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**Department of Defense
Fiscal Year (FY) 2015 Budget Estimates**

March 2014



Office of Secretary Of Defense

Defense Wide Justification Book Volume 3 of 5

Research, Development, Test & Evaluation, Defense-Wide

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Defense-Wide
FY 2015 President's Budget
Exhibit R-1 FY 2015 President's Budget
Total Obligational Authority
(Dollars in Thousands)

27 Feb 2014

Appropriation -----	FY 2013 (Base & OCO)	FY 2014 Base Enacted	FY 2014 OCO Enacted	FY 2014 Total Enacted	FY 2015 Base
Office of Secretary of Defense	2,431,946	2,404,427		2,404,427	2,204,504
Total Research, Development, Test & Evaluation	2,431,946	2,404,427		2,404,427	2,204,504

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Summary Recap of Budget Activities -----	FY 2013 (Base & OCO)	FY 2014 Base Enacted	FY 2014 OCO Enacted	FY 2014 Total Enacted	FY 2015 Base
Basic Research	91,035	124,305		124,305	114,464
Applied Research	102,780	124,824		124,824	138,061
Advanced Technology Development	781,134	828,207		828,207	806,416
Advanced Component Development And Prototypes	508,307	576,971		576,971	430,708
System Development And Demonstration	260,985	130,918		130,918	138,561
Management Support	638,935	558,267		558,267	504,303
Operational System Development	48,770	60,935		60,935	71,991
Total Research, Development, Test & Evaluation	2,431,946	2,404,427		2,404,427	2,204,504
Summary Recap of FYDP Programs -----					
General Purpose Forces	2,355	5,288		5,288	1,956
Intelligence and Communications	104,507	112,258		112,258	113,390
Research and Development	2,267,767	2,247,972		2,247,972	2,045,153
Training Medical and Other	56,325	38,909		38,909	44,005
Administration and Associated Activities	992				
Total Research, Development, Test & Evaluation	2,431,946	2,404,427		2,404,427	2,204,504

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

Line No	Element Number	Program Item	Act	FY 2013 (Base & OCO)	FY 2014 Base Enacted	FY 2014 OCO Enacted	FY 2014 Total Enacted	FY 2015 Base	Sec
3	0601110D8Z	Basic Research Initiatives	01	17,368	11,169		11,169	44,564	U
5	0601120D8Z	National Defense Education Program	01	73,667	77,241		77,241	45,488	U
6	0601228D8Z	Historically Black Colleges and Universities/Minority Institutions	01		35,895		35,895	24,412	U
		Basic Research		91,035	124,305		124,305	114,464	
8	0602000D8Z	Joint Munitions Technology	02	18,701	17,959		17,959	20,065	U
10	0602228D8Z	Historically Black Colleges and Universities (HBCU) Science	02	27,246					U
11	0602234D8Z	Lincoln Laboratory Research Program	02	32,637	41,868		41,868	51,875	U
12	0602251D8Z	Applied Research for the Advancement of S&T Priorities	02		37,984		37,984	41,965	U
17	0602663D8Z	Data to Decisions Applied Research	02	8,605					U
18	0602668D8Z	Cyber Security Research	02	10,542	13,907		13,907	15,000	U
19	0602670D8Z	Human, Social and Culture Behavior Modeling (HSCB) Applied Research	02	5,049	2,000		2,000		U
24	0602751D8Z	Software Engineering Institute (SEI) Applied Research	02		11,106		11,106	9,156	U
		Applied Research		102,780	124,824		124,824	138,061	
26	0603000D8Z	Joint Munitions Advanced Technology	03	18,253	20,012		20,012	26,688	U
27	0603121D8Z	SO/LIC Advanced Development	03	23,648	17,403		17,403	8,682	U
28	0603122D8Z	Combating Terrorism Technology Support	03	108,245	100,754		100,754	69,675	U
29	0603133D8Z	Foreign Comparative Testing	03					30,000	U
37	0603225D8Z	Joint DoD-DoE Munitions Technology Development	03	17,828	19,292		19,292	19,335	U
42	0603288D8Z	Analytic Assessments	03					12,000	U
43	0603289D8Z	Advanced Innovative Analysis and Concepts	03					60,000	U

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46	0603618D8Z	Joint Electronic Advanced Technology	03	6,108	8,996		8,996	10,965	U
47	0603648D8Z	Joint Capability Technology Demonstrations	03	138,374	165,008		165,008	131,960	U
48	0603662D8Z	Networked Communications Capabilities	03	21,476	5,000		5,000		U
49	0603663D8Z	Data to Decisions Advanced Technology Development	03	9,217					U
50	0603668D8Z	Cyber Security Advanced Research	03	11,103	9,667		9,667		U
51	0603670D8Z	Human, Social and Culture Behavior Modeling (HSCB) Advanced Development	03	6,994	2,000		2,000		U
52	0603680D8Z	Defense-Wide Manufacturing Science and Technology Program	03	49,532	59,014		59,014	91,095	U
53	0603699D8Z	Emerging Capabilities Technology Development	03	20,859	53,967		53,967	33,706	U
56	0603716D8Z	Strategic Environmental Research Program	03	58,621	62,324		62,324	57,796	U
58	0603727D8Z	Joint Warfighting Program	03	7,335	3,425		3,425	7,405	U
65	0603781D8Z	Software Engineering Institute	03	28,619	19,006		19,006	15,776	U
66	0603826D8Z	Quick Reaction Special Projects	03	69,946	68,524		68,524	69,319	U
68	0603832D8Z	DoD Modeling and Simulation Management Office	03	37,881	34,338		34,338	3,000	U
71	0603941D8Z	Test & Evaluation Science & Technology	03	84,112	83,255		83,255	81,148	U
72	0604055D8Z	Operational Energy Capability Improvement	03	27,966	47,001		47,001	31,800	U
73	0303310D8Z	CWMD Systems	03	35,017	49,221		49,221	46,066	U
		Advanced Technology Development		781,134	828,207		828,207	806,416	
77	0603161D8Z	Nuclear and Conventional Physical Security Equipment RDT&E ADC&P	04	29,919	48,302		48,302	41,072	U
78	0603527D8Z	RETRACT LARCH	04	18,889	19,139		19,139		U
79	0603600D8Z	WALKOFF	04	84,174	63,763		63,763	90,558	U
80	0603714D8Z	Advanced Sensors Application Program	04	17,407	19,190		19,190	15,518	U

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81	0603851D8Z	Environmental Security Technical Certification Program	04	67,998	66,453		66,453	51,462	U
99	0603920D8Z	Humanitarian Demining	04	11,741	11,688		11,688	10,194	U
100	0603923D8Z	Coalition Warfare	04	10,559	9,827		9,827	10,139	U
101	0604016D8Z	Department of Defense Corrosion Program	04	30,221	20,312		20,312	2,907	U
102	0604250D8Z	Advanced Innovative Technologies	04		129,883		129,883	190,000	U
103	0604400D8Z	Department of Defense (DoD) Unmanned Aircraft System (UAS) Common Development	04	11,233	8,263		8,263	3,702	U
105	0604670D8Z	Human, Social and Culture Behavior Modeling (HSCB) Research and Engineering	04	4,492	2,000		2,000		U
106	0604775D8Z	Defense Rapid Innovation Program	04	218,775	175,000		175,000		U
113	0605170D8Z	Support to Networks and Information Integration	04					12,500	U
114	0303191D8Z	Joint Electromagnetic Technology (JET) Program	04	2,899	3,151		3,151	2,656	U
		Advanced Component Development And Prototypes		508,307	576,971		576,971	430,708	
116	0604161D8Z	Nuclear and Conventional Physical Security Equipment RDT&E SDD	05	6,152	8,109		8,109	7,936	U
117	0604165D8Z	Prompt Global Strike Capability Development	05	176,390	65,393		65,393	70,762	U
120	0604771D8Z	Joint Tactical Information Distribution System (JTIDS)	05	18,336	17,423		17,423	17,562	U
124	0605022D8Z	Defense Exportability Program	05	1,655	3,750		3,750	3,244	U
125	0605027D8Z	OUSD(C) IT Development Initiatives	05	6,267	6,788		6,788	6,500	U
127	0605075D8Z	DCMO Policy and Integration	05	22,429	19,969		19,969	19,351	U
130	0605210D8Z	Defense-Wide Electronic Procurement Capabilities	05	26,580	6,184		6,184	9,546	U
132	0305304D8Z	DoD Enterprise Energy Information Management (EEIM)	05	3,176	3,302		3,302	3,660	U
		System Development And Demonstration		260,985	130,918		130,918	138,561	

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

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133	0604774D8Z	Defense Readiness Reporting System (DRRS)	06	5,815	6,356		6,356	5,616	U
134	0604875D8Z	Joint Systems Architecture Development	06	3,227	2,471		2,471	3,092	U
135	0604940D8Z	Central Test and Evaluation Investment Development (CTEIP)	06	177,520	179,607		179,607	254,503	U
136	0604942D8Z	Assessments and Evaluations	06	2,145	2,115		2,115	21,661	U
137	0604943D8Z	Thermal Vicar	06	7,438	8,255		8,255		U
138	0605100D8Z	Joint Mission Environment Test Capability (JMETC)	06	21,055	27,878		27,878	27,162	U
139	0605104D8Z	Technical Studies, Support and Analysis	06	30,951	21,930		21,930	24,501	U
140	0605110D8Z	USD(A&T)--Critical Technology Support	06	669					U
141	0605117D8Z	Foreign Materiel Acquisition and Exploitation	06	51,366	48,911		48,911		U
143	0605128D8Z	Classified Program USD(P)	06	89,695	100,000		100,000		U
144	0605130D8Z	Foreign Comparative Testing	06	15,352	12,125		12,125		U
145	0605142D8Z	Systems Engineering	06	38,882	39,606		39,606	44,246	U
146	0605151D8Z	Studies and Analysis Support - OSD	06	5,901	5,837		5,837	2,665	U
147	0605161D8Z	Nuclear Matters-Physical Security	06	4,362	4,999		4,999	4,366	U
148	0605170D8Z	Support to Networks and Information Integration	06	5,632	6,277		6,277	27,901	U
149	0605200D8Z	General Support to USD (Intelligence)	06	14,172	6,466		6,466	2,855	U
154	0605502D8Z	Small Business Innovative Research	06	54,815					U
159	0605790D8Z	Small Business Innovation Research (SBIR)/ Small Business Technology Transfer	06	1,344	1,857		1,857	1,634	U
160	0605798D8Z	Defense Technology Analysis	06	10,940	8,332		8,332	12,105	U
163	0605804D8Z	Development Test and Evaluation	06	19,116	19,394		19,394	15,187	U
165	0606100D8Z	Budget and Program Assessments	06	4,221	4,068		4,068	4,100	U

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166	0203345D8Z	Defense Operations Security Initiative (DOSI)	06	2,355	5,288		5,288	1,956	U
172	0305193D8Z	Cyber Intelligence	06	14,645	7,586		7,586	6,748	U
174	0804767D8Z	COCOM Exercise Engagement and Training Transformation (CE2T2)	06	56,325	38,909		38,909	44,005	U
177	0909999D8Z	Financing for Cancelled Account Adjustments	06	992					U
		Management Support		638,935	558,267		558,267	504,303	
181	0607210D8Z	Industrial Base Analysis and Sustainment Support	07		9,993		9,993	14,778	U
182	0607310D8Z	Operational Systems Development	07		1,944		1,944	2,953	U
199	0303140D8Z	Information Systems Security Program	07	10,496	10,638		10,638	11,304	U
205	0303260D8Z	Defense Military Deception Program Office (DMDPO)	07	1,157	1,242		1,242	951	U
213	0305125D8Z	Critical Infrastructure Protection (CIP)	07	9,339	9,728		9,728	8,846	U
217	0305186D8Z	Policy R&D Programs	07	5,414	4,210		4,210	7,065	U
218	0305199D8Z	Net Centricity	07	18,849	16,490		16,490	23,984	U
230	0305387D8Z	Homeland Defense Technology Transfer Program	07	2,158	2,327		2,327	2,110	U
231	0305600D8Z	International Intelligence Technology and Architectures	07	1,357	4,363		4,363		U
		Operational System Development		48,770	60,935		60,935	71,991	
Total Research, Development, Test & Eval, DW				2,431,946	2,404,427		2,404,427	2,204,504	

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***Budget Activity 07: Operational Systems Development
Appropriation 0400: Research, Development, Test & Evaluation, Defense-Wide***

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> / BA 1: <i>Basic Research</i>	R-1 Program Element (Number/Name) PE 0601110D8Z / <i>Basic Research Initiatives</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
Total Program Element	-	17.368	11.169	44.564	-	44.564	46.709	46.799	48.047	50.533	Continuing	Continuing
P010: <i>Basic Research Initiatives</i>	-	17.368	11.169	11.371	-	11.371	11.528	11.548	12.148	12.248	Continuing	Continuing
P101: <i>National Security Science and Engineering Faculty Fellowship (NSSEFF)</i>	-	-	-	33.193	-	33.193	35.181	35.251	35.899	38.285	Continuing	Continuing

The FY 2015 OCO Request will be submitted at a later date.

Note

The National Security Science and Engineering Faculty Fellowship (NSSEFF) program is realigned from the National Defense Education Program (NDEP), program element (PE) 0601120D8Z, to this PE beginning in FY 2015.

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 capabilities, 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

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity	R-1 Program Element (Number/Name)
0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> / BA 1: <i>Basic Research</i>	PE 0601110D8Z / <i>Basic Research Initiatives</i>

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.

The National Security Science and Engineering Faculty Fellowship (NSSEFF) program supports world-class researchers in scientific areas of critical importance to DoD and ensures the cultivation of exceptional talent. NSSEFF provides a critical resource for connections between academia and the DoD science and engineering enterprise. Fellows' work spans all seven DoD S&T priorities and defines a broad set of emerging scientific areas. Fellows serve as speakers at DoD events, reviewers on panels for DoD science, and as collaborators with DoD laboratory scientists and engineers.

B. Program Change Summary (\$ in Millions)	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO	FY 2015 Total
Previous President's Budget	19.405	11.171	13.091	-	13.091
Current President's Budget	17.368	11.169	44.564	-	44.564
Total Adjustments	-2.037	-0.002	31.473	-	31.473
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-1.524	-			
• Congressional Rescissions	-0.025	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.479	-			
• Realignment of the NSSEFF Program	-	-	33.193	-	33.193
• Strategic Efficiency Savings	-	-	-1.720	-	-1.720
• FFRDC Adjustments	-	-0.002	-	-	-
• Other Program Adjustments	-0.009	-	-	-	-

Change Summary Explanation

The National Security Science and Engineering Faculty Fellowship (NSSEFF) program is realigned from PE 0601120D8Z to this PE in FY 2015.

The reduction is a strategic efficiency approach to reduce funding and staffing. As a result, we provide a better alignment of funding and provide support to a smaller military force.

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400 / 1					R-1 Program Element (Number/Name) PE 0601110D8Z / <i>Basic Research Initiatives</i>				Project (Number/Name) P010 / <i>Basic Research Initiatives</i>			
COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
P010: <i>Basic Research Initiatives</i>	-	17.368	11.169	11.371	-	11.371	11.528	11.548	12.148	12.248	Continuing	Continuing

The FY 2015 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 capabilities, 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.

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 2013	FY 2014	FY 2015
<p>Title: Minerva Research Initiative</p> <p>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.</p> <p>FY 2013 Accomplishments: A Department-wide solicitation of topics to be set as Minerva priority social science research areas drew responses from Service leadership, the Defense Advanced Research Projects Agency (DARPA), Combatant Commands (COCOMs), J5, the intelligence community, and others. The resulting broad agency announcement (BAA) and correlated source selection process identified</p>	16.000	8.671	8.871

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014		
Appropriation/Budget Activity 0400 / 1	R-1 Program Element (Number/Name) PE 0601110D8Z / <i>Basic Research Initiatives</i>	Project (Number/Name) P010 / <i>Basic Research Initiatives</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2013	FY 2014	FY 2015
<p>several new university-led research grants to be awarded in these newly derived focus areas. The FY 2013 BAA yielded 270 white papers; 14 proposals were 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>Sponsored eight faculty chair positions for Minerva Research Fellows at defense education institutions (war colleges and Service academies).</p> <p>FY 2014 Plans: A Department-wide solicitation of topics to be set as Minerva priority social science research areas will engage Service leadership, DARPA, J5, the intelligence community, and others in the defense community. The resulting BAA and correlated source selection process will select new university-led research grants to be awarded in these newly derived focus areas.</p> <p>The Minerva Research Fellows program is being restructured to more effectively build in-house social science capabilities and better connect social science research insights to current and future defense leadership at professional military education institutions (PMEs) and elsewhere. An ongoing pilot program has been designed to augment existing institutional resources rather than funding new research faculty by enabling activities such as PME curriculum development, new academic-government exchange opportunities, and research-informed tabletop exercises.</p> <p>FY 2015 Plans: Continue and start new university-led research initiatives. Based on lessons learned during FY 2014 pilot at defense education institutions, the Minerva program will continue strengthening DoD-internal social science capabilities by enabling activities such as PME curriculum development, new academic-government exchange opportunities, and research-informed tabletop exercises.</p>				
<p>Title: Strategic Support for Basic Research (SSBR)</p> <p>Description: 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>FY 2013 Accomplishments: Conducted workshops for scientific situational awareness. Convened National research leaders to provide external perspectives on potential breakthroughs and barriers to advancement in rapidly evolving fields of basic research. Analyzed university-related</p>		1.368	2.498	2.500

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense	Date: March 2014
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Appropriation/Budget Activity 0400 / 1	R-1 Program Element (Number/Name) PE 0601110D8Z / <i>Basic Research Initiatives</i>	Project (Number/Name) P010 / <i>Basic Research Initiatives</i>
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<p>business practices for improvement. Acquired scientific expertise to oversee engineering and science initiatives. Established 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 ASD(R&E) Deans Dialog event to foster active connections with research universities.</p> <p><i>FY 2015 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 ASD(R&E) Deans Dialog event to foster active connections with research universities.</p>			
Accomplishments/Planned Programs Subtotals	17.368	11.169	11.371

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

N/A

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400 / 1	R-1 Program Element (Number/Name) PE 0601110D8Z / <i>Basic Research Initiatives</i>	Project (Number/Name) P101 / <i>National Security Science and Engineering Faculty Fellowship (NSSEFF)</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
P101: <i>National Security Science and Engineering Faculty Fellowship (NSSEFF)</i>	-	-	-	33.193	-	33.193	35.181	35.251	35.899	38.285	Continuing	Continuing

The FY 2015 OCO Request will be submitted at a later date.

