplines including surveillance, operations, policy, information management, cyber policy, training and technology.												
B. Accomplishments/Planned Programs (\$ in Millions)										FY 2012	FY 2013	FY 2014
Title: International Technologies										2.887	2.823	1.420
Description: Identifies international technologies and provides program management oversight and technical support for projects cooperating with international partners. Anticipates exploitation of technology, including available and advanced capabilities, and works through the international commercial sector and academia concerning adversary's application of technology. Explores processes and policy to integrate international capabilities across the spectrum of international security issues.												
FY 2012 Accomplishments:												
• Developed initiatives that enhanced broad linguistic capabilities and cultural understanding as they pertained to military operations.												
• Developed net-centric enterprise technologies to remove international sharing barriers identified with maritime information, intelligence, and data being collected by DoD and foreign governments												
• Researched military competition among nations in the Middle East and highlighted potential capabilities and policies each nation may utilize in future armed conflicts												
• Enhanced strategies and relationships with European nations based on the exchange of information through education opportunities and existing policies												
• Researched and analyze particular Middle East countries as it related to their decision-making process, financial position, leadership, political dynamics, technical abilities and internal social tensions and stability												
• Researched process tools to integrate the military in non-combative situations.												
FY 2013 Plans:												

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 7: <i>Operational Systems Development</i>	R-1 ITEM NOMENCLATURE PE 0305186D8Z: <i>Policy R&D Programs</i>	PROJECT 186: <i>Policy R&D Programs</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
<ul style="list-style-type: none"> • Research and analyze particular Far and Middle East countries as it relates to their decision-making process, financial position, leadership, political dynamics, technical abilities and internal social tensions and stability. • Continue Development of net-centric enterprise technologies to remove international sharing barriers identified with maritime information, intelligence, and data being collected by DoD and foreign governments. • Research efforts within the Services and Combatant Commands to better analyze and demonstrate enduring counterinsurgency operational capabilities. • Research military competition among nations in the Far and Middle East and highlight potential capabilities and policies each nation may utilize in future armed conflicts. <p>FY 2014 Plans:</p> <ul style="list-style-type: none"> • Perform trend analysis and develop mitigation options for addressing program risks. • Finalize and apply risk management methodologies to identified program areas. • Develop net-centric enterprise technologies to remove international sharing barriers identified with maritime information, intelligence, and data being collected by DoD and foreign governments • Research military competition among nations in the Far and Middle East and highlight potential capabilities and policies each nation may utilize in future armed conflicts • Enhance strategies and relationships with European nations based on the exchange of information through education opportunities and existing policies • Research and analyze particular Far and Middle East countries as it relates to their decision-making process, financial position, leadership, political dynamics, technical abilities and internal social tensions and stability. • Continue research efforts within the Services and Combatant Commands to better analyze and demonstrate enduring counterinsurgency operational capabilities. 			
<p>Title: Long Term Competitions (LTC) Program</p> <p>Description: Request supports the Long Term Competitions (LTC) program which is an analytical effort chartered to provide the DoD senior leadership with an understanding of key long-term developments and dynamics in specific areas of the global security environment, and to develop competitive strategies for their consideration as the Department seeks to address these long term challenges. The LTC Program will provide rigorously analyzed competitive strategy recommendations to these senior DoD leaders, and will require the support of organizations and experts outside of government to deliver the highest quality analysis, concepts and recommendations. Funding for the LTC program will be used to: bring outside experts into Task Force working groups and strategy review teams; contract studies; support wargaming and workshops; conduct analytical studies of key developments and dynamics, and their impact on the future security environment and U.S. military capabilities in that environment; and explore new approaches to addressing key analytical requirements.</p> <p>FY 2012 Accomplishments:</p>		1.933	0.940

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 7: <i>Operational Systems Development</i>		R-1 ITEM NOMENCLATURE PE 0305186D8Z: <i>Policy R&D Programs</i>	PROJECT 186: <i>Policy R&D Programs</i>
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
Specific efforts are classified.			
FY 2013 Plans: Specific efforts are classified.			
FY 2014 Plans: Specific efforts are classified.			
Title: Defense Planning Scenarios Activities Description: This program is classified.		1.898	1.662
FY 2012 Accomplishments: Specific efforts are classified.			
FY 2013 Plans: Specific efforts are classified.			
FY 2014 Plans: Specific efforts are classified.			
Accomplishments/Planned Programs Subtotals		6.718	6.360
C. Other Program Funding Summary (\$ in Millions) N/A			
Remarks			
D. Acquisition Strategy N/A			
E. Performance Metrics N/A			

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 7: <i>Operational Systems Development</i>				R-1 ITEM NOMENCLATURE PE 0305186D8Z: <i>Policy R&D Programs</i>				PROJECT 186: <i>Policy R&D Programs</i>			
-----------------------------------------------------------------------------------------------------------------------------------------------------------------	--	--	--	-------------------------------------------------------------------------------	--	--	--	-------------------------------------------------------	--	--	--

Support (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Analytical Support	MIPR	Various:Various	-	3.831	Jul 2012	3.537	May 2013	1.790	May 2014	-		1.790	Continuing	Continuing	Continuing
Subtotal			0.000	3.831		3.537		1.790		0.000		1.790			

Remarks
Analytical effort chartered to provide the DoD senior leadership with an understanding of key long-term developments and dynamics in specific areas of the global security environment, and to develop competitive strategies for their consideration as the Department seeks to address these long term challenges.

Management Services (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
International Technologies	MIPR	Various:Various	-	2.887	Jul 2012	2.823	May 2013	1.420	May 2014	-		1.420	Continuing	Continuing	Continuing
Subtotal			0.000	2.887		2.823		1.420		0.000		1.420			

Remarks
Provides program management oversight and technical support for projects cooperating with international partners.