Note

The National Security Science and Engineering Faculty Fellowship (NSSEFF) program will be realigned from the National Defense Education Program (NDEP) PE 0601120D8Z to this PE beginning in FY 2015.

A. Mission Description and Budget Item Justification

The National Security Science and Engineering Faculty Fellowship (NSSEFF) program supports world-class researchers in scientific areas of critical importance to DoD and ensures the cultivation of exceptional talent. NSSEFF provides a critical resource for connections between academia and the DoD science and engineering enterprise. Fellows' work is selected on the basis of basic research priorities and other emerging areas of potential importance to DoD basic scientific research and defines a broad set of emerging scientific areas. Fellows serve as speakers at DoD events, reviewers on panels for DoD science, and as collaborators with DoD laboratory scientists and engineers.

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

	FY 2013	FY 2014	FY 2015
Title: National Security Science and Engineering Faculty Fellowship (NSSEFF)	-	-	33.193
Description: NSSEFF ensures that DoD has a research portfolio that supports the foremost creative, innovative, and productive university researchers. The objectives of the program are to: (1) conduct innovative, unclassified, basic scientific and engineering research on topics of interest to DoD; (2) provide university researchers with an overview of DoD's missions, employed technologies, and current and future challenges; (3) foster research collaborations between science and engineering faculty members and DoD; and (4) increase the cadre of ready and relevant technical expertise which DoD can call upon.			
FY 2015 Plans: Continue support for current NSSEFF Fellows. Review program topic areas, eligibility, review process and selection criteria. Solicit for a new class of NSSEFF Fellows. Conduct a NSSEFF program review and report on Fellows' progress. Use this venue to identify and facilitate new connections between Fellows and DoD scientists and engineers. Organize and conduct a DoD-wide activity at a DoD Laboratory to further develop the collaborative relationships between DoD researchers and NSSEFF Fellows in areas of scientific or technological importance to DoD.			
Accomplishments/Planned Programs Subtotals	-	-	33.193

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 1	R-1 Program Element (Number/Name) PE 0601110D8Z / <i>Basic Research Initiatives</i>	Project (Number/Name) P101 / <i>National Security Science and Engineering Faculty Fellowship (NSSEFF)</i>

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

N/A

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> / BA 1: <i>Basic Research</i>	R-1 Program Element (Number/Name) PE 0601120D8Z / <i>National Defense Education Program (NDEP)</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
Total Program Element	-	73.667	77.241	45.488	-	45.488	48.212	48.308	49.197	52.466	Continuing	Continuing
P120: <i>National Defense Education Program (NDEP)</i>	-	73.667	77.241	45.488	-	45.488	48.212	48.308	49.197	52.466	Continuing	Continuing

The FY 2015 OCO Request will be submitted at a later date.

Note

The National Security Science and Engineering Faculty Fellowship (NSSEFF) program is realigned from PE 0601120D8Z to PE 0601110D8Z, Basic Research Initiatives, beginning in FY 2015.

A. Mission Description and Budget Item Justification

The National Defense Education Program (NDEP) engages the full science, technology, engineering, and mathematics (STEM) continuum to ensure the Department of Defense (DoD) will have access to high-quality STEM personnel vital to national defense now and in the future. STEM degree production compared to U.S. employment projections show that there is likely to be a significant shortage of STEM professionals, especially in computing, information technology, and electronics engineering, DoD mission critical occupations for which NDEP's continuum of initiatives provides a pool of exceptional talent. NDEP's portfolio provides short, medium, and long-term solutions to the perfect storm of workforce challenges, which include: (1) impending retirement of 33 percent of DoD's STEM workforce; (2) low college readiness rate and interest in STEM majors; and (3) challenges that DoD, like other Federal employers, face in recruiting and retaining high-quality STEM talent in a competitive environment.

NDEP aligns to the DoD Science and Technology (S&T) priorities and the integrated STEM/Historically Black Colleges and Universities and Minority Institutions (HBCU/ MIs) program, synchronized with the Federal 5-Year STEM Strategic Plan, the DoD STEM Strategic and Implementation Plans and the DoD Strategic Workforce Plan (in progress). NDEP components engage in assessment and evaluation as required by the Office of Management and Budget and the Government Accountability Office.

Science, Mathematics, and Research for Transformation (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 engage SMART scholars in hands-on, authentic research and work experiences in DoD facilities, 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 ~1,455 students from bachelor to doctoral levels and to date ~900 have completed program studies and transitioned into the DoD workforce. SMART ensures that DoD has a steady infusion of high-quality U.S. technical talent, prepared in areas of critical importance to DoD, ready to apply their technical knowledge, skills, and abilities to fulfill DoD's mission.

National Security Science and Engineering Faculty Fellowship (NSSEFF) currently supports 29 world-class researchers (NSSEFF Fellows) in scientific areas of critical importance to DoD and ensures the cultivation of exceptional future talent. The NSSEFF Fellows work with ~100 undergraduate students, ~270 graduate students, and ~150 post-doctoral scholars at their respective academic institutions. Three cohorts of NSSEFF Fellows, with the first selected in FY 2008, provides a critical

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity	R-1 Program Element (Number/Name)
0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> / BA 1: <i>Basic Research</i>	PE 0601120D8Z / <i>National Defense Education Program (NDEP)</i>

resource for connections between academia and the DoD science and engineering enterprise. Fellows' work spans all seven DoD S&T priorities and defines a broad set of emerging scientific research areas, critical to the development of future DoD technologies. 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. The NSSEFF program is realigned to PE 0601110D8Z Basic Research Initiatives in FY 2015.

NDEP Pre-Kindergarten (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. The PK-12 program is terminated in FY 2014, though portions may transfer to the Department of Education.

B. Program Change Summary (\$ in Millions)	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO	FY 2015 Total
Previous President's Budget	87.979	84.271	96.906	-	96.906
Current President's Budget	73.667	77.241	45.488	-	45.488
Total Adjustments	-14.312	-7.030	-51.418	-	-51.418
• Congressional General Reductions	-	-7.000			
• Congressional Directed Reductions	-7.826	-			
• Congressional Rescissions	-0.116	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-4.042	-			
• SBIR/STTR Transfer	-2.294	-			
• Realignment of the NSSEFF Program	-	-	-33.193	-	-33.193
• Strategic Efficiency Savings	-	-	-18.225	-	-18.225
• FFRDC Adjustments	-	-0.030	-	-	-
• Other Program Adjustments	-0.034	-	-	-	-

Change Summary Explanation

The National Security Science and Engineering Faculty Fellowship (NSSEFF) program is realigned to PE 0601110D8Z, Basic Research Initiatives, in FY 2015.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> / BA 1: <i>Basic Research</i>	R-1 Program Element (Number/Name) PE 0601120D8Z / <i>National Defense Education Program (NDEP)</i>
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The reduction is a strategic efficiency approach to reduce funding and staffing. As a result, we provide a better alignment of funding and provide support to a smaller military force.

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400 / 1	R-1 Program Element (Number/Name) PE 0601120D8Z / <i>National Defense Education Program (NDEP)</i>	Project (Number/Name) P120 / <i>National Defense Education Program (NDEP)</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost

The FY 2015 OCO Request will be submitted at a later date.

Note

The National Security Science and Engineering Faculty Fellowship (NSSEFF) program is realigned from PE 0601120D8Z to PE 0601110D8Z, Basic Research Initiatives, beginning in FY 2015.

A. Mission Description and Budget Item Justification

The National Defense Education Program (NDEP) engages the full science, technology, engineering, and mathematics (STEM) continuum to ensure the Department of Defense (DoD) will have access to high-quality STEM personnel vital to national defense now and in the future. STEM degree production compared to U.S. employment projections show that there is likely to be a significant shortage of STEM professionals, especially in computing, information technology, and electronics engineering, DoD mission critical occupations for which NDEP's continuum of initiatives provides a pool of exceptional talent. NDEP's portfolio provides short, medium, and long-term solutions to the perfect storm of workforce challenges, which include: (1) impending retirement of 33 percent of DoD's STEM workforce; (2) low college readiness rate and interest in STEM majors; and (3) challenges that DoD, like other Federal employers, face in recruiting and retaining high-quality STEM talent in a competitive environment.

NDEP aligns to the DoD Science and Technology (S&T) priorities and the integrated STEM/Historically Black Colleges and Universities and Minority Institutions (HBCU/ MIs) program, synchronized with the Federal 5-Year STEM Strategic Plan, the DoD STEM Strategic and Implementation Plans and the DoD Strategic Workforce Plan (in progress). NDEP components engage in assessment and evaluation as required by the Office of Management and Budget and the Government Accountability Office.

Science, Mathematics, and Research for Transformation (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 engage SMART scholars in hands-on, authentic research and work experiences in DoD facilities, 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 ~1,455 students from bachelor to doctoral levels and to date ~900 have completed program studies and transitioned into the DoD workforce. SMART ensures that DoD has a steady infusion of high-quality U.S. technical talent, prepared in areas of critical importance to DoD, ready to apply their technical knowledge, skills, and abilities to fulfill DoD's mission.

National Security Science and Engineering Faculty Fellowship (NSSEFF) program supports world-class researchers in scientific areas of critical importance to DoD and ensures the cultivation of exceptional future talent. The NSSEFF provides a critical resource for connections between academia and the DoD science and engineering enterprise. NSSEFF Fellows' work spans all seven DoD S&T priorities and defines a broad set of emerging scientific research areas, critical to the development of future DoD technologies. 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. The NSSEFF program is realigned to PE 0601110D8Z Basic Research Initiatives in FY 2015.

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 1	R-1 Program Element (Number/Name) PE 0601120D8Z / <i>National Defense Education Program (NDEP)</i>	Project (Number/Name) P120 / <i>National Defense Education Program (NDEP)</i>

NDEP Pre-Kindergarten (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. The PK-12 program is terminated in FY 2014, though portions may transfer to the Department of Education.

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

	FY 2013	FY 2014	FY 2015
<p>Title: Science, Mathematics, and Research for Transformation (SMART) Defense Education Program</p> <p>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.</p> <p>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's success is measured by participants that remain in the DoD workforce beyond their required service commitment: 84 percent who have completed their service commitment are still employed by DoD beyond their original service commitment.</p> <p>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.</p> <p>Since FY 2005, ~1,455 students have participated in SMART at ~ 160 sponsoring facilities. As of August 2013, ~900 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.</p>	40.267	46.345	45.488

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 1	R-1 Program Element (Number/Name) PE 0601120D8Z / <i>National Defense Education Program (NDEP)</i>	Project (Number/Name) P120 / <i>National Defense Education Program (NDEP)</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<p><i>FY 2013 Accomplishments:</i></p> <ul style="list-style-type: none"> • 142 SMART students were selected for FY 2013. • Received signature on the SMART Defense Education Program Directive-type Memorandum (DTM) 13-007, which in accordance with the authority in DoD Directive 5134.01, implements the provisions of section 2192a of Title 10 United States Code to establish policy, assign responsibilities, and prescribe procedures for executing the program. • Assessed the mentoring and workforce development initiatives for current participants and the effectiveness of the transition process. • Transitioned approximately 100 participants into the DoD workforce. • Coordinated with the HBCU/MI program to increase the number of eligible applicants as well as application reviewers from HBCU/MIs. <p><i>FY 2014 Plans:</i></p> <ul style="list-style-type: none"> • Establish a SMART DoD Instruction per DTM 13-007. • 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. • Transition ~100 participants into the DoD workforce. • Increase the number of candidate spots and select new participants based on available funding. • Continue to document effectiveness of SMART program with metrics 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. <p><i>FY 2015 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. • Transition ~100 participants into the DoD workforce. • Increase the number of candidate spots and select new participants based on available funding. 			

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014		
Appropriation/Budget Activity 0400 / 1	R-1 Program Element (Number/Name) PE 0601120D8Z / <i>National Defense Education Program (NDEP)</i>	Project (Number/Name) P120 / <i>National Defense Education Program (NDEP)</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2013	FY 2014	FY 2015
<ul style="list-style-type: none"> Continue to document effectiveness of SMART program with metrics 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. 				
<p>Title: National Security Science and Engineering Faculty Fellowship (NSSEFF)</p> <p>Description: NSSEFF ensures that DoD has a research portfolio that supports the foremost creative, innovative, and productive university researchers. The objectives of the program are to:</p> <ul style="list-style-type: none"> Conduct innovative, unclassified, basic scientific and engineering research on topics of interest to DoD. Foster research collaborations between science and engineering faculty members and DoD. Provide university researchers with an overview of DoD's missions, employed technologies, and current and future challenges. Increase the cadre of ready and relevant technical expertise which DOD can call upon. <p>FY 2013 Accomplishments:</p> <ul style="list-style-type: none"> Provided continuing support for current NSSEFF Fellows. Conducted a program review and report on Fellows' progress. Prepared a report documenting the results of the program review. <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. Use this venue to identify and facilitate new connections between Fellows and DoD scientists and engineers. 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. 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 Principal Investigators and their research teams with DoD scientific staff. 		21.400	30.896	-
<p>Title: PK-12</p> <p>Description: A highly-skilled workforce is critical to the long-term viability of the DoD S&T enterprise, therefore, the declining performance and interest of U.S. students in DoD STEM fields poses a risk to national security in the long term. Today's first graders will be the 2030 bachelor's degree talent pool for DoD. The portfolio of NDEP PK-12 activities inspires and develops a diverse, high-quality talent pool for the future DoD STEM workforce aligned with STEM skill needs. Consistent with the goals of the Federal STEM Education 5-Year Strategic Plan, these activities include: (1) develop STEM skills (including STEM pedagogical</p>		12.000	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 1	R-1 Program Element (Number/Name) PE 0601120D8Z / <i>National Defense Education Program (NDEP)</i>	Project (Number/Name) P120 / <i>National Defense Education Program (NDEP)</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<p>skills), practices, or knowledge of STEM for students, educators and education leaders; (2) increase awareness of DoD STEM opportunities; and (3) develop evidence-based STEM education models and practices.</p> <p>The PK-12 program is terminated in FY 2014, though portions may transfer to the Department of Education.</p> <p><i>FY 2013 Accomplishments:</i></p> <ul style="list-style-type: none"> • Performed strategic planning activities to foster connectivity of NDEP PK-12 initiatives to the DoD civilian and military STEM workforce, optimized NDEP STEM investments, updated and improved DoD STEM policy related to NDEP, and achieved greater coordination among NDEP Defense Component participants. • Increased the quality and duration of engagements led by DoD scientists and engineers (S&Es) in communities near DoD laboratories and bases. For example, the number of supported FIRST Robotics teams increased by 84 percent over previous fiscal years, expanded to include students in grades K-3. DoD S&Es volunteered more than 26,000 hours to mentor the 322 teams. • Engaged evaluation expertise to build assessment and evaluation capabilities for NDEP PK-12 investments in alignment with the Federal STEM Education 5-Year Strategic Plan and in concert with Office of Management and Budget and General Accountability Office guidance on assessment and evaluation. • Built upon existing, sustainable partnerships among higher education institutions and PK-12 school systems to increase capacity for long-term sustainability. • Leveraged and maximized the FY 2013 NDEP PK-12 investment through the implementation of effective practices for the engagement of local partners with DoD S&Es. 			
Accomplishments/Planned Programs Subtotals	73.667	77.241	45.488

<p>C. Other Program Funding Summary (\$ in Millions) N/A</p> <p>Remarks</p>
<p>D. Acquisition Strategy N/A</p>
<p>E. Performance Metrics</p> <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 who are transitioned into the DoD workforce.

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 1	R-1 Program Element (Number/Name) PE 0601120D8Z / <i>National Defense Education Program (NDEP)</i>	Project (Number/Name) P120 / <i>National Defense Education Program (NDEP)</i>

- The increase in the number of SMART scholars who 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.
- 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 the broad DoD S&T enterprise, including inclusion in special DoD task forces, advisory panels, and the broad set of engagements of PIs, postdocs, and students.
- The increase in the direct support and/or advancement of research into DoD S&T emphasis areas and emerging research areas by: (1) recognized transformational discoveries, insights, and other measures of scientific progress, such as scientifically relevant publications in peer reviewed journals; and (2) new patents filed/awarded in these areas.
- The number of co-authored papers between NSSEFF Fellows and DoD S&Es.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 1: Basic Research</i>	R-1 Program Element (Number/Name) PE 0601228D8Z / <i>Historically Black Colleges and Universities and Minority Institutions</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
Total Program Element	-	-	35.895	24.412	-	24.412	26.812	26.421	27.312	32.312	Continuing	Continuing
P448: <i>Historically Black Colleges and Universities and Minority Institutions</i>	-	-	35.895	24.412	-	24.412	26.812	26.421	27.312	32.312	Continuing	Continuing

The FY 2015 OCO Request will be submitted at a later date.

Note

The Historically Black Colleges and Universities and Minority Institutions (HBCU/MI) Program was realigned from Budget Activity (BA) 2, Program Element (PE) 0602228D8Z to BA 1, PE 0601228D8Z in FY 2014. The Office of the Secretary of Defense (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.
- **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.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense	Date: March 2014
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Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 1: Basic Research</i>	R-1 Program Element (Number/Name) PE 0601228D8Z I <i>Historically Black Colleges and Universities and Minority Institutions</i>
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B. Program Change Summary (\$ in Millions)	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO	FY 2015 Total
Previous President's Budget	-	30.895	31.199	-	31.199
Current President's Budget	-	35.895	24.412	-	24.412
Total Adjustments	-	5.000	-6.787	-	-6.787
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	5.000			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Strategic Efficiency Savings	-	-	-6.787	-	-6.787

Change Summary Explanation

The reduction is a strategic efficiency approach to reduce funding and staffing. As a result, we provide a better alignment of funding and provide support to a smaller military force.

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400 / 1	R-1 Program Element (Number/Name) PE 0601228D8Z / <i>Historically Black Colleges and Universities and Minority Institutions</i>	Project (Number/Name) P448 / <i>Historically Black Colleges and Universities and Minority Institutions</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
P448: <i>Historically Black Colleges and Universities and Minority Institutions</i>	-	-	35.895	24.412	-	24.412	26.812	26.421	27.312	32.312	Continuing	Continuing

The FY 2015 OCO Request will be submitted at a later date.

Note

The Historically Black Colleges and Universities and Minority Institutions (HBCU/MI) Program was realigned from Budget Activity (BA) 2, Program Element (PE) 0602228D8Z to BA 1, PE 0601228D8Z in FY 2014. The Office of the Secretary of Defense (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.
- **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 2013	FY 2014	FY 2015
Title: Historically Black Colleges and Universities and Minority Institutions (HBCU/MI)	-	35.895	24.412

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 1	R-1 Program Element (Number/Name) PE 0601228D8Z / <i>Historically Black Colleges and Universities and Minority Institutions</i>	Project (Number/Name) P448 / <i>Historically Black Colleges and Universities and Minority Institutions</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<p>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.</p> <p>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 Thurgood Marshall College Fund and a new initiative, STEM Prep with Paul Quinn College and Cheyney State University. The goal is to increase the number of FY 2014 summer interns from 60 to 75 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.</p> <p>FY 2015 Plans: Continue efforts from FY 2014. 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 and the STEM Prep project with HBCUs: Paul Quinn College and Cheney State University. The goal is to increase the number of FY 2015 summer interns from 75 to 85 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.</p>			
Accomplishments/Planned Programs Subtotals	-	35.895	24.412

C. Other Program Funding Summary (\$ in Millions)										
Line Item	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete
• BA 2, PE 0602228D8Z: <i>HBCU/MI</i>	27.246	-	-	-	-	-	-	-	-	Continuing

Remarks

D. Acquisition Strategy
N/A

E. Performance Metrics

- Number of students funded other than undergraduates
- Number of undergraduate students funded

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 1	R-1 Program Element (Number/Name) PE 0601228D8Z / <i>Historically Black Colleges and Universities and Minority Institutions</i>	Project (Number/Name) P448 / <i>Historically Black Colleges and Universities and Minority Institutions</i>
<ul style="list-style-type: none">• 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• Number of undergraduates who will receive scholarships and fellowships for further studies in STEM		

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 2: Applied Research</i>	R-1 Program Element (Number/Name) PE 0602000D8Z I <i>Joint Munitions Technology</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
Total Program Element	20.298	18.701	17.959	20.065	-	20.065	20.085	20.177	20.181	20.421	Continuing	Continuing
P000: <i>Insensitive Munitions</i>	14.474	12.895	13.936	13.571	-	13.571	13.580	13.569	13.561	13.729	Continuing	Continuing
P204: <i>Enabling Fuze Technology</i>	5.824	5.806	4.023	6.494	-	6.494	6.505	6.608	6.620	6.692	Continuing	Continuing

The FY 2015 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 maximizing efficiencies, 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 2018, and 2023 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) Gun 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

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense	Date: March 2014
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Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 2: Applied Research</i>	R-1 Program Element (Number/Name) PE 0602000D8Z I <i>Joint Munitions Technology</i>
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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 2013	FY 2014	FY 2015 Base	FY 2015 OCO	FY 2015 Total
Previous President's Budget	20.615	20.065	21.556	-	21.556
Current President's Budget	18.701	17.959	20.065	-	20.065
Total Adjustments	-1.914	-2.106	-1.491	-	-1.491
• Congressional General Reductions	-	-2.000			
• Congressional Directed Reductions	-1.701	-			
• Congressional Rescissions	-0.028	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.178	-			
• Strategic Efficiency Savings	-	-	-1.491	-	-1.491
• FFRDC Adjustments	-	-0.106	-	-	-
• Other Program Adjustments	-0.007	-	-	-	-

Change Summary Explanation

The reduction is a strategic efficiency approach to reduce funding and staffing. As a result, we provide a better alignment of funding and provide support to a smaller military force.

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense										Date: March 2014		
Appropriation/Budget Activity 0400 / 2					R-1 Program Element (Number/Name) PE 0602000D8Z / <i>Joint Munitions Technology</i>				Project (Number/Name) P000 / <i>Insensitive Munitions</i>			
COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
P000: <i>Insensitive Munitions</i>	14.474	12.895	13.936	13.571	-	13.571	13.580	13.569	13.561	13.729	Continuing	Continuing

The FY 2015 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 2013	FY 2014	FY 2015
Title: High Performance Rocket Propulsion (HPP)	2.894	3.772	3.699
<p>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 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 2018 and 2023 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.</p> <p>FY 2013 Accomplishments:</p> <ul style="list-style-type: none"> - Studied thermal and mechanical responses of composite cases to slow cook off and aerodynamic heating. 			

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014		
Appropriation/Budget Activity 0400 / 2	R-1 Program Element (Number/Name) PE 0602000D8Z / <i>Joint Munitions Technology</i>	Project (Number/Name) P000 / <i>Insensitive Munitions</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2013	FY 2014	FY 2015
<ul style="list-style-type: none"> - Completed scale up of high performance rocket propellants to five gallon size batches, refined processing procedures and conducted sensitivity and safety testing. - Completed final assembly and conducted slow and fast cook off IM tests. - Characterized novel ionic liquid candidates for high performance propulsion. Downselected, scaled-up to one pound, and conducted mechanical property testing. - Completed burning 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 less reactive propellants in steel and composite cases by conducting IM testing on sub-scale analogue motors. - Characterize less reactive propellants with advanced ingredients with safety testing, mechanical property measurements, variable confinement cook off testing, and slow cook off visualization testing. - Conduct small scale cook-off testing and gap testing on novel ionic liquid candidates for high performance propulsion. - Conduct small-scale slow cook-off study correlating historical subscale and full scale slow cook-off data for high performance rocket motors. - Formulate a novel high performance propellant in 1 pound quantities and conducted initial studies. <p>FY 2015 Plans:</p> <ul style="list-style-type: none"> - Synthesize and characterize less reactive ingredients for high performance rocket motor propellant that will maintain missile performance. - Conduct bench-top testing of motor case venting devices. - Conduct sub-scale testing and analysis to validate a new sub-scale test to predict full-scale reactions in cook-off and impact 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 energy and reduced shock sensitivity. The 2018 and 2023 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.</p>		2.994	2.651	2.577

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Appropriation/Budget Activity 0400 / 2	R-1 Program Element (Number/Name) PE 0602000D8Z / <i>Joint Munitions Technology</i>	Project (Number/Name) P000 / <i>Insensitive Munitions</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<p><i>FY 2013 Accomplishments:</i></p> <ul style="list-style-type: none"> - Generated 500 grams of novel coated material. Characterized new materials, including safety and compatibility testing. Performed small-scale IM tests on best candidates. - Mixed pint-sized batches of coated materials and conducted mechanical, safety, and ballistic testing of the mixes. - Synthesized, scaled-up, and performed safety testing on state of the art energetic materials. Performed predictive thermochemical calculations for potential formulations. <p><i>FY 2014 Plans:</i></p> <ul style="list-style-type: none"> - Generate multi-gram batches of novel coated materials. Produced 1 pint-scale mixes of two promising minimum signature propellants. - Scale up and produced multi-grams of novel material. Built and down-selected candidate materials for unique venting mechanism. - Characterize two min signature propellants in a unique configuration to determine the go/no go threshold and investigated other design factors that contribute to ignition, to aide in the development of a modeling and simulation effort designed to predict the reaction of an analog rocket motor under fragment impact. - Complete propellant development program using new binder and conducted gap testing. - Conduct initial screening studies on two ingredients that have potential for MS propellants through solubility and ignition sensitivity testing. <p>Further narrowed the operational range for the autoignition materials and conducted trade studies. Demonstrated Army Burn-to-Violent Reaction (ABVR) screening test as discriminator for reaction violence.</p> <p><i>FY 2015 Plans:</i></p> <ul style="list-style-type: none"> - Conduct mechanical, safety, and card gap testing, and determine ballistic properties of novel coated material minimum signature propellant. - Conduct design of experiments of candidate formulations and down-select to most promising candidate to provide desired performance characteristics. - Conduct final characterization tests and slow cook-off tests to validate formulation. - Build and test unique venting mechanisms in various configurations in environmental and cook-off tests. 			
<p><i>Title:</i> Blast and Fragmentation Warheads (BFW)</p> <p><i>Description:</i> 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</p>	3.281	2.796	2.723

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<p>factors such as cost, availability and reliability may be critically important depending on the intended munition application. 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 2018 and 2023 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 2013 Accomplishments:</p> <ul style="list-style-type: none"> - Concluded manufacturing studies and weaponization study for Compounded HE Composites and prepared to demonstrate IM characteristics of unique warhead explosive material. - Concluded down-selecting materials and the sensitization process in order to conduct device scale testing to validate the process. - Conducted characterization studies on novel explosive material. - Conducted laboratory scale formulation, processing and analysis of melt cast enhanced blast and environmentally friendly explosive fill. - Optimized novel explosive fill formulation for general purpose bombs. - Conducted initial synthesis of unique booster materials for explosives. - Scaled up to 10 gallon batch mix and conducted initial characterization tests of innovative explosive fill for general purpose bombs and transition to BA 6.3. - Synthesized and characterized unique energetic material. Conducted initial sensitivity testing on the materials. <p>FY 2014 Plans:</p> <ul style="list-style-type: none"> - Complete device scale experiments on sensitization process and transition to BA 6.3 project. - Perform one kilogram scale-up of additional composite materials. Formulated and tested IM characteristics of the material. - Synthesize 60 kilograms of new explosive ingredients and formulated explosives on the ten gallon scale. Determined 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 a melt cast enhanced blast explosive fill and performed 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. Conducted characterization testing and down selected unique explosive booster material and transition to Task under PE 603000D8Z/P301. - Produce small quantities of unique energetic material for formulation and characterization testing. 			

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 2	R-1 Program Element (Number/Name) PE 0602000D8Z / <i>Joint Munitions Technology</i>	Project (Number/Name) P000 / <i>Insensitive Munitions</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<ul style="list-style-type: none"> - Conduct synthesis optimization process for novel energetic material and scaled up to produce several 100 gram batches. <p><i>FY 2015 Plans:</i></p> <ul style="list-style-type: none"> - Scale up synthesis process of novel energetic material to produce 1 kg batches to provide multiple grain size material. Examine fundamental properties and conduct characterization testing on manufactured materials. - Perform safety, IM, and performance testing on novel energetic formulations. Analyze results to define failure diameter and establish baseline data for designing IM formulations for transition to a possible 6.3 demonstrator. - Scale up to 40 gram batches unique energetic material and conduct performance and thermal response testing. - Prove concept for detonation train for IM fills for large warheads. Analyze data for formulation to assess the insensitivity to an IM threat. - Predict the potential for passing sympathetic reaction testing based on explosive data gathered during preliminary small-scale testing. 			
<p><i>Title:</i> Anti-Armor Warheads (AAW)</p> <p><i>Description:</i> 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 2018 and 2023 year goals of the AAW MATG are concentrated on solving the IM response of anti-armor warheads to the Fragment Impact, Sympathetic Reaction and Shaped Charge Jet threats for larger munitions and the Fragment Impact, Slow Cookoff, and Sympathetic Reaction / Shaped Charge Jet threats for Medium Caliber Munitions.</p> <p><i>FY 2013 Accomplishments:</i></p> <ul style="list-style-type: none"> - Conducted critical diameter and slow cook-off IM tests of down-selected formulations. - Conducted formulation and initial screening of explosive material to determine physical and performance characteristics. Prepared to transition to Task under PE 603000D8Z. - Conducted initial formulation work and baseline testing on cast cured explosive, using fine grain materials. - Conducted characterization tests on unique combined effects explosive. 	1.673	2.557	2.485

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014		
Appropriation/Budget Activity 0400 / 2	R-1 Program Element (Number/Name) PE 0602000D8Z / <i>Joint Munitions Technology</i>	Project (Number/Name) P000 / <i>Insensitive Munitions</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2013	FY 2014	FY 2015
<ul style="list-style-type: none"> - Conducted 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. - Scaled up to pint mixes formulations of energetic materials with less nitramine content and enhanced insensitivity. - Produced 50 pounds of unique high energy melt cast explosive formulation precursor material for initial evaluation. - Developed baseline data for modeling explosive reactions. <p>FY 2014 Plans:</p> <ul style="list-style-type: none"> - Scale up and conduct IM testing of energetic materials with less nitramine content and enhanced insensitivity. - Conduct small scale performance and mechanical properties testing on unique combined effects explosive formulation. - Conduct aging study and scaled up formulations to 50 pound batches for novel, cast cured, multi-effects explosives formulation. - Conduct larger scale formulation (five pounds) of explosive material and performed intermediate scale IM and performance tests. - Produce unique high energy melt cast explosive formulation material for initial characterization and evaluation testing. - Characterize materials, formulated, and down-selected high energy melt-phase explosive. - Scale up to five gallon mix, conducted initial testing, completed aging study, and conducted standard IM tests on novel, cast cured, multi-effects explosives formulation. - Scale up high energy pressed explosive and conducted performance testing. - Assess additional explosive materials to validate the baseline model data. - Down-select optimized formulation and conducted IM testing on cast cured explosive, using fine grain material. Prepared to transition to Task under PE 603000D8Z. <p>FY 2015 Plans:</p> <ul style="list-style-type: none"> - Scale up synthesis of newly identified explosive ingredient with high performance and low sensitivity potential. - Development and characterization of explosive formulations using a recently scaled-up newly identified explosive ingredient. - Conduct slow cook-off and small scale sympathetic detonation test on unique combined effects explosive formulation. - Down-select formulations of energetic materials composed of finer particle size nitramine content and enhanced insensitivity and conduct small scale cookoff and fragment impact testing. Prepare five pound batches of selected formulation. - Conduct small scale slow cook-off, fragment impact and shaped charge testing on unique high energy melt cast explosive formulation. - Design surrogate munition and shaped charge jet impact initiation testing configurations to demonstrate models utility for weapon design. 				
Title: Gun Propulsion (GP)		2.053	2.160	2.087

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 2	R-1 Program Element (Number/Name) PE 0602000D8Z / <i>Joint Munitions Technology</i>	Project (Number/Name) P000 / <i>Insensitive Munitions</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<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 2018 and 2023 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 2013 Accomplishments:</p> <ul style="list-style-type: none"> - Established design of experiments test matrix and complete subsequent modeling effort. - Concluded IM and mechanical tests on containers and compared results with the models' predictions. - Optimized formulation and conducted IM tests to determine viability of down-select candidate for gun propellants. - Continued formulation development to manufacture three kilogram batches for extrusion into 15 pounds of propellant. - Conducted various tests to validate IM properties and suitability for gun propellant. - Performed initial characterization of ignition propellants after exposure to novel ignition methodology. - Scaled up novel binder material to 25 gram batches and characterized material thermal and sensitivity properties. - Conducted thermal and sensitivity testing on propellant formulation effort using unique less sensitive binder propellant. - Conducted 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 IM 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 validated IM properties and suitability for gun propellant. - Design and fabricate apparatus to test propellants and develop modeling code for small-scale slow cook-off protocol. - Develop properties of ignition propellants after exposure to novel ignition methodology. Performed 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. - Conduct small scale unique processing of propellant grains. <p>FY 2015 Plans:</p>			

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Appropriation/Budget Activity 0400 / 2	R-1 Program Element (Number/Name) PE 0602000D8Z / <i>Joint Munitions Technology</i>	Project (Number/Name) P000 / <i>Insensitive Munitions</i>
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<ul style="list-style-type: none"> - Conduct slow cook-off tests in new apparatus to validate test small scale test protocol for propellant formulations. - Establish data set of required material characteristics after exposure to novel ignition methodology. - Down select unique process ingredients and complete sub-scale IM testing of propellant. 			
Accomplishments/Planned Programs Subtotals	12.895	13.936	13.571

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
<ul style="list-style-type: none"> • 0603000D8Z P002: <i>BA 3 Insensitive Munitions Advanced Technology</i> 	15.702	16.601	19.807	-	19.807	19.993	19.953	20.018	20.163	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) Munition Area Technology Group Technology Roadmaps are prepared, evaluated, and analyzed by Joint Insensitive Munitions Technology Program management and technical staff.
- 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.
- 4) Project 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 Review of Projects conducted as part of Joint Army/Navy/NASA/Air Force meetings.

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense										Date: March 2014		
Appropriation/Budget Activity 0400 / 2					R-1 Program Element (Number/Name) PE 0602000D8Z / Joint Munitions Technology				Project (Number/Name) P204 / Enabling Fuze Technology			
COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
P204: <i>Enabling Fuze Technology</i>	5.824	5.806	4.023	6.494	-	6.494	6.505	6.608	6.620	6.692	Continuing	Continuing

The FY 2015 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 2013	FY 2014	FY 2015
Title: Hard Target Fuzing	1.470	1.048	1.665
<p>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.</p> <p>FY 2013 Accomplishments:</p> <ul style="list-style-type: none"> - Developed and validate modeling and simulation code using high fidelity, multi-scale simulation techniques. - Developed survivable modular fuze technology for multi-common miniature munitions with distributed/embedded fuzes. <p>FY 2014 Plans:</p> <ul style="list-style-type: none"> - Adapt and transition Joint Fuze Technology Program developed testing protocol in boosted and high speed penetrator development programs. 			