			All Prior Years	FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			0.000	6.718		6.360		3.210		0.000		3.210			

Remarks

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2014 Office of Secretary Of Defense			DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 7: Operational Systems Development	R-1 ITEM NOMENCLATURE PE 0305186D8Z: Policy R&D Programs	PROJECT 186: Policy R&D Programs	

	FY 2012				FY 2013				FY 2014				FY 2015				FY 2016				FY 2017				FY 2018			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
<i>International Technologies</i>																												
FY 2012/2013 Projects																												
FY 2013/2014 Projects																												
FY 2014/2015 Projects																												
<i>Long Term Competitions Program</i>																												
FY 2012/2013 Projects																												
FY 2013/2014 Projects																												
FY 2014/2015 Projects																												
<i>Defense Planning Scenarios Activities</i>																												
FY 2012/2013 Projects																												
FY 2013/2014 Projects																												
FY 2014/2015 Projects																												

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2014 Office of Secretary Of Defense			DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 7: <i>Operational Systems Development</i>	R-1 ITEM NOMENCLATURE PE 0305186D8Z: <i>Policy R&D Programs</i>	PROJECT 186: <i>Policy R&D Programs</i>	

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>International Technologies</i>				
FY 2012/2013 Projects	2	2012	3	2013
FY 2013/2014 Projects	2	2013	3	2014
FY 2014/2015 Projects	1	2014	3	2015
<i>Long Term Competitions Program</i>				
FY 2012/2013 Projects	2	2012	3	2013
FY 2013/2014 Projects	2	2013	3	2014
FY 2014/2015 Projects	1	2014	3	2015
<i>Defense Planning Scenarios Activities</i>				
FY 2012/2013 Projects	2	2012	3	2013
FY 2013/2014 Projects	2	2013	3	2014
FY 2014/2015 Projects	1	2014	3	2015

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense	DATE: April 2013
-------------------------------------------------------------------------------------------------	-------------------------

APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE							
0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 7: <i>Operational Systems Development</i>					PE 0305199D8Z: <i>Net Centricity</i>							
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
Total Program Element	-	14.528	21.190	21.602	-	21.602	21.610	19.954	20.189	20.512	Continuing	Continuing
199: <i>GIG Evaluation Facilities (GIG-EF) and GIG Enterprise-Wide Systems Engineering Advisory Activities</i>	-	14.528	21.190	21.602	-	21.602	21.610	19.954	20.189	20.512	Continuing	Continuing
Quantity of RDT&E Articles												

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

As a Department efficiency the ASD(NII) was disestablished on January 11, 2012. Starting in FY2013 the funding in PE 0604771D8Z JTIDS associated with communications and information networks architecture, strategy and policy; and frequency spectrum analysis and management was transferred to this PE and aligned under the office of the DoD Chief Information Officer (DoD CIO).

Funds will be used to provide technical, systems engineering and capability management oversight of programs, projects and activities to maximize the Department's return on investment in information technology resources and affect a comprehensive approach for assessing and procuring critical information systems from initial design, through development to capability delivery in support of improved systems performance and military operations. Emphasis is placed on the information transport, information assurance, net and spectrum management, command and control (C2) applications and services, information sharing capabilities, and enterprise services activities focused on the development, integration, testing and technical assessment of capabilities and applications in joint and coalition warfighter support environments. Resources support collaborative efforts to demonstrate the interoperability and performance requirements of command, control, communication, computing network, and Information Infrastructure (C4&II) capabilities and programs. This program is funded under Budget Activity 7, Operational System Development.

This project provides the resources necessary to implement net centric processes and authoritative analytic methods that provide the capability to synchronize interdependent capabilities across all layers (ground, air, space) of the joint information environment architecture, to forecast and achieve a balance in supply and demand for network capacity, and field effective capabilities more rapidly and efficiently as an enabler for C4&II capabilities applications and services. Resources are required to transform current networks into an operationally unified and architecturally diverse joint information environment that will provide end-to-end communications transport layer, computing networks, and mission application capabilities that are optimized and integrated with all other joint capability areas with a focus on the tactical edge faced with disconnected, intermittent, and latency (DIL) environments. There will be technical assessments, modeling and simulation, and analysis of the Joint space communications layer, Joint aerial network layer, contested communications on the move, Position Navigation and Timing (PNT), and C2 mission application capabilities. These funds develop the capability for the warfighter to manage and deconflict radio frequencies through ground, air, and space

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense	DATE: April 2013
-------------------------------------------------------------------------------------------------	-------------------------

APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 7: <i>Operational Systems Development</i>	R-1 ITEM NOMENCLATURE PE 0305199D8Z: <i>Net Centricity</i>
-----------------------------------------------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------

communication networks. The funds will be used to develop and synchronize information assurance capabilities with other joint information environment capabilities to provide secure access to information and services (e.g. Cryptographic Modernization Management plan).

In addition, funding will continue to be used to support the Defense Information System's Agency's (DISA) and Services' interoperable improvement efforts and processes in the development of common standards and protocols. This effort includes initiating the Joint Interoperability Enhancement Process (IEP) that allows operators, engineers, and program managers to verify capabilities and identify issues in a design with Joint /Allied units prior to system fielding, or with fielded systems to identify required systems changes for systems upgrade planning. DISA and the Joint Forces Combatant Command lead the effort to transform the current standards and interoperability management tools to a common set of Joint network-enabled standards to ensure adherence to the Global Information Grid (GIG) enterprise-wide technical baseline and for implementation of future Tactical Data Link (TDL) capabilities. These joint standards, protocols, and processes will be used for implementation and testing to ensure the TDL capabilities are synchronized with the development and integration timelines of other planned network-enabled Global Information Grid (GIG) initiatives. The threats to the networking waveforms and the Joint NC migration will also be looked at in cooperation with the Intelligence agencies.

<u>B. Program Change Summary (\$ in Millions)</u>	<u>FY 2012</u>	<u>FY 2013</u>	<u>FY 2014 Base</u>	<u>FY 2014 OCO</u>	<u>FY 2014 Total</u>
Previous President's Budget	14.432	21.190	21.778	-	21.778
Current President's Budget	14.528	21.190	21.602	-	21.602
Total Adjustments	0.096	0.000	-0.176	-	-0.176
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Program Adjustment	0.096	0.000	-0.176	-	-0.176

Change Summary Explanation

Program Change Explanation:

FY 2014: Service support contract efficiency -0.176 million.

<u>C. Accomplishments/Planned Programs (\$ in Millions)</u>	<u>FY 2012</u>	<u>FY 2013</u>	<u>FY 2014</u>
<i>Title:</i> Net Centricity Plans and Accomplishments	14.528	21.190	21.602
<i>FY 2012 Accomplishments:</i> – Assessed aerial layer waveforms (Link-16, TTNT, CDL) for cost and complexity in implementation. Identified technologies and platform architectures to enable improved performance and lower technology insertion costs for advanced tactical data.			

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 7: <i>Operational Systems Development</i>		R-1 ITEM NOMENCLATURE PE 0305199D8Z: <i>Net Centricity</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
<ul style="list-style-type: none"> – Completed JALN Analysis of Alternatives (AoA). Directed DoD efforts to develop and test proposed JALN modifications and developing ATDL technologies with greater system throughput and performance in future operational environments; assessed Service plans to field systems to support JALN with ATDLs; and assessed any additional allied participation alternatives for JALN architectures and ATDL networks. Working with ASD(R&E), coordinated the planned technology developments to address communications shortfalls and ensure support of joint interoperable solutions that are technically effective and financially sound. Working with the services incorporated the ATDL and JALN recommendations to provide the warfighters with effective communication systems. – Continued the expansion of the TDL community participation including the incorporation of the ATDL with the associated gateway efforts and enhanced joint, allied and coalition partnership within the JTMP process to facilitate Joint TDL migration. – Further refined, developed and analyzed future capabilities for advanced waveforms and data links for terrestrial (line-of-sight) and satellite (beyond-line-of-sight) systems. This included detailed engineering analysis of new technologies, alternatives and interoperability – Continued to analyze and propose solutions for Generation 4 to 5 advanced data link interoperability. – Continued to model various coalition aerial networks, sowing interoperability between US aircraft in US only nets, US aircraft in coalition networks and allied aircraft. – Implemented the joint Interoperability Enhancement Process (IEP) to define and plan the expansion of TDL technologies to include tactical information integration and configuration management with Link 16, VMF, CDL and MADL; continued to develop policy-based network management preferred system concept and methodology for enterprise situational awareness. – Finalized the 2011 TDL migration plan and started draft of 2013 plan. Enhanced modeling and simulation capability to support data link technical and operational capability assessments including integration to other components of the GIG. – Conducted JALN implementation analysis. Provided datalink migration engineering support. Conducted advanced waveform analysis of Gen 4/5 aircraft. – Analyzed Gen 4-5 fighter/bomber waveform modification (MADL). Modeled advanced tactical datalinks. Developed a MADL waveform standard specification. Analyzed MADL and link 16 gateway capabilities. – Worked with the Intelligence, Surveillance, and Reconnaissance (ISR) community to define a set of non-duplicative CDLs for joint use. – Provided pre-Milestone A technical assessment for “Developmental Planning” to ensure selection and development of solutions that are interoperable across the strategic and tactical boundaries in regards to Joint space communications layer, Joint aerial network layer, and contested communications on the move capabilities. – Built waveform roadmaps that provide a chronology of tactical communications waveforms and captures delivery of new approved waveforms as well as disestablishment/migration of existing/legacy waveforms. – Defined current network capacity, capability gaps and potential solutions (space, air, terrestrial) in the Combined Joint Operational Area (CJOA) to meet the demand of the Combined Joint Force (CJF) Commander. – Performed systems engineering analysis for technical baseline compliance, information assurance, and tactical networking. 				

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 7: <i>Operational Systems Development</i>		R-1 ITEM NOMENCLATURE PE 0305199D8Z: <i>Net Centricity</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
<ul style="list-style-type: none"> – Developed network management (NM) technical solutions to share NM data and execute control through all levels of DoD networks – Performed waveform migration analysis to select optimum waveforms for warfighter interoperability and DoD cost reduction – Provided technical solutions to integrate spectrum resources and optimize electromagnetic systems that use spectrum resources in the tactical environment. – Executed technical analysis on spectrally efficient technologies, sharing techniques, and regulatory alternatives to increase efficient use of spectrum technologies. – Assessed the services infrastructure requirements (and limitations) of implementing C2 functional services to operate from the tactical edge – Continued development of a Global Electromagnetic Spectrum Information System (GEMSIS), transforming spectrum operations from a preplanned and static frequency assignment system into a responsive and agile capability to request, assign, allocate, and deconflict portions of the electromagnetic spectrum; providing an integrated approach to electromagnetic spectrum, enabling C2 access to spectrum situational information and providing spectrum efficiency and effectiveness enhancements to JTRS and integration of spectrum consideration to networking protocols. – Performed detailed feasibility studies, band analysis, operational impact studies and cost estimates in response to future domestic and global spectrum reallocations that might inhibit the DoD's ability to complete its warfighting mission – Conducted joint network modeling and network design for Army, USMC, Air Force brigade, MEB and wing. Provided analysis of SATCOM systems in support of the RBSC effort. Conducted a MUOS alternative study to determine a technical solution for getting the most out of the MUOS payload side of the satellite through modifications at the NAF and with, ground terminal mods. This effort included waveform options, cost and schedule impacts. – Performed cyber CND analysis for tactical networks, resiliency based satellite analysis, secure voice telephone modeling replacement, analysis to determine options for extending enterprise services to the tactical edge, current waveform capabilities and functions and evolutionary strategy for 2 MHz – 2 GHz. – Developed a common set of interface standards to minimize the network management complexity in tactical communication networks. Analyzed the use and feasibility of NET FPGA technology as a layer 3 solution for the Soldier Radio Waveform (SRW) as a future enhancement. Conducted analysis and performance modeling for implementation on tactical networks, Capabilities document to determine what can be removed to facilitate an alternative solution. – Provided technical analysis and developed trade-offs for evolution of C2 information sharing policies, strategies and functional requirements to support continued development and delivery of Coalition C2 and C2 Information Sharing capability metrics and mechanisms.. – Developed wireless architecture and advanced technologies analyses, technical analyses in waveform policy oversight, COMSEC/TRANSEC guidance for spectrum dependent systems and spectrum technology radar analyses. – Provided technical analyses on network management to include cyber and spectrum issues and develop a network management strategy roadmap. 				

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 7: <i>Operational Systems Development</i>		R-1 ITEM NOMENCLATURE PE 0305199D8Z: <i>Net Centricity</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
<ul style="list-style-type: none"> - Provided engineering and technical expertise and analytic support for the Ten Year Plan and DoD Long-term Spectrum Strategy and spectrum relocation analyses. - Developed Engineering analysis, including secure voice conferencing, to support the total replacement of the Defense Red Switch Network (DRSN) in the DoD. - Network Management Working Group Ground Segment Analysis; Assessment of Software Defined Networking; Analysis of SRW Layer 3 Networking; Updates to DoD CIO Waveform Roadmap; Command Link Encryption for Commercial Satellites Brief; AJ-AS Modem Background Brief; INTEL SAT UHF Interference Analysis – Review of MCEB Frequency Plan; Cyber Vulnerability Analysis of Wideband SATCOM Control - Performed systems engineering analysis to establish E2E system performance parameters for MUOS program. - Developed comprehensive technical risk assessment and mitigation approaches for MUOS program to meet operational performance requirements. - Assessed technical alternatives to better utilize WCDMA side of MUOS with legacy terminals. - Enforced implementation of ECDSA/SHA-256 as PKI crypto. SW standard in MUOS program to maintain E2E interoperability. FY 2013 Plans: <ul style="list-style-type: none"> - Determine strengths, weaknesses, and uses of waveforms; identify gaps not satisfied by currently planned waveforms; consider how new technologies will result in improved waveforms; support Waveform Roadmap effort; - Support technical analysis, architecture development, and systems engineering to support understanding the maturity of cloud computing standards and cloud computing best practices to ensure resiliency of the cloud computing environment to support operations; Identify how cloud services can be extended to the mission networks; - Assess tactical communications systems' ability to support IPv6. - Conduct analyses and perform modeling and simulation to address issues with command and control systems, communications systems and networks; - Conduct cyber vulnerability analyses of communications systems and networks; - Conduct analyses and perform modeling and simulation to address SATCOM issues; - Conduct analyses and perform modeling and simulation to address DoD organizational messaging modernization. Include materiel and non-materiel aspects. - Support analysis of security architectures and provide recommendations on policy for commercial mobile devices in the DoD to include support for secret and top secret data and voice communications, address interim solutions, route to final architecture, and technical options for integration - Refine the DoD radio strategy document and establish radio strategy working group with services to facilitate POM development for FY15 and out years. - Update existing SATCOM synch matrices to reflect changes in POM 13 funding, emerging systems/technology, and JALN AOA recommendations as appropriate. 				