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014		
Appropriation/Budget Activity 0400 / 2	R-1 Program Element (Number/Name) PE 0602000D8Z / <i>Joint Munitions Technology</i>	Project (Number/Name) P204 / <i>Enabling Fuze Technology</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2013	FY 2014	FY 2015
<p>- Demonstrate and transition survivable modular fuze technology for multi-role common miniature munitions with distributed/embedded fuzes.</p> <p>FY 2015 Plans:</p> <p>- Develop and demonstrate alternative packaging technology for the electronic components of a fireset to improve fuze survivability and reliability for hypersonic penetrating weapon applications.</p>				
<p>Title: Tailorable Effects Fuzing</p> <p>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.</p> <p>FY 2013 Accomplishments:</p> <p>- Continued to develop Tailorable Effects modeling and simulation using hydrocode.</p> <p>- Developed 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.</p> <p>FY 2014 Plans:</p> <p>- Demonstrate and transition into 6.3 advanced technology development of detonator, initiation, and fireset technologies.</p> <p>- Apply initiation architecture and control technologies for application in the Services' warhead development programs.</p> <p>FY 2015 Plans:</p> <p>- Begin development of a primary explosive ink with high output and low sensitivity for use in MEM's micro-detonators.</p>		1.578	1.029	1.646
<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 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 reliability expectations and harsher weapon system operational requirements are dictating the need for higher fuze reliability than available using current technologies.</p> <p>FY 2013 Accomplishments:</p>		1.440	0.987	1.605

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 2	R-1 Program Element (Number/Name) PE 0602000D8Z / <i>Joint Munitions Technology</i>	Project (Number/Name) P204 / <i>Enabling Fuze Technology</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<ul style="list-style-type: none"> - Demonstrated high reliability fuze architecture concepts that satisfy reliability while maintaining safety by eliminating single-point and common-mode failures. - Applied next generation cluster munitions fuze design and architecture, fabricate component technology prototypes, and conduct performance and reliability tests in ballistic and harsh environment testing. <p>FY 2014 Plans:</p> <ul style="list-style-type: none"> - Research and develop novel technologies for UXO reduction features including fuze mechanisms and initiation energetic to eliminate any unexploded ordnance. <p>FY 2015 Plans:</p> <ul style="list-style-type: none"> - Develop and demonstrate MEMS structures that give existing MEMS Fuzes the ability to self-report safety and reliability compromises in an effort to improve reliability. 			
<p>Title: Enabling Fuze Technologies</p> <p>Description: 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.</p> <p>FY 2013 Accomplishments:</p> <ul style="list-style-type: none"> - Established next generation system interface architecture between various fuze subsystems. - Evaluated proximity fuze sensor, electronics and algorithm technologies in performance and functional testing in air-gun and ballistic environments. - Transitioned to 6.3 development of exploitation resistant proximity fuze sensors and electronics technology. <p>FY 2014 Plans:</p> <ul style="list-style-type: none"> - Conduct assessments of common fuze architecture technologies: safety components, modular electronics, sensors, interfaces, and packaging. <p>FY 2015 Plans:</p> <ul style="list-style-type: none"> - Begin research of failure modes in flash programmable logic devices (F-PLD) that enables reliable, safe and effective use of F-PLDs as fuze components. 	1.318	0.959	1.578
Accomplishments/Planned Programs Subtotals	5.806	4.023	6.494

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 2	R-1 Program Element (Number/Name) PE 0602000D8Z / Joint Munitions Technology	Project (Number/Name) P204 / Enabling Fuze Technology

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

<u>Line Item</u>	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015</u> <u>Base</u>	<u>FY 2015</u> <u>OCO</u>	<u>FY 2015</u> <u>Total</u>	<u>FY 2016</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• 0603000D8Z P301: BA 3 Enabling Fuze Advanced Technology	4.793	3.411	6.881	-	6.881	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.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I</i> BA 2: <i>Applied Research</i>	R-1 Program Element (Number/Name) PE 0602228D8Z <i>I Historically Black Colleges and Universities and Minority Institutions (HBCU/MI)</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
Total Program Element	-	27.246	-	-	-	-	-	-	-	-	Continuing	Continuing
P489: <i>Historically Black Colleges and Universities and Minority Institutions (HBCU/MI)</i>	-	27.246	-	-	-	-	-	-	-	-	Continuing	Continuing

The FY 2015 OCO Request will be submitted at a later date.

Note

The HBCU/MI Program was realigned from Budget Activity (BA) 2, Program Element (PE) 0602228D8Z to BA 1, PE 0601228D8Z in FY 2014. The Office of the Secretary of Defense (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.
- **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.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense	Date: March 2014
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Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 2: Applied Research</i>	R-1 Program Element (Number/Name) PE 0602228D8Z <i>I Historically Black Colleges and Universities and Minority Institutions (HBCU/MI)</i>
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B. Program Change Summary (\$ in Millions)	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO	FY 2015 Total
Previous President's Budget	-	-	-	-	-
Current President's Budget	27.246	-	-	-	-
Total Adjustments	27.246	-	-	-	-
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-5.401	-			
• Congressional Rescissions	-0.047	-			
• Congressional Adds	15.599	-			
• Congressional Directed Transfers	20.000	-			
• Reprogrammings	-2.000	-			
• SBIR/STTR Transfer	-0.892	-			
• Other Program Adjustments	-0.013	-	-	-	-

Change Summary Explanation

The FY 2013 President's Budget requested funds for the HBCU/MI program under Army PE 0601104A. FY 2013 funding was appropriated by Congress in OSD PE 0602228D8Z.

The HBCU/MI Program was realigned from BA 2, PE 0602228D8Z to BA 1, PE 0601228D8Z in the FY 2014 President's Budget Request.

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400 / 2	R-1 Program Element (Number/Name) PE 0602228D8Z / <i>Historically Black Colleges and Universities and Minority Institutions (HBCU/MI)</i>	Project (Number/Name) P489 / <i>Historically Black Colleges and Universities and Minority Institutions (HBCU/MI)</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
P489: <i>Historically Black Colleges and Universities and Minority Institutions (HBCU/MI)</i>	-	27.246	-	-	-	-	-	-	-	-	Continuing	Continuing

The FY 2015 OCO Request will be submitted at a later date.

Note

The HBCU/MI Program was realigned from Budget Activity (BA) 2, Program Element (PE) 0602228D8Z to BA 1, PE 0601228D8Z in FY 2014. The Office of the Secretary of Defense (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.
- **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 2013	FY 2014	FY 2015
Title: Historically Black Colleges and Universities and Minority Institutions (HBCU/MI)	27.246	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 2	R-1 Program Element (Number/Name) PE 0602228D8Z / <i>Historically Black Colleges and Universities and Minority Institutions (HBCU/MI)</i>	Project (Number/Name) P489 / <i>Historically Black Colleges and Universities and Minority Institutions (HBCU/MI)</i>

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

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 2013 Accomplishments:

Conducted annual competition of the HBCU/MI program that resulted in 57 equipment/instrumentation awards totaling \$20.0 million. Established 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. Expanded 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. Developed a DoD-wide HBCU/MI Strategic Plan. Continued to assess the DoD-wide HBCU/MI programs in order to strengthen the competitive position of these institutions within DoD. Continued 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, and the Thurgood Marshall College Fund totaling \$7.000 million. Conducted annual review of the six DoD Centers of Excellence. Continued 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 the DoD or the federal workforce. Conducted outreach webinars and workshops to expose HBCUs/MIs to opportunities in DoD.

FY 2013	FY 2014	FY 2015
Accomplishments/Planned Programs Subtotals	27.246	-

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

Line Item	FY 2013	FY 2014	FY 2015	FY 2015	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	Cost To	
			Base	OCO	Total					Complete	Total Cost
• BA 1, PE 0601228D8Z: <i>HBCU/MI</i>	-	35.895	24.412	-	24.412	26.812	26.421	27.312	32.312	Continuing	Continuing

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

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

- Percent of students graduating with undergraduate degrees in Science, Mathematics, Engineering, and Technology fields.

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 2	R-1 Program Element (Number/Name) PE 0602228D8Z / <i>Historically Black Colleges and Universities and Minority Institutions (HBCU/MI)</i>	Project (Number/Name) P489 / <i>Historically Black Colleges and Universities and Minority Institutions (HBCU/MI)</i>

- 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.

This data constitutes the "Existing Baseline" for measurement and improvement in future years.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 2: Applied Research</i>	R-1 Program Element (Number/Name) PE 0602234D8Z / <i>Lincoln Laboratory</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
Total Program Element	34.444	32.637	41.868	51.875	-	51.875	53.993	53.459	55.628	62.303	Continuing	Continuing
P534: <i>Lincoln Laboratory</i>	27.877	29.048	32.865	41.846	-	41.846	44.707	43.634	49.709	55.450	Continuing	Continuing
P535: <i>Technical Intelligence</i>	3.687	3.263	8.638	10.029	-	10.029	9.286	9.825	5.919	6.853	Continuing	Continuing
P536: <i>Testbed for Comparative Analysis</i>	2.880	0.326	0.365	-	-	-	-	-	-	-	Continuing	Continuing

The FY 2015 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, Cyber Security and Information Sciences, Surveillance and Reconnaissance Systems and Technology, Tactical Systems, Space Control, and Air and Missile Defense. In FY 2013 the LL Program supported 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.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense	Date: March 2014
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Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 2: Applied Research</i>	R-1 Program Element (Number/Name) PE 0602234D8Z / <i>Lincoln Laboratory</i>
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- 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)	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO	FY 2015 Total
Previous President's Budget	36.826	46.875	51.452	-	51.452
Current President's Budget	32.637	41.868	51.875	-	51.875
Total Adjustments	-4.189	-5.007	0.423	-	0.423
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-3.152	-5.000			
• Congressional Rescissions	-0.049	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.974	-			
• Strategic Efficiency Savings	-	-	0.423	-	0.423
• FFRDC Adjustments	-	-0.007	-	-	-
• Other Program Adjustments	-0.014	-	-	-	-

Change Summary Explanation

The reduction is a strategic efficiency approach to reduce funding and staffing. As a result, we provide a better alignment of funding and provide support to a smaller military force.

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense										Date: March 2014		
Appropriation/Budget Activity 0400 / 2					R-1 Program Element (Number/Name) PE 0602234D8Z / Lincoln Laboratory				Project (Number/Name) P534 / Lincoln Laboratory			
COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
P534: Lincoln Laboratory	27.877	29.048	32.865	41.846	-	41.846	44.707	43.634	49.709	55.450	Continuing	Continuing

The FY 2015 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, Cyber Security and Information Sciences, 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 2013	FY 2014	FY 2015
Title: Information, Computation, and Exploitation Sciences	3.926	4.117	5.118
Description: Seeks to develop novel architectures, tools, and techniques for the processing, fusion, interpretation, computation, and exploitation of multi-sensor, multi-intelligence data.			

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense	Date: March 2014
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Appropriation/Budget Activity 0400 / 2	R-1 Program Element (Number/Name) PE 0602234D8Z / Lincoln Laboratory	Project (Number/Name) P534 / Lincoln Laboratory
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<p><i>FY 2013 Accomplishments:</i> Extended video analytics work to enable end user customization and composability of video analytics engine. Developed theoretical framework for threat detection in networks and graphs. Developed a data-intensive cloud analytics infrastructure to enable collection, fusion, and exploitation of structured and unstructured datasets.</p> <p><i>FY 2014 Plans:</i> Begin demonstration of large-scale multi-intelligence data fusion, exploitation, and visualization for specific application domains.</p> <p><i>FY 2015 Plans:</i> Continue demonstration of large-scale multi-intelligence data fusion, exploitation, and visualization for specific application domains.</p>			
<p><i>Title:</i> Cyber Security</p> <p><i>Description:</i> Developing technologies and new techniques for the protection of systems against cyber attack and exploitation.</p> <p><i>FY 2013 Accomplishments:</i> Developed tools to improve cyber situation awareness and simulation environments to model the impact of cyber attacks on mission effectiveness. Developed automated methods to reverse engineer malicious computer codes.</p> <p><i>FY 2014 Plans:</i> Evaluate cyber situational awareness tools on operational networks. Evaluate the impact of cyber attacks on simulated networks and develop strategies to maximize mission effectiveness.</p> <p><i>FY 2015 Plans:</i> Continue to evaluate cyber situational awareness tools on operational networks and evaluate the impact of cyber attacks on simulated networks and develop strategies to maximize mission effectiveness.</p>	3.595	3.770	4.198
<p><i>Title:</i> Advanced Devices</p> <p><i>Description:</i> Development of materials, devices, and subsystems utilizing microelectronic, photonic, biological, and chemical technologies to enable new system approaches to Department of Defense (DoD) sensors.</p> <p><i>FY 2013 Accomplishments:</i> Evaluated new materials for short-wavelength infrared (SWIR) imagers. Developed proof-of-concept, ultra-low power electronics for processors. Fabricated silicon photonic devices for heterogeneous integration into coherent analog systems. Demonstrated arrays of high-power, semiconductor lasers optimized for incorporation into directed energy systems.</p> <p><i>FY 2014 Plans:</i></p>	5.750	6.029	5.185

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense	Date: March 2014
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Appropriation/Budget Activity 0400 / 2	R-1 Program Element (Number/Name) PE 0602234D8Z / <i>Lincoln Laboratory</i>	Project (Number/Name) P534 / <i>Lincoln Laboratory</i>
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
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<p>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.</p> <p>FY 2015 Plans: Continue to 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.</p>			
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<p>Title: Optical Systems</p> <p>Description: Development of focal planes, integrated imagers, imaging and spectroscopic detection systems.</p> <p>FY 2013 Accomplishments: Developed optical systems and components for space surveillance. Developed components and techniques for high-power, high-efficiency mid-wavelength infrared (MWIR) and long-wavelength infrared (LWIR) transmitters. Evaluated the performance of new concepts for extending the range of coherent laser radars.</p> <p>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.</p> <p>FY 2015 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.</p>	4.816	5.051	6.000
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<p>Title: Radio Frequency (RF) Systems</p> <p>Description: Development of novel active and passive RF sensors and development of electronic protection and electronics attack technologies and system concepts.</p> <p>FY 2013 Accomplishments: Completed fabrication and testing of a high-performance, low-power tunable receiver on a chip. Developed and evaluate concepts to extend the linearity of RF analog devices. Design and fabricate photonic components needed for massively channelized RF receivers. Developed RF techniques for electronic protection and attack.</p> <p>FY 2014 Plans:</p>	4.895	5.134	3.380
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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400 / 2	R-1 Program Element (Number/Name) PE 0602234D8Z / <i>Lincoln Laboratory</i>	Project (Number/Name) P534 / <i>Lincoln Laboratory</i>
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<p>Design next generation RF receiver chips with enhanced linearity. Test components for massively channelized photonic RF receiver. Design and fabricate new RF components.</p> <p>FY 2015 Plans: Test next generation RF receiver chips with enhanced linearity. Test components for massively channelized photonic RF receiver. Design and fabricate new RF components.</p>			
<p>Title: Technical Initiatives</p> <p>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.</p> <p>FY 2013 Accomplishments: Biosciences: Grew techniques and platforms for synthetic biology research, focusing on digital-based gene synthesis. Developed tools and methods for rapid assessment of traumatic brain injury. Developed low Size, Weight and Power (SWaP) tools for physiological load monitoring. Autonomous systems: Focused 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: Focused on demonstration of multi-qubit computation and development of quantum protected communications. Novel and Engineered Materials: Developed meta material designs and test material properties in support of the development of high-frequency, tunable mirrors in the mid to long-wave infrared. Developed designs and test miniature broad-band antennas utilizing negative index of refraction materials.</p> <p>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.</p> <p>FY 2015 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.</p>	6.066	8.764	12.965

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Appropriation/Budget Activity 0400 / 2	R-1 Program Element (Number/Name) PE 0602234D8Z / <i>Lincoln Laboratory</i>	Project (Number/Name) P534 / <i>Lincoln Laboratory</i>
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
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.			
<p>Title: Applied Research Analyses for Advancing S&T Priorities</p> <p>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)).</p> <p>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 thorough reactive or proactive analyses that will aid in the DoD specific short term conflict resolution and long term strategic decision making.</p> <p>FY 2015 Plans: Assess various 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 thorough reactive or proactive analyses that will aid in the DoD specific short term conflict resolution and long term strategic decision making.</p>	-	-	5.000
Accomplishments/Planned Programs Subtotals	29.048	32.865	41.846

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

N/A

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense										Date: March 2014		
Appropriation/Budget Activity 0400 / 2					R-1 Program Element (Number/Name) PE 0602234D8Z / <i>Lincoln Laboratory</i>				Project (Number/Name) P535 / <i>Technical Intelligence</i>			
COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
P535: <i>Technical Intelligence</i>	3.687	3.263	8.638	10.029	-	10.029	9.286	9.825	5.919	6.853	Continuing	Continuing

The FY 2015 OCO Request will be submitted at a later date.

A. Mission Description and Budget Item Justification

(U) The Technical Intelligence program provides global scientific and technological (S&T) awareness – an understanding of relevant fields, developments, applications, and opportunities of S&T topics – in order to assist decision-makers in the Office of the Assistant Secretary for Research and Engineering (OASD(R&E)) to prepare for an uncertain future.

(U) The Technical Intelligence program provides this support through three over-arching areas: Current Threat and Capability Estimates, Technical Watch and Horizon Scanning (TW/HS), and Technical Assessments. The current threat and capability estimate focus area coordinates with multiple U.S. government agencies to characterize today’s global S&T environment – to include threats and opportunities – using intelligence-derived and open source information as well as developing proof-of-concept systems to address identified threats. The TW/HS focus area identifies nascent and disruptive technologies that will shape the future S&T landscape through novel TW/HS tools and engagement with international partners. The technical assessment focus area identifies the military relevance, research opportunities, and policy recommendations for existing and future technologies. Each of these areas is supported by a robust outreach program.

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

	FY 2013	FY 2014	FY 2015
Title: Technical Intelligence	3.263	8.638	10.029
Description: The Technical Intelligence program provides global scientific and technological (S&T) awareness – an understanding of relevant fields, developments, applications, and opportunities of S&T topics – in order to assist decision-makers in the Office of the Assistant Secretary for Research and Engineering (OASD(R&E)) to prepare for an uncertain future.			
FY 2013 Accomplishments:			
(U) In FY2013, the Technical Intelligence program focused on programs which aligned with the Office of Technical Intelligence’s (OTI) focus areas: Current Threat and Capability Estimates, Technology Watch and Horizon Scanning, and Technical Assessments. Specifically:			
<ul style="list-style-type: none"> • (U//FOUO) JASON Program: sponsored three JASON studies on national security topics: 1) Hypersonic Synthetic Aperture Radar (SAR); 2) Missile Threat; and 3) Space Intelligence. The study results are classified. • (U//FOUO) AS-US Bilateral Program: sponsored multiple DSTO studies that include Agile Manufacturing, Cold Atom Technology, Metamaterials, Future Technologies in Synthetic Biology, Attitude Toward Application of Biotechnologies to Humans, Cognitive Neuroscience and Augmentation, Efficient Heuristics for Hamiltonian Cycle Problem, and Batteries Deep Dive Study. 			