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 7: <i>Operational Systems Development</i>		R-1 ITEM NOMENCLATURE PE 0305199D8Z: <i>Net Centricity</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
<ul style="list-style-type: none"> - Analyze PACOM gateway system requirements and proposed equipment suites including the number and types of equipment needed to meet the operational requirements. - Analyze DoD tactical radios to determine which radios are suitable for Suite B implementation - Conduct a study to determine the feasibility of implementing legacy narrowband SATCOM solutions on the MUOS payload - Develop policy documents to support crypto mod initiatives and crypto mod integration issues - Provide analysis and oversight for Crypto-solution management, policy development, and enforcement, Nuclear C2 systems evolution, and Crypto modernization for the general force. - Support JSCL AoA relative to wideband SATCOM architecture - Finalize and coordinate JIPM evolution and deployment strategy - Conduct technical analysis and policy support with emphasis on Coalition C2 and Multi-National Information Sharing (MNIS), including technical analysis of Coalition C2 functional requirements, strategic policy development and capability strategies addressed by the international community (inclusive of multilateral and bi-lateral engagements) - Conduct technical analysis of selected Joint and Military Service C2 programs and initiatives to promote net-centric approaches for data, services and enterprise deployments - Provide technical analysis and support for C4&I related policies, plans, studies, governance and management, roadmaps, assessment reports, capabilities and numerous other initiatives. - Provide technical assessments to inform and influence Future Mission Network (FMN) development and implementation activities. - Provide technical analysis and support for the development of Common Mission Network Transport (CMNT) capability. Conduct Joint Network modeling and Network design for Army USMC, and Air Force Brigade, Marine Expeditionary Brigade (MEB), and USAF Wing. - Provide analysis of the SATCOM systems in support of the RBSC effort - Conduct a MUOS alternative study (to determine a technical solution for getting the most out of the MUOS payload side of the satellite), NAF modifications, ground terminal modifications, waveform options, cost, and schedule impacts - Conduct analysis to determine requirements, feasibility, and availability of hand held MUOS terminals. - Conduct assessments to investigate feasibility, and availability of COT high efficiency WCDMA power amplifiers for MUOS hand held radios. - Provide technical analysis on network management to include cyber and spectrum issues. - Conduct wireless architecture and advanced technologies analysis. Develop recommendations, reports, and communications policies - Conduct technical analysis to support waveform policy development and oversight - Conduct spectrum technology radar analysis and to develop Spectrum Technology Radar Roadmap - Conduct wireless communications architecture and policy analysis, and waveform policy analysis to inform Department-wide policies. 				

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 7: <i>Operational Systems Development</i>		R-1 ITEM NOMENCLATURE PE 0305199D8Z: <i>Net Centricity</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
<ul style="list-style-type: none"> - Provide technical development and analysis to the C4II Directorate for the evolution of Multi-National Information Sharing programs, related acquisition strategies, and functional requirements to support continued development of C2 Information Sharing metrics and mechanisms to enhance capability strategies and C2 IS roadmap development. - Conduct follow-on JALN analysis with Joint Service JALN Council, oversee Service implementation efforts, initiate JALN capability Non-Recurring Engineering (NRE) development. - Expand IEP beyond Link 16 to incorporate VMF, MADL, and CDL - Publish Joint TDL Migration Plan (JTMP), start draft for 2014 JTMP, and develop DoD Instruction for TDL migration - Draft MIL-STDs for MADL and CDL to enhance interoperability and oversight of the communication systems - Conduct SOCOM Line of Sight (LoS) communications assessment - Conduct Advanced Ground / Air / Space assessments for: Generation 4 to Generation 5 Fighter/bomber waveform modification analysis (Multifunction Advanced Data Link (MADL); Advanced tactical data link modeling; Develop a MADL waveform standard specification; analyze MADL and Link-16 gateway capabilities - Conduct analysis to update the Joint Command and Control technical and architectural artifacts and inform transition of Global Command and Control Family of Systems to a network enabled, joint information enterprise - Analyze approaches, potential costs and schedules to establish net-centric C2 capabilities. <p>FY 2014 Plans:</p> <ul style="list-style-type: none"> - Continue efforts to determine strengths, weaknesses, and uses of waveforms; identify gaps not satisfied by currently planned waveforms; consider how new technologies will result in improved waveforms; support Waveform Roadmap effort; - Continue technical analysis, architecture development, and systems engineering to support understanding the maturity of cloud computing standards and cloud computing best practices to ensure resiliency of the cloud computing environment to support operations; Identify how cloud services can be extended to the mission networks; - Assess tactical communications systems' ability to support IPv6; develop policies and implementation strategies to promote IPV6 use in tactical systems. - Conduct analyses and perform modeling and simulation to address issues with command and control systems, communications systems and networks - Conduct cyber vulnerability analyses of communications systems and networks - Conduct analyses and perform modeling and simulation to address SATCOM issues - Complete analyses and perform modeling and simulation to address DoD organizational messaging modernization. Include materiel and non-materiel aspects. - Continue analysis of security architectures and provide recommendations on policy for commercial mobile devices in the DoD to include support for secret and top secret data and voice communications, address interim solutions, route to final architecture, and technical options for integration 				