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 2	R-1 Program Element (Number/Name) PE 0602234D8Z / <i>Lincoln Laboratory</i>	Project (Number/Name) P535 / <i>Technical Intelligence</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<ul style="list-style-type: none"> • (U//FOUO) Technical Assessment Program: sponsored efforts to support the technical assessment program. Assessment topics include: directed energy weapons, human performance modifications, synthetic biology, and quantum magnetometers. The assessment results are at both the unclassified and higher classification levels. <p>FY 2014 Plans: (U) In FY 2014, the Technical Intelligence program will continue to focus on supporting efforts which align with our focus areas: Current Threat and Capability Estimates, TW/HS, and Technical Assessments. Specifically:</p> <ul style="list-style-type: none"> • (U//FOUO) Morning Express Program: OTI will sponsor the development of a countermeasure system(s) to protect forces and infrastructure from attack. Additional information on this effort is at a higher classification level. • (U) JASON Program: OTI will sponsor the JASON group to support focused technical assessments on defense relevant problems. The topic areas include metamaterials, photonics, and autonomy. • (U) Open-Source Capability Development: OTI will complete the development of a contemporary website based on the OASD(R&E) S&T News Bulletin which showcase S&T news stories and academic publications. • (U) Technical Assessment Program: will sponsor multiple technical assessment activities to include Human Performance, Synthetic Biology, Printed Electronics, Quantum Magnetometry, Metamaterials, Human-Systems Integration, and Autonomy. <p>FY 2015 Plans: (U) In FY2015, the Technical Intelligence program will continue to focus on supporting efforts which align with our focus areas: Current Threat and Capability Estimates, TW/HS, and Technical Assessments. Specifically:</p> <ul style="list-style-type: none"> • (U//FOUO) OTI will identify additional areas to explore proof-of-concept counter measure development. : OTI will sponsor the development of an electronic countermeasure system(s) to protect forces and infrastructure from attack. Additional information on these effort are at a higher classification level. • (U) OTI will sponsor the JASON group to support focused technical assessments on defense relevant problems. • (U) OTI will sponsor efforts to continue the development of the TW/HS program. These efforts may include identification of alternate TW/HS tool exploitation. • (U) OTI will sponsor multiple efforts to support the technical assessment program based of emerging and disruptive technology lists developed nationally and with international partners. 			
Accomplishments/Planned Programs Subtotals	3.263	8.638	10.029

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

N/A

Remarks

D. Acquisition Strategy

N/A

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400 / 2	R-1 Program Element (Number/Name) PE 0602234D8Z / <i>Lincoln Laboratory</i>	Project (Number/Name) P535 / <i>Technical Intelligence</i>
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E. Performance Metrics

N/A

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400 / 2	R-1 Program Element (Number/Name) PE 0602234D8Z / Lincoln Laboratory	Project (Number/Name) P536 / Testbed for Comparative Analysis
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
P536: <i>Testbed for Comparative Analysis</i>	2.880	0.326	0.365	-	-	-	-	-	-	-	Continuing	Continuing

The FY 2015 OCO Request will be submitted at a later date.

A. Mission Description and Budget Item Justification

(U) The Testbed for Comparative Analysis program supports the Technical Watch and Horizon Scanning (TW/HS) efforts within the Office of Technical Intelligence (OTI). The TW/HS focus area identified nascent and disruptive technologies that will shape the future S&T landscape through the exploitation of novel TW/HS tools. The Testbed for Comparative Analysis program provides OTI the ability to quantitatively and qualitatively test and evaluate techniques for technology forecasting and horizon scanning.

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

	FY 2013	FY 2014	FY 2015
Title: Testbed for Comparative Analysis	0.326	0.365	-
<p>Description: (U) The Testbed for Comparative Analysis program supports the Technical Watch and Horizon Scanning (TW/HS) efforts within the Office of Technical Intelligence (OTI). The TW/HS focus area identified nascent and disruptive technologies that will shape the future S&T landscape through the exploitation of novel TW/HS tools. The Testbed for Comparative Analysis program provides OTI the ability to quantitatively and qualitatively test and evaluate techniques for technology forecasting and horizon scanning.</p> <p>FY 2013 Accomplishments: (U) In FY2013, the Testbed for Comparative Analysis program supports efforts which aligned with the TW/HS focus area. Specifically: • (U) Tech Watch and Horizon Scanning Pilot System: OTI sponsored two efforts in the continuation of the TW/HS automated system development effort. These efforts included the purchasing of SCOPUS data to support the query sets of the TW/HS pilot system and technical support from GTRI and NSWC in the development of a request for information to industry, academia, and government research centers/laboratories in identifying a solution to developing an automated TW/HS operating system.</p> <p>FY 2014 Plans: (U) In FY2014, the Testbed for Comparative Analysis program will continue to focus on supporting efforts which align with the TW/HS. Specifically: • (U) TW/HS Pilot System Development: OTI will continue to sponsor efforts towards developing an autonomous TW/HS prototype operating system which may provide early identification of emerging and developing technologies. • (U) TW/HS Tool Exploitation: OTI will sponsor efforts on exploiting TW/HS tools to 1) identify existing and unrecognized patterns; specifically providing insight into non-obvious relationships, using open source information; and 2) develop a better</p>			

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense	Date: March 2014
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Appropriation/Budget Activity 0400 / 2	R-1 Program Element (Number/Name) PE 0602234D8Z / <i>Lincoln Laboratory</i>	Project (Number/Name) P536 / <i>Testbed for Comparative Analysis</i>
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
understanding on how to incorporate private-sector data analysis regarding technology development, trends, and potentially disruptive developments.			
Accomplishments/Planned Programs Subtotals	0.326	0.365	-

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

N/A

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 2: Applied Research</i>	R-1 Program Element (Number/Name) PE 0602251D8Z I <i>Applied Research for the Advancement of S&T Priorities</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
Total Program Element	-	-	37.984	41.965	-	41.965	46.920	51.071	52.098	56.098	Continuing	Continuing
P227: <i>Applied Research for the Advancement of S&T Priorities</i>	-	-	37.984	41.965	-	41.965	46.920	51.071	52.098	56.098	Continuing	Continuing

The FY 2015 OCO Request will be submitted at a later date.

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 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. Program Change Summary (\$ in Millions)

	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015 Base</u>	<u>FY 2015 OCO</u>	<u>FY 2015 Total</u>
Previous President's Budget	-	45.000	38.800	-	38.800
Current President's Budget	-	37.984	41.965	-	41.965
Total Adjustments	-	-7.016	3.165	-	3.165
• Congressional General Reductions	-	-7.000			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• FFRDC Adjustment	-	-0.016	-	-	-
• DoD Higher Priorities	-	-	3.165	-	3.165

Change Summary Explanation

Program increase is to support the higher priorities of agency operations.

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400 / 2	R-1 Program Element (Number/Name) PE 0602251D8Z / <i>Applied Research for the Advancement of S&T Priorities</i>	Project (Number/Name) P227 / <i>Applied Research for the Advancement of S&T Priorities</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
<i>P227: Applied Research for the Advancement of S&T Priorities</i>	-	-	37.984	41.965	-	41.965	46.920	51.071	52.098	56.098	Continuing	Continuing

The FY 2015 OCO Request will be submitted at a later date.

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 2013	FY 2014	FY 2015
Title: Applied Research for the Advancement of S&T Priorities	-	29.000	32.039
Description: The 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 - Social and cultural understanding - Personnel and training - Protection and sustainment			

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014		
Appropriation/Budget Activity 0400 / 2	R-1 Program Element (Number/Name) PE 0602251D8Z / <i>Applied Research for the Advancement of S&T Priorities</i>	Project (Number/Name) P227 / <i>Applied Research for the Advancement of S&T Priorities</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2013	FY 2014	FY 2015
<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 - Reinventing cyber technology foundations <p>FY 2015 Plans:</p>				

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 2	R-1 Program Element (Number/Name) PE 0602251D8Z / <i>Applied Research for the Advancement of S&T Priorities</i>	Project (Number/Name) P227 / <i>Applied Research for the Advancement of S&T Priorities</i>

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

	FY 2013	FY 2014	FY 2015
<p>Continue to conduct concept exploration efforts that focus on the S&T priority areas. In FY 2015, the challenge areas within the priorities include:</p> <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 			

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400 / 2	R-1 Program Element (Number/Name) PE 0602251D8Z / <i>Applied Research for the Advancement of S&T Priorities</i>	Project (Number/Name) P227 / <i>Applied Research for the Advancement of S&T Priorities</i>
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
- Reinventing cyber technology foundations			
<p>Title: S&T Focus Areas</p> <p>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.</p> <p>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.</p> <p>FY 2015 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.</p>	-	8.984	9.926
Accomplishments/Planned Programs Subtotals	-	37.984	41.965

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.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 2: Applied Research</i>					R-1 Program Element (Number/Name) PE 0602663D8Z / <i>Data to Decisions Applied Research</i>							
COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
Total Program Element	-	8.605	-	-	-	-	-	-	-	-	Continuing	Continuing
P266: <i>Data to Decisions Applied Research</i>	-	8.605	-	-	-	-	-	-	-	-	Continuing	Continuing

The FY 2015 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 higher Department of Defense (DoD) priorities.

The goals of this program will be shifted to the DoD Components under the direction of the Research and Engineering (R&E) 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, in support of the 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

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 to advance a particular priority area of that Component. As a result, the R&E Database has over 388 references to Decision Support programs; all of which are designed to address 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

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Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 2: Applied Research</i>	R-1 Program Element (Number/Name) PE 0602663D8Z / <i>Data to Decisions Applied Research</i>
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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 2013	FY 2014	FY 2015 Base	FY 2015 OCO	FY 2015 Total
Previous President's Budget	13.753	-	-	-	-
Current President's Budget	8.605	-	-	-	-
Total Adjustments	-5.148	-	-	-	-
• Congressional General Reductions	-5.000	-	-	-	-
• Congressional Directed Reductions	-0.696	-	-	-	-
• Congressional Rescissions	-0.012	-	-	-	-
• Congressional Adds	-	-	-	-	-
• Congressional Directed Transfers	-	-	-	-	-
• Reprogrammings	0.752	-	-	-	-
• SBIR/STTR Transfer	-0.189	-	-	-	-
• Other Program Adjustments	-0.003	-	-	-	-

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Appropriation/Budget Activity 0400 / 2	R-1 Program Element (Number/Name) PE 0602663D8Z / <i>Data to Decisions Applied Research</i>	Project (Number/Name) P266 / <i>Data to Decisions Applied Research</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
<i>P266: Data to Decisions Applied Research</i>	-	8.605	-	-	-	-	-	-	-	-	Continuing	Continuing

The FY 2015 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 higher Department of Defense (DoD) priorities.

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 2013	FY 2014	FY 2015
Title: Moving Intelligence (MOVINT) Analytics	4.302	-	-
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.			

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<p><i>FY 2013 Accomplishments:</i></p> <ul style="list-style-type: none"> - Conducted bottom-up analysis of a single workflow to identify functions controlling performance. - Initiated efforts to provide management of uncertainty by simultaneously controlling sensing and processing. - Evaluated technology implementation of common functions that occur in the wide area motion imagery problem space. - Reviewed projects to determine if they should continue as DoD Component programs, can be completed at the end of FY 2013, or cancelled as soon as practical. 			
<p><i>Title:</i> Text Analytics</p> <p><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.</p> <p><i>FY 2013 Accomplishments:</i></p> <ul style="list-style-type: none"> - Researched information representation methods to enable faster and more efficient detection of social networks in complex, incomplete, imprecise, and potentially contradictory large data sets. - Researched methods to enable analysts to operate more efficiently, leverage non-traditional data sources, and more effectively identify objects of interest - Reviewed projects to determine if they should continue as DoD Component programs, can be completed at the end of FY 2013, or cancelled as soon as practical. 	4.303	-	-
Accomplishments/Planned Programs Subtotals	8.605	-	-

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
• BA 3, PE# 0603663D8Z, P366: <i>Data to Decisions Advanced Development</i>	9.217	-	-	-	-	-	-	-	-	-	Continuing Continuing

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Appropriation/Budget Activity 0400 / 2	R-1 Program Element (Number/Name) PE 0602663D8Z / <i>Data to Decisions Applied Research</i>	Project (Number/Name) P266 / <i>Data to Decisions Applied Research</i>
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C. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015</u> <u>Base</u>	<u>FY 2015</u> <u>OCO</u>	<u>FY 2015</u> <u>Total</u>	<u>FY 2016</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
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Remarks
Change from FY 2013 to FY 2014 reflects a realignment of the program from the Data to Decisions Advanced Development PE 0603663D8Z to higher Department of Defense (DoD) priorities. 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

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Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 2: Applied Research</i>	R-1 Program Element (Number/Name) PE 0602668D8Z I <i>Cyber Security Research</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
Total Program Element	-	10.542	13.907	15.000	-	15.000	15.285	15.575	15.871	16.173	Continuing	Continuing
P003: <i>Cyber Applied Research</i>	-	10.542	13.907	15.000	-	15.000	15.285	15.575	15.871	16.173	Continuing	Continuing

The FY 2015 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) systems to counter those threats and assure our missions. The Cyber Applied Research 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.

This program builds upon existing basic and applied research results. The 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 and Technology Roadmap and assessments conducted by the Office of the Assistant Secretary of Defense for Research and Engineering (OASD(R&E)). Progress and results are reviewed by the DoD Cyber Science & Technology Community of Interest. New efforts will also be aligned with emerging U.S. Cyber Command Mission Requirements.

<u>B. Program Change Summary (\$ in Millions)</u>	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015 Base</u>	<u>FY 2015 OCO</u>	<u>FY 2015 Total</u>
Previous President's Budget	18.985	18.908	23.675	-	23.675
Current President's Budget	10.542	13.907	15.000	-	15.000
Total Adjustments	-8.443	-5.001	-8.675	-	-8.675
• Congressional General Reductions	-7.500	-5.000			
• Congressional Directed Reductions	-0.948	-			
• Congressional Rescissions	-0.015	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	0.291	-			
• SBIR/STTR Transfer	-0.267	-			
• FFRDC Adjustment	-	-0.001	-	-	-
• Other Program Adjustments	-0.004	-	-	-	-
• Strategic Efficiency Savings	-	-	-8.675	-	-8.675

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity
0400: *Research, Development, Test & Evaluation, Defense-Wide / BA 2: Applied Research*

R-1 Program Element (Number/Name)
PE 0602668D8Z / *Cyber Security Research*

Change Summary Explanation

The reduction is a strategic efficiency approach to reduce funding and staffing. As a result, we provide a better alignment of funding and provide support to a smaller military force.

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400 / 2					R-1 Program Element (Number/Name) PE 0602668D8Z / <i>Cyber Security Research</i>				Project (Number/Name) P003 / <i>Cyber Applied Research</i>			
COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
P003: <i>Cyber Applied Research</i>	-	10.542	13.907	15.000	-	15.000	15.285	15.575	15.871	16.173	Continuing	Continuing

The FY 2015 OCO Request will be submitted at a later date.

A. Mission Description and Budget Item Justification

This program builds upon existing basic and applied research results. The 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 and Technology Roadmap and assessments conducted by the Office of the Assistant Secretary of Defense for Research and Engineering (OASD(R&E)). Progress and results are reviewed by the DoD Cyber Science & Technology Community of Interest.

Beginning in FY 2013, the program expanded 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. Beginning in FY14, new efforts will also be aligned with emerging U.S. Cyber Command Mission Requirements.

The six technical thrust areas include:

- FOUNDATIONS OF TRUST
- RESILIENT INFRASTRUCTURE
- AGILE OPERATIONS
- ASSURING EFFECTIVE MISSIONS
- CYBER MODELING, SIMULATION, AND EXPERIMENTATION (MSE)
- EMBEDDED, MOBILE, AND TACTICAL ENVIRONMENTS (EMT)

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

	FY 2013	FY 2014	FY 2015
Title: Foundations of Trust	1.055	1.390	1.500
Description: 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.			
FY 2013 Accomplishments: - Developed scalable reverse engineering and analysis toolset.			

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<p>- Created cost-effective technology for the construction of high-assurance cyber-physical systems, meaning functionally correct and satisfying appropriate safety and security properties.</p> <p>FY 2014 Plans:</p> <ul style="list-style-type: none"> - Explore and identify trust establishment, propagation, and maintenance techniques. - Develop trustworthy architectures and trust composition tools. - Develop interfaces to the reverse toolset and code libraries. - Develop test tool for multiple systems architectures. <p>FY 2015 Plans:</p> <ul style="list-style-type: none"> - Develop a non-signature based capability to detect malicious code on cyber systems with high accuracy. - Develop trustworthy architectures and trust composition tools. - Detection algorithms for malicious USB firmware/hardware. 			
<p>Title: Resilient Infrastructure</p> <p>Description: 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 at 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 address novel protocols and algorithms to increase the repertoire of resiliency mechanisms available to the infrastructure and architecture. Research is needed to develop resilience at lower levels with specific algorithms and protocols to support higher-level resiliency architectures.</p> <p>FY 2013 Accomplishments:</p> <ul style="list-style-type: none"> - Developed analytical model for routing techniques in the presence of jamming. - Understood new mechanisms for secure operation of many-core chips. - Identified mechanisms to compose resilient systems from brittle components. - Monitored, protected and reconfigured a host system or peripheral components that are targeted during an attack. <p>FY 2014 Plans:</p> <ul style="list-style-type: none"> - Develop methods for increasing resiliency of operational systems. - Integrate sensing, detection, response, and recovery mechanisms. - Design framework for secure modularization and virtualization of nodes and networks. - Develop advanced Computer Network Defense (CND) components and management features for the CND framework. - Develop methods for increasing resiliency of large scale tactical networks while introducing increased mobility. - Conduct resiliency-specific modeling and simulation. 	4.217	5.563	1.000

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2013	FY 2014	FY 2015
<ul style="list-style-type: none"> - Develop code-level software resiliency. <p>FY 2015 Plans:</p> <ul style="list-style-type: none"> - Conduct spectral analysis of Random Matrix Theory to extend beyond origination destination. - Explore learning algorithms to distinguish abnormal traffic patterns from normal traffic patterns. 				
<p>Title: Agile Operations</p> <p>Description: 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 repositories for altering the operating state 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>FY 2013 Accomplishments:</p> <ul style="list-style-type: none"> - Researched and analyzed the security architectures of various major web engines such as Trident and Gecko. - Designed distributed systems architectures and service application polymorphism. - Transitioned ARCSYNE from Internet Protocol version (IPV) 4 to IPv6. <p>FY 2014 Plans:</p> <ul style="list-style-type: none"> - Design distributed systems architectures and service application polymorphism. - Develop machine intelligence techniques for autonomous reprogramming, reconfiguration, and control of cyber components <p>FY 2015 Plans:</p> <ul style="list-style-type: none"> - Design distributed systems architectures and service application polymorphism. - Develop techniques for autonomous reprogramming, reconfiguration, and control of cyber components, and machine intelligence. - Develop automated reasoning techniques for executing courses of action. 		3.162	2.086	2.000
<p>Title: Assuring Effective Missions</p> <p>Description: 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.</p>		2.108	1.391	3.000

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
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To perform dynamic analysis of asset criticality, and course-of-action analysis alternatives, there is a critical need for tools that can map information technology assets to missions and use modeling and simulation, or other techniques. 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.