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 7: <i>Operational Systems Development</i>		R-1 ITEM NOMENCLATURE PE 0305199D8Z: <i>Net Centricity</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
<ul style="list-style-type: none"> - Refine the DoD radio strategy document and establish radio strategy working group with services to facilitate POM development for FY16 and out years. - Update existing SATCOM synch matrices to reflect changes in POM 15 funding, emerging systems/technology, and JALN AOA recommendations as appropriate. - Refine PACOM gateway system requirements and proposed equipment suites including the number and types of equipment needed to meet the operational requirements. - Continue analysis of tactical radios to determine which radios are suitable for Suite B implementation - Continue analysis efforts to address the feasibility of implementing legacy narrowband SATCOM solutions on the MUOS payload. - Develop policy documents and implementation plans to support crypto mod initiatives and crypto mod integration issues - Provide analysis and oversight for Crypto-solution management, policy development, and enforcement, Nuclear C2 systems evolution, and Crypto modernization for the general force. - Support JSCL AoA follow-on efforts relative to wideband SATCOM architecture - Conduct analysis to optimize JIPM evolution and deployment/implementaion strategy - Conduct technical analysis on Coalition C2 and Multi-National Information Sharing (MNIS), including technical analysis of Coalition C2 functional requirements, strategic policy development and capability strategies addressed by the international community (inclusive of multilateral and bi-lateral engagements). - Conduct technical analysis of selected Joint and Military Service C2 programs and initiatives to promote net-centric approaches for data, services and enterprise deployments - Provide technical analysis and support for C4&I related policies, plans, studies, governance and management, roadmaps, assessment reports, capabilities and numerous other initiatives. - Continue technical assessments to inform and influence Future Mission Network (FMN) development and implementation. - Provide technical analysis and support for the development and implementation of the Common Mission Network Transport (CMNT) capability. - Conduct Joint Network modeling and Network design for Army USMC, and Air Force Brigade, Marine Expeditionary Brigade (MEB), and USAF Wing. - Provide analysis of the SATCOM systems in support of the RBSC effort - Conduct follow-on analysis of the MUOS alternative study (to determine a technical solution for getting the most out of the MUOS payload side of the satellite), NAF modifications, ground terminal modifications, waveform options, cost, and schedule impacts - Continue analysis to refine requirements, feasibility, and availability of hand held MUOS terminals. - Continue assessments to investigate feasibility, and availability of COT high efficiency WCDMA power amplifiers for MUOS hand held radios. - Develop an implementation plan for MUOS specific Test & Certification test bed capability to support COTS vendor terminals to support MUOS system. 				

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 7: <i>Operational Systems Development</i>		R-1 ITEM NOMENCLATURE PE 0305199D8Z: <i>Net Centricity</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
<ul style="list-style-type: none"> - Provide technical analysis on network management to include cyber and spectrum issues. - Conduct wireless architecture and advanced technologies analysis. Develop recommendations, reports, and communications policies - Conduct technical analysis to support waveform policy development and oversight - Conduct spectrum technology radar analysis and to develop Spectrum Technology Radar Roadmap - Conduct wireless communications architecture and policy analysis, and waveform policy analysis to inform Department-wide policies. - Provide technical development and analysis to the C4II Directorate for the evolution of Multi-National Information Sharing programs, related acquisition strategies, and functional requirements to support continued development of C2 Information Sharing metrics and mechanisms to enhance capability strategies and C2 IS roadmap development. - Conduct follow-on JALN analysis with Joint Service JALN Council, oversee Service implementation efforts, initiate JALN capability Non-Recurring Engineering (NRE) development. - Continue technical efforts to expand IEP beyond Link 16 to incorporate VMF, MADL, and CDL - Conduct technical and policy assessments to enable TDL migration - Conduct SOCOM Line of Sight (LoS) communications assessments - Conduct Advanced Ground / Air / Space assessments for: Generation 4 to Generation 5 Fighter/bomber waveform modification analysis (Multifunction Advanced Data Link (MADL); Advanced tactical data link modeling; Develop a MADL waveform standard specification; analyze MADL and Link-16 gateway capabilities - Conduct analysis to refine the Joint Command and Control technical and architectural artifacts and inform transition of Global Command and Control Family of Systems to a network enabled, joint information enterprise - Provide studies and analysis of the Command and Control capability gaps to inform investment strategies. - Analyze approaches, potential costs and schedules to establish net-centric C2 capabilities. 				
Accomplishments/Planned Programs Subtotals		14.528	21.190	21.602
D. Other Program Funding Summary (\$ in Millions)				
N/A				
Remarks				
E. Acquisition Strategy				
N/A				
F. Performance Metrics				
– PPBE related issue development and approval				

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 7: Operational Systems Development	R-1 ITEM NOMENCLATURE PE 0305199D8Z: Net Centricity	
<ul style="list-style-type: none">– Successful technical development and analysis of the CIO and DCIO C4IIC portfolio of programs and activities– Develop comprehensive risk assessment and mitigation approaches of the CIO and DCIO C4IIC portfolio of programs and activities		

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 7: Operational Systems Development				R-1 ITEM NOMENCLATURE PE 0305199D8Z: Net Centricity				PROJECT 199: GIG Evaluation Facilities (GIG-EF) and GIG Enterprise-Wide Systems Engineering Advisory Activities			
-----------------------------------------------------------------------------------------------------------------------------------------------	--	--	--	---------------------------------------------------------------	--	--	--	---------------------------------------------------------------------------------------------------------------------------------	--	--	--

Support (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Net Centricity	Various	Various:Various	0.000	14.528	Jul 2012	20.890	Jul 2013	21.302	Jul 2014	-		21.302	Continuing	Continuing	Continuing
Subtotal			0.000	14.528		20.890		21.302		0.000		21.302			

Management Services (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
FFRDC Support	FFRDC	Various:Various	0.000	0.000	Jul 2012	0.300	Jul 2013	0.300	Jul 2014	-		0.300	Continuing	Continuing	Continuing
Subtotal			0.000	0.000		0.300		0.300		0.000		0.300			

			All Prior Years	FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			0.000	14.528		21.190		21.602		0.000		21.602			

Remarks

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE							
0400: Research, Development, Test & Evaluation, Defense-Wide BA 7: Operational Systems Development					PE 0305387D8Z: Homeland Defense Technology Transfer Program							
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
Total Program Element	-	2.630	2.303	2.338	-	2.338	2.404	2.440	2.480	2.528	Continuing	Continuing
387: Homeland Defense Technology Transfer Program	-	2.630	2.303	2.338	-	2.338	2.404	2.440	2.480	2.528	Continuing	Continuing
Quantity of RDT&E Articles												

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

Continues Congressionally directed (Sec. 1401, P.L. 107-314) Technology Transfer Program to consolidate and coordinate various military endeavors that pass technology and equipment to first responders. Works with a variety of DoD activities, interagency partners, and first responder organizations to ensure that dual use military technology is expedited into the commercial sector for use by law enforcement, fire, and emergency medical service personnel. Works with the Military Departments and Defense Logistics Agency to ensure that appropriate excess military property is made available to the first responder community on an expedited basis.