FY 2013 Accomplishments:

- Researched trusted information flow architectures, frameworks, and mechanisms for application to tactical assured information sharing environments.
- Developed techniques for mapping assets and describing dependencies between mission elements and cyber infrastructure.
- Developed techniques for course of action development and analysis.
- Improved realism through automated mission modeling and mission situational awareness.

FY 2014 Plans:

- Enable cyber effects assessment.
- Automate mapping of mission essential functions – cyber resources using multi-attribute identifiers.
- Identify critical assets and potential rogue workflows.
- Develop metrics with which the DoD could maintain Computer Network Defense (CND) capabilities to thwart certain classes of APTs and other threats.

FY 2015 Plans:

- Assess effectiveness of agility mechanisms and moving target techniques against Advanced Persistent Threats (APT).
- Develop metrics with which the DoD could maintain Computer Network Defense (CND) capabilities to thwart certain classes of APTs and other threats.
- Design distributed systems architectures and service application polymorphism.

Title: Cyber Modeling, Simulation & Experimentation (MSE)

Description: 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; 1) Cyber Modeling and Simulation and 2) 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

	-	1.391	3.000

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<p>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 exploration of 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>FY 2014 Plans:</p> <ul style="list-style-type: none"> - Develop methods to plan and execute large-scale cyber engagements. - Conduct quantitative information verification & validation of emerging cyber technologies. <p>FY 2015 Plans:</p> <ul style="list-style-type: none"> - Develop tools and techniques to rapidly configure cyber experiments. - Demonstrate cyber technologies with operationally relevant response time. 			
<p>Title: Embedded, Mobile & Tactical Environments (EMT)</p> <p>Description: 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.</p> <p>FY 2014 Plans:</p> <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. <p>FY 2015 Plans:</p> <ul style="list-style-type: none"> - Develop monitoring and assessment tools to track behavior of embedded cyber systems. 	-	2.086	4.500
Accomplishments/Planned Programs Subtotals	10.542	13.907	15.000

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

<u>Line Item</u>	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015</u> <u>Base</u>	<u>FY 2015</u> <u>OCO</u>	<u>FY 2015</u> <u>Total</u>	<u>FY 2016</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• BA 3, PE #0603668D8Z, P113: <i>Cyber Advanced Technology Development</i>	11.103	9.667	-	-	-	-	-	-	-	Continuing	Continuing

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 2: Applied Research</i>	R-1 Program Element (Number/Name) PE 0602670D8Z I <i>Human Social Culture Behavior (HSCB) Modeling Applied Research</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
Total Program Element	-	5.049	2.000	-	-	-	-	-	-	-	Continuing	Continuing
<i>P270: Human Social Culture Behavior (HSCB) Modeling Applied Research</i>	-	5.049	2.000	-	-	-	-	-	-	-	Continuing	Continuing

The FY 2015 OCO Request will be submitted at a later date.

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.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense	Date: March 2014
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Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 2: Applied Research</i>	R-1 Program Element (Number/Name) PE 0602670D8Z I <i>Human Social Culture Behavior (HSCB) Modeling Applied Research</i>
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B. Program Change Summary (\$ in Millions)	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO	FY 2015 Total
Previous President's Budget	6.771	-	-	-	-
Current President's Budget	5.049	2.000	-	-	-
Total Adjustments	-1.722	2.000	-	-	-
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-0.548	-			
• Congressional Rescissions	-0.009	-			
• Congressional Adds	-	2.000			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-0.978	-			
• SBIR/STTR Transfer	-0.184	-			
• Other Program Adjustments	-0.003	-	-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400 / 2	R-1 Program Element (Number/Name) PE 0602670D8Z / <i>Human Social Culture Behavior (HSCB) Modeling Applied Research</i>	Project (Number/Name) P270 / <i>Human Social Culture Behavior (HSCB) Modeling Applied Research</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
<i>P270: Human Social Culture Behavior (HSCB) Modeling Applied Research</i>	-	5.049	2.000	-	-	-	-	-	-	-	Continuing	Continuing

The FY 2015 OCO Request will be submitted at a later date.

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 2013	FY 2014	FY 2015
<p>Title: Human Behavior Based Theory and Model Development</p> <p>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.</p>	4.005	1.000	-

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

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 2	R-1 Program Element (Number/Name) PE 0602670D8Z / <i>Human Social Culture Behavior (HSCB) Modeling Applied Research</i>	Project (Number/Name) P270 / <i>Human Social Culture Behavior (HSCB) Modeling Applied Research</i>

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

FY 2013 Accomplishments:

Completed the development and demonstration of model-based tools for understanding adversarial networks and tracking the impacts of adversary communications. Completed the development of several advanced methods for tracking narrative to monitor and mitigate violent extremism. Used empirical data to develop a model that estimates mobility (for example (e.g.) commuting trips) and communication (e.g. number of phone calls) fluxes between any two regions (e.g. cities, counties, etc.) under normal conditions. Utilized unclassified commercial satellite imagery and raw survey data from Afghanistan to develop models for predicting survey responses of villages based on imagery features. Delivered several models to detect indicators of instability at levels below country/state using geographically clustered data. Built cross-national comparative sets of data on the relationship between attitudes toward Western values, access to emerging media, and tolerance for extremism and violence.

FY 2014 Plans:

Develop "Big Data" modeling and analysis tools that support construction of intelligence-driven operational views providing decision makers with the ability to make better decisions faster. Social, broadcast, and print media data sources could then be used to identify "tripwires" that indicate adversarial activity, including non-State actors/terrorists and criminal organizations. Develop understanding of how the Master Narratives of Islamic Extremism differ between the Middle East and the Asia-Pacific region.

Title: Data Collection Methods

Description: 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.

FY 2013 Accomplishments:

Developed and validated several new natural language processing (NLP) techniques to extract eight features of bi-directional sentiment expressions from blog discussions and news sources (i.e. evoker, reactor, sentiment phrase, date, magnitude, direction, modality, and issue). These techniques serve as a viable alternative to surveys or polling in denied or difficult-to-penetrate areas. Delivered assessment of the HSCB factors that can be inferred from overhead imagery and the limitations of imagery-derived data. Developed automated methods for determining sentiment in social media/news to support military operations. Validated new methods for collection of data from open sources, including emerging media.

FY 2014 Plans:

FY 2013	FY 2014	FY 2015
1.044	1.000	-

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 2	R-1 Program Element (Number/Name) PE 0602670D8Z / <i>Human Social Culture Behavior (HSCB) Modeling Applied Research</i>	Project (Number/Name) P270 / <i>Human Social Culture Behavior (HSCB) Modeling Applied Research</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
Develop data collection tools that allow analysts to quickly aggregate information based on model output recommendations ("tripwires"). These tools will allow easy aggregation of information including people of international interest infrastructure documentation, and data from physical sensors.			
Accomplishments/Planned Programs Subtotals	5.049	2.000	-

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
• PE 0603670D8Z BA 3: <i>HSCB Advanced Development</i>	6.994	2.000	-	-	-	-	-	-	-	Continuing	Continuing
• PE 0604670D8Z BA 4: <i>HSCB Research and Engineering</i>	4.492	2.000	-	-	-	-	-	-	-	Continuing	Continuing

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 2: Applied Research</i>	R-1 Program Element (Number/Name) PE 0602751D8Z / <i>Software Engineering Institute (SEI) Applied Research</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
Total Program Element	-	-	11.106	9.156	-	9.156	9.158	9.325	9.857	10.682	Continuing	Continuing
<i>P278: Software Engineering Institute (SEI) Applied Research</i>	-	-	11.106	9.156	-	9.156	9.158	9.325	9.857	10.682	Continuing	Continuing

The FY 2015 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, the Department 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, give DoD access to top experts in information science, and generally enhance the DoD's ability to benefit from the military applications of research in software and computer science.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense	Date: March 2014
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Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 2: Applied Research</i>	R-1 Program Element (Number/Name) PE 0602751D8Z I <i>Software Engineering Institute (SEI) Applied Research</i>
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B. Program Change Summary (\$ in Millions)	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO	FY 2015 Total
Previous President's Budget	-	11.107	11.330	-	11.330
Current President's Budget	-	11.106	9.156	-	9.156
Total Adjustments	-	-0.001	-2.174	-	-2.174
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• FFRDC Adjustments	-	-0.001	-	-	-
• Strategic Efficiency Savings	-	-	-2.174	-	-2.174

Change Summary Explanation

The reduction is a strategic efficiency approach to reduce funding and staffing. As a result, we provide a better alignment of funding and provide support to a smaller military force.

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400 / 2	R-1 Program Element (Number/Name) PE 0602751D8Z / <i>Software Engineering Institute (SEI) Applied Research</i>	Project (Number/Name) P278 / <i>Software Engineering Institute (SEI) Applied Research</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
<i>P278: Software Engineering Institute (SEI) Applied Research</i>	-	-	11.106	9.156	-	9.156	9.158	9.325	9.857	10.682	Continuing	Continuing

The FY 2015 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 2013	FY 2014	FY 2015
Title: Software Engineering Institute Applied Research	-	11.106	9.156
Description: Research projects at the SEI FFRDC will be awarded under this PE on a competitive basis across the SEI. Funding levels in each thrust area may vary from year to year. Research will address the 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) 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.			
2) 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			

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 2	R-1 Program Element (Number/Name) PE 0602751D8Z / <i>Software Engineering Institute (SEI) Applied Research</i>	Project (Number/Name) P278 / <i>Software Engineering Institute (SEI) Applied Research</i>

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

	FY 2013	FY 2014	FY 2015
<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>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"> • Make competitive awards within the SEI for novel research. • 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 assurance-at-scale. This effort creates an applied research component to complement 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 complement work started under the SEI PE (0603781D8Z). • Begin research on the design principles and tools for evolvable, scalable ecosystems. • Advance research on measurement techniques for measuring the effectiveness of software technologies and methods. • Begin research on models of computational behaviors. • Develop advanced analytics techniques for identified patterns, trends, and indicators in the software and systems vulnerability and exploitation ecosystem. Explore concepts in 'counter-analytics' for building more understanding bias and robustness of analytic techniques. • Develop specific insider threat mitigations that form an architectural foundation for next-generation DoD enterprise systems and technologies • Develop approaches and techniques to discover vulnerabilities automatically in compiled applications 			

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 2	R-1 Program Element (Number/Name) PE 0602751D8Z / <i>Software Engineering Institute (SEI) Applied Research</i>	Project (Number/Name) P278 / <i>Software Engineering Institute (SEI) Applied Research</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<ul style="list-style-type: none"> • Develop generalized techniques for vulnerability discovery in low-power, low-bandwidth networked systems • Develop malware analysis techniques aimed at improving scalability and enabling correlation with network analysis • Investigate the integration of architecture fault model framework with confidence maps for incremental qualification and certifications of safety-critical cyber-physical 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 strategy to other scenarios and environments. <p>FY 2015 Plans:</p> <ul style="list-style-type: none"> • Improve software security throughout the entire DoD supply chain by improving the security of programming language standards. • Investigate and improve approaches to the detection and quantification of cyber threats to the DoD. • Research the capabilities of various operating systems to understand how to better integrate Insider Threat controls and monitoring such that it is transparent to users, and low maintenance for administrators. • Continue research on measurement techniques for the effectiveness of software technologies and methods. • Continue investigation of the integration of the architecture fault model framework with confidence maps for incremental qualification and certifications of safety-critical software-reliant DoD systems. • Develop quality-attribute analyses for distributed, autonomous cyber-physical systems to ensure correctness of timing, functionality, and distributed coordination of the computational and physically-related aspects of DoD systems. • Extend the architecture, algorithms, and prototypes that support rapid analysis of social networks to include voice, image and video data; rapidly-deployable and scalable autonomous sensor networks; and the mobile component strategy to other scenarios and environments. • Extend work in group-context-awareness to include additional sensors and more sophisticated context models in support of new scenarios and environments. • Extend work in cloudlets to create a federated cloudlet capability. • Continue early lifecycle cost estimation research for pre-Milestone A decisions. • Integrate architecture-level dependency metrics and rework analysis with architecture fault model framework to characterize technical debt in certification of safety-critical software-reliant DoD systems. 			
Accomplishments/Planned Programs Subtotals	-	11.106	9.156

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
• BA 3, PE# 0603781D8Z: <i>Software Engineering Institute (SEI)</i>	28.619	19.006	15.776	-	15.776	15.778	15.799	16.292	16.792	Continuing	Continuing

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 2	R-1 Program Element (Number/Name) PE 0602751D8Z / <i>Software Engineering Institute (SEI) Applied Research</i>	Project (Number/Name) P278 / <i>Software Engineering Institute (SEI) Applied Research</i>

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

<u>Line Item</u>	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015</u> <u>Base</u>	<u>FY 2015</u> <u>OCO</u>	<u>FY 2015</u> <u>Total</u>	<u>FY 2016</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
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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.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 3: Advanced Technology Development (ATD)</i>	R-1 Program Element (Number/Name) PE 0603000D8Z I <i>Joint Munitions Advanced Technology</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
Total Program Element	14.590	18.253	20.012	26.688	-	26.688	26.897	26.997	27.061	27.268	Continuing	Continuing
P002: <i>Insensitive Munitions Advanced Technology</i>	13.515	15.614	16.601	19.807	-	19.807	19.993	19.953	20.018	20.163	Continuing	Continuing
P301: <i>Enabling Fuze Advanced Technology</i>	1.075	2.639	3.411	6.881	-	6.881	6.904	7.044	7.043	7.105	Continuing	Continuing

The FY 2015 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 maximizing efficiencies, 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 2018 and 2023 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 combination, will be incorporated in hardware, simulating real-world munitions, to demonstrate their utility and feasibility as part of Technology Transition Agreements with PEOs.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 3: Advanced Technology Development (ATD)</i>	R-1 Program Element (Number/Name) PE 0603000D8Z <i>I Joint Munitions Advanced Technology</i>
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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)	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO	FY 2015 Total
Previous President's Budget	25.612	26.646	30.040	-	30.040
Current President's Budget	18.253	20.012	26.688	-	26.688
Total Adjustments	-7.359	-6.634	-3.352	-	-3.352
• Congressional General Reductions	-5.600	-6.500			
• Congressional Directed Reductions	-1.619	-			
• Congressional Rescissions	-0.026	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.106	-			
• Strategic Efficiency Savings	-	-	-3.352	-	-3.352
• FFRDC Adjustments	-	-0.134	-	-	-
• Other Program Adjustments	-0.008	-	-	-	-

Change Summary Explanation

The reduction is a strategic efficiency approach to reduce funding and staffing. As a result, we provide a better alignment of funding and provide support to a smaller military force.

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
P002: <i>Insensitive Munitions Advanced Technology</i>	13.515	15.614	16.601	19.807	-	19.807	19.993	19.953	20.018	20.163	Continuing	Continuing

The FY 2015 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 – providing efficiencies and cost savings for the Department.

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 2013	FY 2014	FY 2015
Title: High Performance Rocket Propulsion (HPP)	3.209	3.369	4.086
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. Operating conditions may be controlled or widely varying in both temperature and vibration. The 2018 and 2023 year goals of			

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2013	FY 2014	FY 2015
<p>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 2013 Accomplishments:</p> <ul style="list-style-type: none"> - Manufactured seven inch diameter rocket motor cases using novel technique to load with propellant to support baseline IM testing. - Manufactured motor cases, demonstrated five-gallon mix process, and performed initial aging and thermal/mechanical studies on an extinguishable rocket propellant. - Conceptual rocket motor design and analysis completed for integration of IM mitigation technologies. - Scaled a high energy propellant up to 50 gallon mix, filled three uniquely manufactured cases and conduct IM testing. - Conducted IM testing on rocket motor equipped with unique safety device. Finalized rocket motor design for high performance solid propellant. <p>FY 2014 Plans:</p> <ul style="list-style-type: none"> - Load seven-inch diameter rocket motor cases with propellant to support baseline IM testing. Integrate components of delivered assets and finalize motor fabrication for testing. Conduct baseline slow cook off and fragment impact IM testing. 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 for a less-reactive high performance propellant. Perform testing of 30 gallon mix properties. Procure rocket motor materials, cast motors, and conduct component testing to validate proof of concept. - Conduct individual IM component testing, integrate into rocket motor case, cast rocket motors for IM testing and conduct full suite of IM tests with baseline and less reactive propellants. - Prepared, loaded, and conducted IM testing on novel small diameter missile propellant formulation in manufactured motor cases. <p>FY 2015 Plans:</p> <ul style="list-style-type: none"> - Conduct sub-scale IM demonstration tests and performance evaluation of 50 to 70 pound motors containing an extinguishable rocket propellant. - Complete design and component testing of slow cook-off mitigation device components for HPP rocket motor. - Perform component-level testing to validate component designs for sensor for surface and air-launched systems - Demonstrate slow cook-off mitigation sensor performance and validate design for surface launched missile applications. 				
Title: Minimum Signature Rocket Propulsion (MSP)		2.494	1.904	2.420

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
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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 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 2018 and 2023 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 2013 Accomplishments:**
- Loaded demonstrator motor with down-selected propellant formulation, incorporated case enhancements, and prepared to conduct IM tests.
 - Conducted full-scale motor static tests of IM propellants.
 - Prepared to demonstrate reduced sensitivity minimum signature propellant IM and ballistic properties in full-scale test.
 - Completed initial motor designs and hardware production in order to conduct IM evaluations for fielded munition designs.
 - Demonstrated enhanced insensitive propellant readiness for motor design.
 - Completed 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:**
- Conduct IM, structural, and ballistic testing on full-scale demonstrator motor to validate that design meets defined requirements.
 - 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.
 - Design and integrate mitigation technologies to reduce response to cook-off and bullet and fragment impact. Conduct propellant characterization and sub-scale IM tests.

- FY 2015 Plans:**
- Manufacture composite rocket motor cases, cast motors with new propellant formulation and conduct fragment impact and cook-off tests IM prototypes.
 - Test performance and environmental testing of prototype IM air to ground rocket motors.
 - Initial designs of low-cost anti-artillery rounds (air defense) using extruded propellants in composite cases.

Title: Blast and Fragmentation Warheads (BFW)	6.180	6.763	7.603
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B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2013	FY 2014	FY 2015
<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 2018 and 2023 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 2013 Accomplishments:</p> <ul style="list-style-type: none"> - Completed large scale testing of initiator using novel explosive. Fabricated initiation systems and conducted IM tests using system level hardware to transition to IM technology transition program. - Conducted formulation refinements and subscale IM tests. Prepared assets for full-scale IM tests. - Integrated initiation designs with explosive fill candidate and conducted small-scale tests as well as full Bucket Test series. - Conducted testing to demonstrate that unique initiation system components can pass impact survivability requirements and sympathetic detonation testing. - Manufactured novel bomb fill for initial characterization testing and loading to determine baseline formulation. - Conducted "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. - Conducted full-scale 500 pound bomb demonstration lethality testing to include horizontal and vertical arena testing and subsequent analysis. - Optimized formulation and conducted thermal initiation testing with production representative grenade assembly using novel explosive. <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 formulation characterization and initial performance and sensitivity testing using novel explosive for grenade assembly. - Conduct modeling and simulation effort on novel bomb fill to optimize formulation, scale up best candidates, and fill representative articles for initiation testing and design detonation train for insensitive fill. 			

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2013	FY 2014	FY 2015
<ul style="list-style-type: none"> - Computational analysis to 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 to be fabricated for testing and IM mitigation designs to be tested against slow and fast cook-off, fragment impact, sympathetic reaction, and shaped charge jet threats. - Synthesize adequate quantities of a unique munition fill material to conduct small scale mixes, scale-up, detonation velocity, and critical diameter tests. - Demonstrate new form of matter and efficient method of producing new form of energetic crystal with modified properties. <p>FY 2015 Plans:</p> <ul style="list-style-type: none"> - Produce 660kg of innovative explosive fill for general purpose bombs to complete full-scale sympathetic reaction testing to validate performance. - Model and design feasible detonation train, scale up novel bomb formulation to 150 gallon mix quantity, fill full-scale assets for sympathetic reaction testing to validate performance. - Conduct bullet impact, fragment impact, and slow cook-off testing with production representative grenade assembly using novel explosive material. - Scale up and conduct small scale tests on novel bomb fill to optimize formulation and select final formulation. Conduct performance testing of fill and initiation study. - Scale up to produce 1000 pounds of unique munition fill material to conduct performance and sensitivity testing in generic warhead assemblies. Prepare for full scale IM testing. 				
<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 2018 and 2023 year goals of the AAW MATG are concentrated on solving the IM response of anti-armor warheads to the Fragment Impact, Sympathetic Reaction and Shaped Charge Jet threats for larger munitions and the Fragment Impact, Slow Cookoff, and Sympathetic Reaction / Shaped Charge Jet threats for Medium Caliber Munitions.</p>		2.457	3.089	3.705

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2013	FY 2014	FY 2015
<p><i>FY 2013 Accomplishments:</i></p> <ul style="list-style-type: none"> - Conducted modeling and simulation down-selection of candidate technologies to determine fragment impact technologies suitable for higher velocity munition requirements. Fabricated, loaded, inspected, and conducted limited IM and performance testing on representative articles. - Conducted synthesis and initial production efforts of two unique energetic materials for a replacement munition booster. <p><i>FY 2014 Plans:</i></p> <ul style="list-style-type: none"> - Finalize higher velocity munition IM designed, fabricated, loaded, and conduct shock and thermal assessments. - Complete performance validation studies and initial IM testing for two unique energetic materials as a replacement munition booster. <p><i>FY 2015 Plans:</i></p> <ul style="list-style-type: none"> - Conduct performance and IM testing on higher velocity munition ID design. - Conduct ballistic assessment and IM testing for two unique energetic materials as a replacement munition booster. - Conduct integration and design efforts with prototype AAW technologies to demonstrate successful IM technologies to mitigate fragment impact responses. 				
<p><i>Title:</i> Gun Propulsion (GP)</p> <p><i>Description:</i> 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 2018 and 2023 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><i>FY 2013 Accomplishments:</i></p> <ul style="list-style-type: none"> - Conducted engineering and sensitivity testing; explored three mitigating technologies; and scaled-up two propellant formulations for a shoulder fired weapon system. <p><i>FY 2014 Plans:</i></p>		1.274	1.476	1.993

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<ul style="list-style-type: none"> - Optimize the propellant formulations, conduct characterization and performance tests on formulations, and conduct small scale engineering ballistic tests on components for use in shoulder fired weapon system. - Conduct baseline cook-off testing of large caliber ammunition item and conduct modeling and simulation to assist in venting design selection and survivability assessment. - Conduct propellant formulation, characterization tests, and small scale bullet and fragment impact testing of large caliber munition item. <p>FY 2015 Plans:</p> <ul style="list-style-type: none"> - Conduct thermal and venting analysis, full-scale fast and slow cook-off and fragment impact testing of two propellant formulations for use in shoulder fired weapon systems. - Produce prototype of large caliber ammunition item with venting and prepare for full scale IM testing. - Conduct component design and manufacturing of large caliber munition item, and conduct performance testing. Integrate propellant formulation and component design to conduct small scale fragment impact testing and slow cookoff test. 			
Accomplishments/Planned Programs Subtotals	15.614	16.601	19.807

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
• 0602000D8Z P000: <i>BA2 Inensitive Munitions</i>	13.023	13.936	13.571	-	13.571	13.580	13.569	13.561	13.729	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.

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603000D8Z / <i>Joint Munitions Advanced Technology</i>	Project (Number/Name) P301 / <i>Enabling Fuze Advanced Technology</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
P301: <i>Enabling Fuze Advanced Technology</i>	1.075	2.639	3.411	6.881	-	6.881	6.904	7.044	7.043	7.105	Continuing	Continuing

The FY 2015 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 2013	FY 2014	FY 2015
<p>Title: Hard Target Fuzing</p> <p>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.</p> <p>FY 2013 Accomplishments:</p> <ul style="list-style-type: none"> - Conducted validation experiments on advanced fuze High-G modeling and simulation tools. - Continued to develop survivable modular fuze technology for application into multi-role common miniature munitions with distributed/embedded fuzes. <p>FY 2014 Plans:</p> <ul style="list-style-type: none"> - Conduct validation experiments on advanced fuze High-G modeling and simulation tools. 	0.591	0.974	1.841

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<ul style="list-style-type: none"> - Continue to develop survivable modular fuze technology for application into multi-role common miniature munitions with distributed/embedded fuzes. - Used high fidelity modeling and simulation code & test methods for Air Force Quick Reaction Capability (QRC) Penetrator Program. <p>FY 2015 Plans:</p> <ul style="list-style-type: none"> - Conduct high speed weapon hard target tests, to include high shock data recorders, to validate High-G fuze models. - Transition survivable modular fuze technology for application into multi-role common miniature munitions with distributed/embedded fuzes. 			
<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 2013 Accomplishments:</p> <ul style="list-style-type: none"> - Conducted tests of warhead initiation architecture and control technologies into warheads. Specifically, weapons capable of reducing collateral damage will benefit using tailorable effects technologies. <p>FY 2014 Plans:</p> <ul style="list-style-type: none"> - 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>FY 2015 Plans:</p> <ul style="list-style-type: none"> - Conduct demonstration tests of warhead initiation and selectable architecture and control technologies in live explosive tests. - Continue to develop component technologies for multi-mode, multipoint sequential timing fuze designs that will improve void counting algorithms and optimize detonation timing. 	0.662	0.741	1.610
<p>Title: High Reliability Fuzing</p> <p>Description: Develop high reliability fuzing architectures, fuzing components, and unexploded ordnance (UXO) reduction features. This program's fuzing technologies are critical to enable the next generation of cluster munitions to achieve the required greater than 99 percent reliability. 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,</p>	0.778	0.993	1.860

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2013	FY 2014	FY 2015
<p>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 2013 Accomplishments:</p> <ul style="list-style-type: none"> - Refined 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. - Demonstrated 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"> - 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 2015 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. - Begin to develop fuze system communication and interface technologies for Dual-Purpose Improved Conventional Munitions (DPICM) to increase reliability with minimal disruption to the dispense event. 				
<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 2013 Accomplishments:</p> <ul style="list-style-type: none"> - Began joint program with Industry to develop sensor technology into bomb fuzing applications. - Began transition (from 6.2) efforts of advanced, exploitation resistant proximity sensor advanced technology development. <p>FY 2014 Plans:</p> <ul style="list-style-type: none"> - Conduct joint program with Industry to develop sensor technology into bomb fuzing applications. - Begin transition (from 6.2 efforts) of advanced, exploitation resistant proximity sensor advanced technology development. <p>FY 2015 Plans:</p>		0.608	0.703	1.570

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
- 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	2.639	3.411	6.881

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
• 0602000D8Z P204: <i>BA2 Enabling Fuze Technology</i>	5.864	4.023	6.494	-	6.494	6.505	6.608	6.620	6.692	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.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 3: Advanced Technology Development (ATD)</i>	R-1 Program Element (Number/Name) PE 0603121D8Z I <i>SO/LIC Advanced Development</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
Total Program Element	44.186	23.648	17.403	8.682	-	8.682	-	-	-	-	Continuing	Continuing
206: <i>Explosive Ordnance Disposal/Low-Intensity Conflict</i>	7.520	4.081	3.374	1.509	-	1.509	-	-	-	-	Continuing	Continuing
207: <i>Special Reconnaissance Capabilities</i>	20.461	10.996	6.946	4.004	-	4.004	-	-	-	-	Continuing	Continuing
208: <i>Information Dissemination Concepts</i>	3.175	1.726	1.425	0.637	-	0.637	-	-	-	-	Continuing	Continuing
209: <i>Irregular Warfare Support (IWS)</i>	13.030	6.845	5.658	2.532	-	2.532	-	-	-	-	Continuing	Continuing

The FY 2015 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 Surveillance,

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 3: Advanced Technology Development (ATD)</i>	R-1 Program Element (Number/Name) PE 0603121D8Z / <i>SO/LIC Advanced Development</i>
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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 2013	FY 2014	FY 2015 Base	FY 2015 OCO	FY 2015 Total
Previous President's Budget	26.324	19.420	9.889	-	9.889
Current President's Budget	23.648	17.403	8.682	-	8.682
Total Adjustments	-2.676	-2.017	-1.207	-	-1.207
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-2.676	-2.017			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Strategic Efficiency Reduction	-	-	-1.207	-	-1.207

Change Summary Explanation

FY 2015 budget reduced due to fiscal constraints and higher priorities within the Department.

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603121D8Z / SO/LIC Advanced Development	Project (Number/Name) 206 / Explosive Ordnance Disposal/Low-Intensity Conflict
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
206: Explosive Ordnance Disposal/Low-Intensity Conflict	7.520	4.081	3.374	1.509	-	1.509	-	-	-	-	Continuing	Continuing

The FY 2015 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 2013	FY 2014	FY 2015
Title: Explosive Ordnance Disposal/Low-Intensity Conflict (EOD/LIC)	4.081	3.374	1.509
<p>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).</p> <p>FY 2013 Accomplishments: Efforts were focused on Countering Improvised Explosive Devices (C-IED) and Electronic Countermeasures (ECM). Demonstrated a maritime, 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 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. Demonstrated a remote missile launch pod module that provides a precision engagement capability from an unmanned surface vehicle or other small craft. Developed a multi-purpose advanced tactical timer. Initiated development a compact, high-</p>			

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603121D8Z / <i>SO/LIC Advanced Development</i>	Project (Number/Name) 206 / <i>Explosive Ordnance Disposal/Low-Intensity Conflict</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<p>power next generation x-ray generator for EOD use. Initiated development of techniques and concept render safe tool(s) capable of achieving high order or low order disposal of insensitive high explosive (IHE) munitions. Initiated development a suite of tools for Render Safe Procedures against underwater explosive devices.</p> <p>FY 2014 Plans: Efforts will focus on tools and equipment to enhance situational awareness and operational capability during incident response, render safe or direct action operations. Continue development of a compact, high-power next generation x-ray generator for EOD use. Continue development of techniques and concept render safe tool(s) capable of achieving high order or low order disposal of insensitive high explosive (IHE) munitions. Continue development of a suite of tools for Render Safe Procedures against underwater explosive devices. Demonstrate and evaluate a multi-purpose advanced tactical timer. Develop a collapsible explosive charge container for wide scope EOD and/or demolition applications. Develop a hydraulically-actuated, platform-independent arm system for Robotic Platforms. Develop a mechanical remote fuze removal system. Develop a capability to readily identify metallic compounds and materials in suspect homemade explosive (HME) and conventional high explosive (HE) mixtures.</p> <p>FY 2015 Plans: Efforts will focus on tools and equipment to enhance situational awareness and operational capability during incident response, render safe or direct action operations. Conduct Operational test and evaluation of techniques and concept render safe tool(s) capable of achieving high order or low order disposal of insensitive high explosive (IHE) munitions. Demonstrate a suite of tools for Render Safe Procedures against underwater explosive devices. Demonstrate a collapsible explosive charge container for wide scope EOD and/or demolition applications. Demonstrate a mechanical remote fuze removal system. Continue development of a hydraulically-actuated, platform-independent arm system for Robotic Platforms. Continue development of a capability to readily identify metallic compounds and materials in suspect homemade explosive (HME) and conventional high explosive (HE) mixtures.</p>			
Accomplishments/Planned Programs Subtotals	4.081	3.374	1.509

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

N/A

Remarks

D. Acquisition Strategy

N/A

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603121D8Z / <i>SO/LIC Advanced Development</i>	Project (Number/Name) 206 / <i>Explosive Ordnance Disposal/Low-Intensity Conflict</i>

E. Performance Metrics

N/A

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603121D8Z / SO/LIC Advanced Development	Project (Number/Name) 207 / Special Reconnaissance Capabilities
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
<i>207: Special Reconnaissance Capabilities</i>	20.461	10.996	6.946	4.004	-	4.004	-	-	-	-	Continuing	Continuing

The FY 2015 OCO Request will be submitted at a later date.

A. Mission Description and Budget Item Justification

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.

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

	FY 2013	FY 2014	FY 2015
<p>Title: SPECIAL RECONNAISSANCE CAPABILITIES (SRC).</p> <p>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 Overseas Contingency Operations (OCO) tasks. 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.</p> <p>FY 2013 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/miniaturation; 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 covert antennas; placement and concealment of unattended ground sensors; and low power, high bandwidth data transmission sub-systems.</p> <p>FY 2014 Plans: 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</p>	10.996	6.946	4.004

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603121D8Z / <i>SO/LIC Advanced Development</i>	Project (Number/Name) 207 / <i>Special Reconnaissance Capabilities</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
optical technologies; improvement in flexibility and accuracy through integration of disparate technologies into single devices; ultrahigh speed data processing and transmission; next-generation nanotechnology and 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; clandestine communications architectures; advanced biometric data collection, including high speed, portable DNA analysis; counter-surveillance systems: and low power, high bandwidth data transmission sub-systems.			
<i>FY 2015 Plans:</i> 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: optical data transmission technologies; ultra high speed data processing and transmission; device miniaturization; low profile enhanced micro-optics; next-generation precision Hostile Forces Tagging, Tracking, and Locating capabilities; clandestine communications architectures; advanced biometric data collection; and low power, high bandwidth data transmission subsystems.			
Accomplishments/Planned Programs Subtotals	10.996	6.946	4.004

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

N/A

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603121D8Z / SO/LIC Advanced Development	Project (Number/Name) 208 / Information Dissemination Concepts
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
<i>208: Information Dissemination Concepts</i>	3.175	1.726	1.425	0.637	-	0.637	-	-	-	-	Continuing	Continuing

The FY 2015 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 2013	FY 2014	FY 2015
<p>Title: INFORMATION DISSEMINATION CONCEPTS</p> <p>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.</p> <p>FY 2013 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.</p> <p>FY 2014 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.</p> <p>FY 2015 Plans:</p>	1.726	1.425	0.637

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603121D8Z / <i>SO/LIC Advanced Development</i>	Project (Number/Name) 208 / <i>Information Dissemination Concepts</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
Deliver new languages to track topics, events and trends from various data sources (social media and tactical content in the field). Improve Speech Recognition capabilities and Machine Translation of informal content and from low-density languages. Increase the precision in cross lingual searches and understanding of messages from multiple sources. Test and integrate language technologies into operational systems that support military situational awareness, targeting and analytics in both large enterprise applications and in the filed field, light and mobile platforms. Create systems that enable language learning skills and cultural awareness.			
Accomplishments/Planned Programs Subtotals	1.726	1.425	0.637

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

N/A

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603121D8Z / SO/LIC Advanced Development	Project (Number/Name) 209 / Irregular Warfare Support (IWS)
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
209: Irregular Warfare Support (IWS)	13.030	6.845	5.658	2.532	-	2.532	-	-	-	-	Continuing	Continuing

The FY 2015 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 2013	FY 2014	FY 2015
Title: IRREGULAR WARFARE SUPPORT (IWS)	6.845	5.658	2.532
<p>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.</p> <p>FY 2013 Accomplishments: Under IW Joint Operational Concept (JOC 2.0) and DODD 3000.07 on IW, the IWS Program continued 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. Deployed an enhanced training capability and planned for transition to a program of record a counter- "green on blue" capability for ISAF and U.S. forces. This effort assisted warfighters in detecting and mitigating insider threat attacks in partner, COIN and contingency operations, which is a serious issue that undercuts efforts at training host nation security forces, one of the pillars of Irregular Warfare. Continued to support an Advanced Situational Awareness Capability that includes instructor-led training and supporting publications for tactical unit leaders at the US Army Maneuver Center of Excellence (MCoE), Ft. Benning, GA. This capability led to trained units achieving the highest IED discovery rates in the OEF theater and saving coalition lives. This capability was ultimately transitioned to the US Army MCoE and they</p>			

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603121D8Z / <i>SO/LIC Advanced Development</i>	Project (Number/Name) 209 / <i>Irregular Warfare Support (IWS)</i>

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

	FY 2013	FY 2014	FY 2015
<p>currently seek to enhance this capability with the training to counter “green on blue” violence that was previously mentioned in a hybrid training course. Continued to support Project LEGACY, a capability that significantly improves host-nation police counterinsurgency and military intelligence capabilities. Conducted and completed a spiral effort of Legacy 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. Conducted an assessment of the relevance and applicability of specialized Security Force Assistance doctrine and operational approach for environments outside Operation Enduring Freedom. Continued 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. Continued to research and develop 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. Continued 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 a real time data and analysis capability along with mentorship and the analytical tradecraft to understand and monitor critical events and sentiments in open source social media. Continued to develop frameworks and training to better understand and implement Combatant Command (COCOM) -level Communication Activities. Delivered Return on Investment Analytic Framework for the COCOM VOICE Program in order to assist in garnering quantifiable measurements of performance, measurements of effectiveness and methods of determining overall return on investment (ROI) of program dollars. Additionally, this effort also developed 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. Conducted 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. Assisted with further development and understanding of the US Marine Corps concept of the Intelligence Driven Combat, to include international partnership and exchanges with Israel. Developed enhanced MISO/ PSYOP capabilities in planning, targeting and execution for support to special and unconventional warfare mission requirements. Researched and started development of 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). Conducted 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). Initiated the Secure Unclassified Network (SUNet), which provided protected dynamic enclaves of capability for multi-agency users (Law Enforcement, Interagency, Defense, Coalition, and Foreign Nationals) in order to provide inter-organizational</p>			

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603121D8Z / <i>SO/LIC Advanced Development</i>	Project (Number/Name) 209 / <i>Irregular Warfare Support (IWS)</i>

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

collaborative areas and enhanced capabilities of data upload, searching and sharing from headquarters down to smartphones, tablets or laptops. Research and development of a non-material effort intended to better understand indirect and irregular threats currently facing the US, and how to implement effective measures against them. The studies and related activities undertaken for this project will fall under three broad lines of effort: 1) an analysis of indirect/irregular actions employed historically and how these capabilities may be applied to today's threat environment; 2) an analysis of current and the evolving irregular threat environment; and 3) identification and analysis of which of the capabilities the US could apply to prevail against irregular/indirect threats now and in the future. Initiated a research and development effort to assess the degree and quality of organizational learning, adaptation, and innovation in the field over the course of the deployment of specific units engaged in IW; provide an initial framework to speed up and enhance organizational learning in the field; and operationalize framework through instruction/ education aids.