B. Program Change Summary (\$ in Millions)	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total
Previous President's Budget	2.631	2.303	2.353	-	2.353
Current President's Budget	2.630	2.303	2.338	-	2.338
Total Adjustments	-0.001	0.000	-0.015	-	-0.015
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Economic Adjustments	-	-	-0.015	-	-0.015
• Other Program Adjustments	-0.001	-	-	-	-

Change Summary Explanation

FY 2014 and beyond reflect contractor support reductions as well as continued implementation of efficiencies in program.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 7: <i>Operational Systems Development</i>		R-1 ITEM NOMENCLATURE PE 0305387D8Z: <i>Homeland Defense Technology Transfer Program</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
Title: Homeland Defense Technology Transfer Program Description: Provided outreach through coordination and cooperation with inter-agency partners to provide dual-use technology and equipment to first responders. Ensured DoD components conducted Technology Transfer programs that are appropriate for the respective component. Provided information to stakeholders on equipment and technology use and availability. Funding was previously in PE 0305186D8Z. FY 2012 Accomplishments: <ul style="list-style-type: none"> Reviewed program for DoD increased efficiencies. Engaged consortium of subject matter experts/governance council to prioritize technology transfer requirements. Continued program outreach programs, prioritize outreach to reflect efficiencies. Pursued excess equipment transfer capabilities from overseas contingency operations. FY 2013 Plans: <ul style="list-style-type: none"> Implement efficiencies. Use a consortium of subject matter experts/governance council to prioritize technology transfer requirements. Continue program outreach programs, prioritize outreach to reflect efficiencies. Pursue excess equipment transfer capabilities from overseas contingency operations. Develop revised metrics. FY 2014 Plans: <ul style="list-style-type: none"> Continue to implement efficiencies. Use a consortium of subject matter experts/governance councils to prioritize technology transfer requirements. Continue program outreach activities and prioritize outreach to reflect efficiencies. Enhance and expedite excess equipment transfer capabilities from overseas contingency operations. 		2.630	2.303	2.338
Accomplishments/Planned Programs Subtotals		2.630	2.303	2.338
D. Other Program Funding Summary (\$ in Millions) N/A Remarks E. Acquisition Strategy N/A				

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 7: <i>Operational Systems Development</i>		R-1 ITEM NOMENCLATURE PE 0305387D8Z: <i>Homeland Defense Technology Transfer Program</i>
<u>F. Performance Metrics</u> As stated.		

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 7: <i>Operational Systems Development</i>				R-1 ITEM NOMENCLATURE PE 0305387D8Z: <i>Homeland Defense Technology Transfer Program</i>				PROJECT 387: <i>Homeland Defense Technology Transfer Program</i>			
-----------------------------------------------------------------------------------------------------------------------------------------------------------------	--	--	--	----------------------------------------------------------------------------------------------------	--	--	--	----------------------------------------------------------------------------	--	--	--

Support (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Defense Logistics Agency Contracting Office	MIPR	AECOM:Alexandria, VA	-	0.500	Sep 2009	0.550	Jun 2013	0.600		-		0.600	Continuing	Continuing	Continuing
Subtotal			0.000	0.500		0.550		0.600		0.000		0.600			

Remarks

Support to Program Headquarters.

Management Services (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Consolidate and coordinate various military endeavors that pass technology and equipment to first responders.	MIPR	Various:Various	-	2.130	Jul 2012	1.753	Jul 2013	1.738	Jul 2014	-		1.738	Continuing	Continuing	Continuing
Subtotal			0.000	2.130		1.753		1.738		0.000		1.738			

Remarks

Provide outreach through coordination and cooperation with inter-agency partners to provide dual-use technology and equipment to first responders.

	All Prior Years	FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	2.630		2.303		2.338		0.000		2.338			

Remarks

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2014 Office of Secretary Of Defense	DATE: April 2013
----------------------------------------------------------------------------------------	-------------------------

APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 7: <i>Operational Systems Development</i>	R-1 ITEM NOMENCLATURE PE 0305387D8Z: <i>Homeland Defense Technology Transfer Program</i>	PROJECT 387: <i>Homeland Defense Technology Transfer Program</i>
-----------------------------------------------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------

	FY 2012				FY 2013				FY 2014				FY 2015				FY 2016				FY 2017				FY 2018			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
FY 2012/2013																												
FY 2013/2014																												
FY 2014/2015																												

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2014 Office of Secretary Of Defense			DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 7: <i>Operational Systems Development</i>	R-1 ITEM NOMENCLATURE PE 0305387D8Z: <i>Homeland Defense Technology Transfer Program</i>	PROJECT 387: <i>Homeland Defense Technology Transfer Program</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
FY 2012/2013	1	2012	4	2013
FY 2013/2014	1	2013	4	2014
FY 2014/2015	1	2014	4	2015

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY

0400: *Research, Development, Test & Evaluation, Defense-Wide*
BA 7: *Operational Systems Development*

R-1 ITEM NOMENCLATURE

PE 0305600D8Z: *International Intelligence Technology and Architectures*

COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013[#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
Total Program Element	2.792	1.444	1.478	4.372	-	4.372	2.601	2.662	2.704	2.752	Continuing	Continuing
997: <i>International Intelligence Technology and Architectures</i>	2.792	1.444	1.478	4.372	-	4.372	2.601	2.662	2.704	2.752	Continuing	Continuing

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

Provides for the identification, migration and integration of existing and advanced multi-lateral and bi-lateral international intelligence information virtual advanced analytics, algorithmic data fusion, and multi-level security cross domain technologies into an integrated US (United States), North Atlantic Treaty Organization (NATO), and coalition intelligence service oriented architecture/data repository such as the US and NATO Battlefield Information Collection and Exploitation System(s) (BICES). Provides for rapid implementation of US BICES capabilities into the Distributed Common Ground/Surface System (DCGS) and the Defense Intelligence Information Enterprise (DI2E) intelligence decision applications and data mechanisms in support of the Under Secretary of Defense (Intelligence) mission to ensure necessary intelligence information is being acquired, analyzed, and disseminated rapidly amongst our allies and coalition partners. Develop US BICES as the "enduring" coalition intelligence support element of the DI2E. Continues the development of the Trusted Network Environment (TNE) multi-level security database, web, and e-mail capabilities for U.S. Central Command (CENTCOM), U.S. European Command (EUCOM), U.S. Africa Command (AFRICOM), and U.S. Pacific Command (PACOM). Supports the research and development of 50+ High Assurance Connection Interfaces to Combatant Command identified bi-lateral and multi-lateral partners, develops the multi-level security rule sets and develops Ozone Widget Framework with applicable cloud widgets that can transverse the multi-level security boundaries. Develops, test, and integrate intelligence mission applications that interface with and support the development of the DoD/CIO Future Mission Network.

B. Program Change Summary (\$ in Millions)

	<u>FY 2012</u>	<u>FY 2013</u>	<u>FY 2014 Base</u>	<u>FY 2014 OCO</u>	<u>FY 2014 Total</u>
Previous President's Budget	1.444	1.478	1.524	-	1.524
Current President's Budget	1.444	1.478	4.372	-	4.372
Total Adjustments	0.000	0.000	2.848	-	2.848
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Department Adjustment	-	-	2.848	-	2.848

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 7: Operational Systems Development		R-1 ITEM NOMENCLATURE PE 0305600D8Z: International Intelligence Technology and Architectures
Change Summary Explanation Provides an additional \$2.848 million to develop and migrate critical mission applications to operate within the TNE multi-level security boundary. Allows the multiple bi-lateral and multi-lateral connections through the High Assurance Connection Interfaces to access the operational intelligence mission software portals and services with the data elements tagged to allow only the intelligence information that is releasable to the particular bi-lateral to be exchanged. Provides for the research and development of the software applications necessary to ensure the PL-4 level security certification remains intact and will allow multi-level security between the secret, secret releasable, and NATO secret levels. Provides research into determining whether data at the unclassified level can be connected to a higher level of security network. Provides for research and development that will allow for US intelligence analysts to view not only US Secret Internet Protocol Router Network (SIPRNET), but multiple bi-lateral and multi-lateral windows on the single workstation.		

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 7: Operational Systems Development					R-1 ITEM NOMENCLATURE PE 0305600D8Z: International Intelligence Technology and Architectures				PROJECT 997: International Intelligence Technology and Architectures			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
997: International Intelligence Technology and Architectures	2.792	1.444	1.478	4.372	-	4.372	2.601	2.662	2.704	2.752	Continuing	Continuing
Quantity of RDT&E Articles												

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

Provides for the migration and integration of existing and advanced multinational and bi-lateral international intelligence information virtual advanced analytics, algorithmic data fusion, and multi-level security cross domain technologies into an integrated US, NATO, and coalition intelligence service oriented architecture / data repository such as the US and NATO BICES. Provides for rapid implementation of US BICES capabilities into the DCGS and the DI2E intelligence decision applications and data mechanisms in support of USD(I)'s mission to ensure necessary intelligence information is being acquired, analyzed, and disseminated rapidly among our allies and coalition partners. Develop US BICES as the "enduring" coalition intelligence component of the DI2E. Continue development of the TNE multi-level security database, web, and e-mail capabilities for US BICES.

B. Accomplishments/Planned Programs (\$ in Millions)

Title: International Intelligence Technology and Architectures	FY 2012	FY 2013	FY 2014
FY 2012 Accomplishments: Developed applications and architectures to incorporate multi-level security (Oracle Trusted Cross Domain Systems) capabilities for bi-lateral and multi-lateral data dissemination and discovery capabilities into existing US, NATO, and coalition networks supporting on-going Special Operations Forces (SOF) and conventional operational intelligence needs. Researched potential cloud architectures for US BICES in-line with NATO cloud standards. Initiated DI2E integration research. Began migration to federated multi-level security capabilities.	1.444	1.478	4.372
FY 2013 Plans: Migrate federated architectures to incorporate multi-level security (Oracle Trusted Cross Domain Systems) capabilities for bi-lateral and multi-lateral data dissemination and discovery information sharing techniques into existing US, NATO, and coalition networks supporting on-going SOF and conventional operational intelligence needs. Incorporate design of DI2E capabilities for US BICES. Continue US BICES application integration.			
FY 2014 Plans: Continue migration of federated architectures to incorporate multi-level security (Oracle Trusted Cross Domain Systems) capabilities for bi-lateral and multi-lateral data dissemination and discovery information sharing techniques into existing US, NATO, and coalition networks supporting on-going SOF and conventional operational intelligence needs. Incorporate design of			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense									DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 7: Operational Systems Development				R-1 ITEM NOMENCLATURE PE 0305600D8Z: International Intelligence Technology and Architectures				PROJECT 997: International Intelligence Technology and Architectures			
B. Accomplishments/Planned Programs (\$ in Millions)									FY 2012	FY 2013	FY 2014
DI2E capabilities for US BICES. Continue US BICES application integration. Provides additional funding to develop and migrate critical mission applications to run within the TNE multi-level security boundary. Allows the multiple bi-lateral and multi-lateral connections through the High Assurance Connection Interfaces to access the operational intelligence mission software portals and services with the data elements tagged to allow only the intelligence information that is releasable to the particular bi-lateral to be exchanged. Provides for the research and development of the software applications necessary to ensure the PL-4 level security certification remains intact and will allow multi-level security between the secret, secret releasable, and NATO secret levels. Provides research into whether the unclassified level can be connected in conjunction with the higher level security levels. Provides the research and development that will allow for US intelligence analysts to view not only US SIPRNET, but multiple bi-laterals and multi-lateral windows on the single workstation.											
Accomplishments/Planned Programs Subtotals									1.444	1.478	4.372
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
• 0305600D8Z Proc DW: International Intelligence Technology and Architectures	29.276	17.582	16.678		16.678	16.808	15.831	15.998	16.309	Continuing	Continuing
• 0305600D8Z O&M DW: International Intelligence Technology and Architectures	111.808	68.518	69.546		69.546	69.503	65.839	67.234	68.689	Continuing	Continuing
Remarks											
D. Acquisition Strategy											
Performance will be monitored on a monthly basis via Program Reviews, Current Expenditures, Estimated Future Expenditures, and Cost/Schedule Adherence. Research and Development will provide increased intelligence information sharing capabilities in support of US and coalition forces utilizing the US BICES and NATO virtual networks within the Afghanistan theater and provide increased database information via Distributed Common Ground System - Army (DCGS-A). Provides an increase in intelligence disciplines (Imagery Intelligence (IMINT), Signal Intelligence (SIGINT), and potential Human Intelligence (HUMINT)) in support of US and Allied/Coalition forces that currently is very limited to the warfighter. Increased intelligence advanced analytics tools will be migrated from Joint Intelligence Operations Center (JIOC)-IT and DI2E developments and will significantly increase the timeliness of intelligence and bring US BICES/NATO Special Operations Forces Headquarters (NSHQ) /NATO Intelligence Fusion Center (NIFC) capabilities into the current technology baselines. Develops and provides a federated TNE that incorporates the Asian Pacific Intelligence Information Network (APIIN) being developed to support the National Defense Strategy as we move out of Afghanistan and into the Pacific. Provides multi-level security intelligence bi-laterals and multi-laterals to meet Combatant Commander Integrated Priority Lists. Develops the Coalition Partner Network for CENTCOM, the Coalition Information Exchange Network (CIEN) for SOUTHCOM, and the Coalition Partner Network for EUCOM and AFRICOM. Develops the											

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 7: <i>Operational Systems Development</i>	R-1 ITEM NOMENCLATURE PE 0305600D8Z: <i>International Intelligence Technology and Architectures</i>	PROJECT 997: <i>International Intelligence Technology and Architectures</i>
<p>US BICES connections with these bi-lateral and multi-lateral federated TNEs that make up the US BICES - Extended (US BICES-X) Enterprise Network in support of Commander SOCOM requirements for conventional and coalition operations as the US migrates into other Combatant Command regions.</p> <p><u>E. Performance Metrics</u></p> <p>Assessment and Analysis - Can it easily be adapted or adjusted to meet the current or projected capabilities gap for Allied or Coalition Intelligence Information Sharing and for the Intelligence integration into the Future Mission Network.</p> <p>Realism – Allows exploration of new environments and capabilities through participation in exercise environments that utilize bi-lateral and multi-lateral intelligence enterprise solutions such as US BICES-X.</p> <p>Advancement - Increases the current capabilities for the sharing of intelligence information and determines if it actually adds functionality in support of Combatant Commanders requirements through exercises such as Unified Vision, Enterprise Challenge, and the MAJIIC (multi-sensor aerospace ground joint intelligence, surveillance, and reconnaissance interoperability coalition) exercises.</p> <p>Utility - Can it be integrated into the existing national or multinational architectures in a timely and cost effective manner and does it increase the discovery and dissemination of intelligence information to the Allies or Coalition forces.</p>		

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2014 Office of Secretary Of Defense												DATE: April 2013			
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 7: <i>Operational Systems Development</i>						R-1 ITEM NOMENCLATURE PE 0305600D8Z: <i>International Intelligence Technology and Architectures</i>						PROJECT 997: <i>International Intelligence Technology and Architectures</i>			
Product Development (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Multi-Level Security - Trusted Network Environment	SS/CPFF	Hill Air Force Base:Utah	1.700	0.900	Mar 2012	0.900	Feb 2013	2.300	Dec 2013	-		2.300	1.500	7.300	8.000
US BICES Cloud Computing	SS/CPFF	Hill Air Force Base:Utah	0.300	0.300	Apr 2012	0.300	Mar 2013	0.500	Dec 2013	-		0.500	0.700	2.100	3.000
US BICES Application Integration	SS/CPFF	Hill Air Force Base:Utah	0.792	0.244	Mar 2012	0.278	Mar 2013	1.272	Dec 2013	-		1.272	5.900	8.486	10.000
US BICES Cyber Development	SS/CPFF	Hill Air Force Base:Utah	0.000	0.000		0.000		0.300	Dec 2013	-		0.300	4.400	4.700	5,000
Subtotal			2.792	1.444		1.478		4.372		0.000		4.372	12.500	22.586	
			All Prior Years	FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			2.792	1.444		1.478		4.372		0.000		4.372	12.500	22.586	
Remarks															

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2014 Office of Secretary Of Defense

DATE: April 2013

APPROPRIATION/BUDGET ACTIVITY

0400: Research, Development, Test & Evaluation, Defense-Wide
BA 7: Operational Systems Development

R-1 ITEM NOMENCLATURE

PE 0305600D8Z: International Intelligence
Technology and Architectures

PROJECT

997: International Intelligence Technology
and Architectures

	FY 2012				FY 2013				FY 2014				FY 2015				FY 2016				FY 2017				FY 2018			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
US BICES Multi-Level Security (MLS)																												
Evaluate existing Multi-Level Security (MLS) capabilities																												
Determine Security Levels																												
Develop Architectural Approach																												
Develop Prototype Capability																												
Determine Final Solution																												
Determine Accreditation Schedule																												
Implement and Operationalize																												
Continue Development to Improve MLS																												
US BICES Cloud Computing																												
Determine US BICES Cloud Computing Requirements																												
Evaluate DI2E Architecture																												
Determine DI2E Applications that apply to US BICES																												
Develop test Cloud Environment																												
Determine NATO Cloud Standards																												
Implement NATO Cloud Standards																												
Implement and Operationalize on US BICES																												
Implement TNE Cloud Constructs																												
Continue development to improve US BICES Cloud Computing																												
US BICES Applications Integration																												
Evaluate Applications for use on US BICES																												

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2014 Office of Secretary Of Defense																								DATE: April 2013															
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 7: Operational Systems Development												R-1 ITEM NOMENCLATURE PE 0305600D8Z: International Intelligence Technology and Architectures												PROJECT 997: International Intelligence Technology and Architectures															
												FY 2012				FY 2013				FY 2014				FY 2015				FY 2016				FY 2017				FY 2018			
												1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Integrate and test applications for utility on US BICES																																							
Continue development to improve/expand US BICES applications																																							
US BICES Cyber Development																																							
Evaluate cyber applications and develop test items																																							
Determine cyber applications that can be shared with NATO																																							

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2014 Office of Secretary Of Defense			DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 7: <i>Operational Systems Development</i>	R-1 ITEM NOMENCLATURE PE 0305600D8Z: <i>International Intelligence Technology and Architectures</i>	PROJECT 997: <i>International Intelligence Technology and Architectures</i>	

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>US BICES Multi-Level Security (MLS)</i>				
Evaluate existing Multi-Level Security (MLS) capabilities	2	2012	3	2012
Determine Security Levels	2	2012	1	2013
Develop Architectural Approach	2	2013	4	2013
Develop Prototype Capability	1	2014	4	2014
Determine Final Solution	3	2014	4	2014
Determine Accreditation Schedule	3	2014	4	2014
Implement and Operationalize	4	2014	3	2015
Continue Development to Improve MLS	4	2015	4	2018
<i>US BICES Cloud Computing</i>				
Determine US BICES Cloud Computing Requirements	3	2012	4	2012
Evaluate DI2E Architecture	4	2012	4	2012
Determine DI2E Applications that apply to US BICES	3	2012	4	2013
Develop test Cloud Environment	1	2014	4	2014
Determine NATO Cloud Standards	2	2012	2	2013
Implement NATO Cloud Standards	4	2012	4	2013
Implement and Operationalize on US BICES	3	2013	4	2014
Implement TNE Cloud Constructs	1	2015	1	2016
Continue development to improve US BICES Cloud Computing	2	2016	4	2018
<i>US BICES Applications Integration</i>				
Evaluate Applications for use on US BICES	3	2012	4	2018
Integrate and test applications for utility on US BICES	3	2012	4	2018

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2014 Office of Secretary Of Defense				DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 7: Operational Systems Development		R-1 ITEM NOMENCLATURE PE 0305600D8Z: International Intelligence Technology and Architectures		PROJECT 997: International Intelligence Technology and Architectures	
		Start		End	
Events by Sub Project		Quarter	Year	Quarter	Year
Continue development to improve/expand US BICES applications		1	2014	4	2018
US BICES Cyber Development					
Evaluate cyber applications and develop test items		1	2014	4	2018
Determine cyber applications that can be shared with NATO		1	2014	4	2018