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. Complete the deployment of an enhanced training capability and transition to a program of record a counter- "green on blue" capability for ISAF and U.S. forces. This effort assists warfighters in detecting and mitigating insider threat attacks in partner, COIN and contingency operations, which is a serious issue that undercuts efforts at training host nation security forces, one of the pillars of Irregular Warfare. Continue to support Project LEGACY, a capability that significantly improves host-nation police counterinsurgency and military intelligence capabilities. Mentoring via the Legacy program will continue through FY14, though substantial drawdowns will begin starting in October 2013 with additional reductions occurring throughout 2014. Complete the effort that elicited and refined requirements from users within a 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 research and develop threat group and geographic 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. Continued to develop and expand an effort that integrates and fuses heterogeneous social medial data for use in strategic and tactical operational planning and preparation of the battlefield with new end users and different support environments. This effort will continue to provide a real time data and analysis capability along with mentorship and the analytical tradecraft to understand and monitor critical events and sentiments in open source social media. Continue to develop and refine frameworks and training to better understand and implement Combatant Command (COCOM) -level Communication Activities to include 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. Developed enhanced MISO/PSYOP capabilities in planning, targeting and execution for support to special and unconventional warfare mission requirements. Deliver enhanced mobile capability for assessing and

FY 2013	FY 2014	FY 2015

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603121D8Z / <i>SO/LIC Advanced Development</i>	Project (Number/Name) 209 / <i>Irregular Warfare Support (IWS)</i>

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

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 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 (Law Enforcement, Interagency, 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. Research, develop, test, evaluate and field capabilities that enhance Special Warfare operations and building the capacity of our partner nation forces. Spiral development of a non-material effort intended to better understand indirect and irregular threats currently facing the US, and how to implement effective measures against them. This effort will support of the Army Special Operations Command and will include wargaming and experimentation, strategy assessment and recommendations for future operations planning. Initiate research and development effort to understand "Lawfare" or the strategy of "using – or misusing – law as a substitute for traditional military means to achieve an operational objective." This effort will review current literature and case studies of lawfare, conduct gap analysis and develop recommendations for use in the Lawfare realm by the US and its allies. Complete and deliver assessment of the degree and quality of organizational learning, adaptation, and innovation in the field over the course of the deployment of specific units engaged in IW; provide a framework to speed up and enhance organizational learning in the field; and operationalize framework through instruction/education aids.

FY 2015 Plans:

Close out and completion of the LEGACY effort, to include final reporting and lessons learned. Final delivery of capability and training for an enhanced mobile capability 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). Delivery and evaluation of material and non-material solutions that build and/or enhance Military Information Support Operations (MISO) forces' capabilities that are essential to unconventional warfare missions. Research, develop, test, evaluate and field capabilities that enhance Special Warfare operations and building the capacity of our partner nation forces. Deliver applicable lessons from literature and expert practitioners on Lawfare and other analogous policy tools. The effort will also provide recommendations for a framework outlining how the US and its allies can effectively defend against and conduct offensive legal warfare.

FY 2013	FY 2014	FY 2015

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
Final completion of all Irregular Warfare Support Program efforts and program close out.			
Accomplishments/Planned Programs Subtotals	6.845	5.658	2.532

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

N/A

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 3: Advanced Technology Development (ATD)</i>	R-1 Program Element (Number/Name) PE 0603122D8Z / <i>Combating Terrorism Technology Support</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
Total Program Element	74.563	108.245	100.754	69.675	-	69.675	71.627	74.397	78.549	83.465	Continuing	Continuing
484: <i>Combating Terrorism Technology Support (CTTS)</i>	74.563	108.245	100.754	69.675	-	69.675	71.627	74.397	78.549	83.465	Continuing	Continuing

The FY 2015 OCO Request will be submitted at a later date.

A. Mission Description and Budget Item Justification

The Combating Terrorism Technical Support (CTTS) program identifies capabilities to combat terrorism and irregular adversaries and delivers these capabilities to U.S., interagency, and international users through rapid research and development, advanced studies, and technical innovation. Projects are distributed among 10 mission categories, in line with the interagency Technical Support Working Group (TSWG): 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; Training Technology Development; and a new working group, Irregular Warfare and Evolving Threats. The CTTS 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.

The CTTS program justified in the R-2 exhibit identifies the projects fully or partially funded by Congressional appropriations for the CTTS program. However, the Combating Terrorism Technical Support Office (CTTSO) develops technology and provides support using external funds provided by other DoD and other Federal Departments and International partnerships. These projects and support activities are not necessarily reflected in this justification R-2; but the number of activities do reflect positively on the trust and competence that CTTSO has earned throughout the Department and interagency to rapidly conduct critical RDT&E and provide innovative products.

In FY 2013, CTTS focused on DoD requirements that supported military forces in demanding or hostile environments such as Afghanistan, Yemen, Africa, the Philippines, Mexico, 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.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

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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 the withdrawal of U.S. forces from Afghanistan accelerates, CTTS will continue to address force protection needs for the remaining forces. Additionally, CTTS will increasingly address technology requirements requested from USSOCOM's field components as they 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. Specifically, CTTS will address personnel and physical security for small forces deployed to austere and hostile environments. In parallel, CTTS is increasing its support of the USMC as they reconstitute and improve the capacity and capabilities of the Marine Expeditionary Units. Another area of increased emphasis that has become even more concerning will be the protection of U.S. personnel, to include State Department personnel in embassy and consulate locations overseas that need increased security.

CTTS will continue to actively support the Department's Homeland Defense mission at NORTHCOM, including Defense support of civil authorities, interagency coordination, Special Operations support, and security cooperation. Consistent with that focus, this office will also work to address Department of Defense Security requirements for advanced technology and capabilities that will (1) enhance security along the U.S. Southwest Border and (2) proactively address improvised devices and other chemical, biological, nuclear and radiological threats in a domestic environment.

B. Program Change Summary (\$ in Millions)	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO	FY 2015 Total
Previous President's Budget	77.144	77.792	79.323	-	79.323
Current President's Budget	108.245	100.754	69.675	-	69.675
Total Adjustments	31.101	22.962	-9.648	-	-9.648
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	31.101	22.962			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Strategic Efficiency Reduction	-	-	-9.648	-	-9.648

Change Summary Explanation

FY 2015 budget reduced due to fiscal constraints and higher priorities within the Department.

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
Title: Advanced Analytic Capabilities (AAC)	11.316	6.546	5.644
Description: The Advanced Analytic Capability (AAC) Subgroup's objective is to develop and deploy integrated analytic capabilities; enabling Warfighters and Mission Partners to make better/faster decisions at the "Tactical Edge". AAC projects			

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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
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improve sense-making, decision-making, and data management across a range of mission areas: counterterrorism, counterinsurgency, stabilization/re-construction missions and cyber-defense.

FY 2013 Accomplishments:

Completed development of an enhanced integrated analytic platform that enabled analyses of diverse and disparate data sources to support near real-time decision making, collaboration, and training to support varied workflows tailored to operational requirements. Developed and began preparation for delivery an advanced audit tool to determine, over network or serial communications, whether the security configuration settings on field devices in industrial control systems are in compliance. Developed and delivered prototype software that enabled fusion of imagery and text-based data that relates changes in patterns of life to variables affecting quality of life. This tool may be integrated into the next SAVANT update (a mission support tool developed by SOCOM and CTTSO) for MISO operators taught at the John F. Kennedy Special Warfare Center and School. Began developing a prototype entity extraction/guided clustering software that significantly improves the quality and accuracy of data analyses by enabling analysts to change relationships in the data in real-time as part of a “guided clustering” capability while automating the actual analysis. This technique should allow the analyst to identify clusters of related data in large data sets and represents a significant improvement of a key analytic tool. Continued development and proof of concept for multi-model analyses using Model Predictive Controllers (MPC) to make better decisions and establish measures of effectiveness for multiple courses of action. Initiated the development of an enhanced Critical Thinking Tool that allows complex reasoning approaches to be accomplished by analysts with a user-friendly platform that guides them through processes that are currently difficult to use (e.g. Evidence-based reasoning) but very valuable. Initiated the application of an additional MPC model that allows regional agent-based analyses that also reduces dependence on subject matter experts for MPC analyses once conditions are initially set.

FY 2014 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

	FY 2013	FY 2014	FY 2015

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense	Date: March 2014
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<p>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 2015 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>			
<p>Title: CHEMICAL, BIOLOGICAL, RADIOLOGICAL, NUCLEAR, AND EXPLOSIVES (CBRNE)</p> <p>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 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 2013 Accomplishments: Developed a flexible powered air purifying respirator system for CBRN environments. Tested and commercialized protective ensembles providing enhanced CBRN protection in tactical environments. Developed a tactical protective mask for CBRN environments. Completed evaluation of noise cancelling technology that enhances communication for a person wearing a self-contained breathing apparatus in a CBRN environment. Initiated development of a next generation CB glove. Developed enhanced testing procedures for the evaluation of protective ensembles. Initiated development of a decision support tool for determining proper work/rest cycles in protective clothing. Developed an enhanced water filter for military field survival situations. Evaluated tools for the decontamination of infrastructure, personnel, and equipment. Initiated development of a solid material with imbedded chemical detection and decontamination properties. Developed test methods for the evaluation of skin permeation and penetration by chemical threats. Evaluated and tested an orthogonal system for the detection and identification of trace levels of toxic industrial chemicals. Developed a dual wavelength Raman spectrometer for the evaluation of bulk levels of toxic industrial chemicals and improvised explosives. Developed a sampling interface for a person portable mass spectrometer with gas chromatograph inlet for the rapid detection and identification of target chemicals. Initiated development of an unobtrusive,</p>	13.812	15.423	12.521

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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
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colorimetric detection system capable of discreetly notifying the operator of a positive detection of select chemical warfare agents. Initiated development of a miniature hand-portable mass spectrometer for the detection of chemical and explosive threats. Enhanced algorithms for a cosmic ray attenuation capability for the detection of special nuclear materials, explosives and humans in cargo. Initiated development of RFID-based colorimetric chemistry for monitoring cargo containers. Continued assessment of prototype expeditionary wet chemistry kits for homemade explosives detection. Miniaturized and commercialized a colorimetric chemistry based explosive detection system. Continued development of a low-cost, single-use test kit to rapidly identify precursor materials of homemade explosives. Developed a portable system to quickly screen personnel for explosive threats at temporary venues. Continued development of a handheld ion mobility spectroscopy system for particulate inorganic homemade explosives threats. Developed colorimetric fabrics for the detection of bulk explosive materials. Initiated development of a spatially offset Raman technology capable of identifying materials through non-metallic packaging. Initiated development of an optimized sampling media for the collection of bulk explosive materials. Continued development of 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 methods for the evaluation of CBRN contaminated evidence. Developed 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. Developed computer-based training tools for deployed personnel that use ion mobility spectroscopy explosive detection equipment. Completed development of updated models for the dispersion of radiological materials following a radiological dispersal device (RDD) detonation. Completed an assessment of the cross-contamination potential of victims and first responders/receivers following a RDD event. Initiated development of an endoscopic CB collection tool.

FY 2014 Plans:
 Certify and commercialize a flexible powered air purifying respirator system for CBRN environments. Continue evaluating and testing a protective mask for tactical CBRN environments. Develop a next generation CB sock. Continue development of a decision support tool for determining proper work/rest cycles in protective clothing. Evaluate enhanced testing procedures for the evaluation of protective ensembles. Develop personal protective equipment decontamination strategies. Continue developing a next generation CB glove. Develop a water purifier capable of producing potable water for a small military unit. Develop a portable glove box suitable for working with CBRN materials in field operations. Continue development of a solid material with imbedded chemical detection and decontamination properties. Continue development of an unobtrusive, colorimetric detection system capable of discreetly notifying the operator of a positive detection of select chemical warfare agents. Evaluate a portable system to quickly screen personnel for explosive threats at temporary venues. Continue development of a miniature hand-portable mass spectrometer for the detection of chemical and explosive threats. Continue development of explosives detection technology for monitoring cargo containers. Develop enhanced sampling materials and high volume samplers for CBRNE threats. Test and evaluate colorimetric fabrics for the detection of bulk explosive materials. Continue development and test a spatially offset Raman technology capable of identifying materials through non-metallic packaging. Evaluate and commercialize a low-

FY 2013	FY 2014	FY 2015

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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
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<p>cost, single-use test kit to rapidly identify precursor materials of homemade explosives. Test, evaluate and commercialize a handheld explosives particulate detector for inorganic homemade explosives threats. Initiate development of a novel bio-sensor based upon pyroelectric transducer technology. Continue to evaluate potential methods of production of threat materials, and identify key indicators and warnings for response personnel. Develop decision support tools to provide on-scene responders with medical information and recommendations, and detection/identification of unknown substances. Develop an automated fingerprint collection device to assist in deceased victim identification in the postmortem environment.</p> <p>FY 2015 Plans: Develop next generation systems for respiratory protection. Continue evaluating and testing a protective mask for CBRN environments. Evaluate and certify a next generation CB glove. Continue to evaluate enhanced testing procedures for the evaluation of protective ensembles. Evaluate a next generation CB sock. Evaluate personal protective equipment decontamination strategies. Develop tools for the identification of protective equipment failures. Evaluate a portable glove box suitable for working with CBRN materials in field operations. Continue development of a water purifier capable of producing potable water for a small military unit. Evaluate an optimized sampling media for the collection of bulk explosive materials. Test and evaluate colorimetric fabrics for the detection of bulk explosive materials. Evaluate and commercialize a spatially offset Raman technology capable of identifying materials through non-metallic packaging. Develop next generation sensors for use in trace, bulk, proximity and stand-off detection of explosives-based threats. Develop and evaluate enhanced sampling materials and systems for CBRNE threats. Continue to develop a novel bio-sensor based upon pyroelectric transducer technology. Continue to evaluate potential methods of production of threat materials, and identify key indicators and warnings for response personnel. Develop advanced analytical tools for the analysis of chemical and biological agent production methods. Develop and evaluate decision support tools for providing medical information and recommendations in hostile environments. Continue to develop and deploy decision support tools to enhance risk-based decision making with scientific evidence. Continue to develop and evaluate an automated fingerprint collection device to assist in deceased victim identification in the postmortem environment.</p>			
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<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 advanced prototype systems that provide more efficiency and a greater degree of safety for Bomb Technicians to investigate, access, evaluate, and if needed render safe or dispose of suspect devices whether emplaced, person borne, vehicle borne or water borne. The Subgroup supports the Homeland Security Presidential Directive (HSPD) 19 – Combating Terrorist Use of Explosives in the United States and the National Strategic Plan for Bomb Squads.</p>			
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4.606	4.904	4.002	

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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<p><i>FY 2013 Accomplishments:</i> Delivered and evaluated the Body Bomb Tool Kit to robotically counter Person Borne Improvised Explosive Devices (PBIEDs). Delivered, operationally tested and commercialized the Vehicle Borne IED (VBIED) Tool Kit to aid in the access and defeat of VBIEDs. Developed a Bomb Technician Wikipedia for sharing of bomb technician and EOD related information. Developed and delivered the iLIVE inline video enhancement module for robot cameras allowing a clearer picture in low lighted areas. Completed development, delivered and commercialized the Scalable Improvised Device Disruptor (SIDDD) that provides a surgical disruption capability to counter VBIEDs. Developed a Bomb Squad specific IED Instant Notification System (INS) Application for Android and iPhones that provides real time incident notification 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. Developed a VBIED Threat Assessment System to assist in locating unknown hazards in vehicles. Developed improved end effectors for remote controlled vehicles. 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, and operationally evaluated the Automatic Wire Cutter (AWC); a remote wire cutting tool that will increase safe separation from command or detonator wires being cut. Delivered an Advanced Diver Data Display System prototype for combat swimmers. Tested and evaluated static and dynamic ship immobilization systems. Delivered an expeditionary mobile port security barrier. Developed forensic gathering tools that interface with the Body Bomb Tool Kit and provide controlled sample collection and fingerprint gathering capability using robotics. Developed a Mobile Explosive Device Neutralizer to remotely unscrew end caps from pipe bomb IEDs.</p> <p><i>FY 2014 Plans:</i> Integrate the IED Instant Notification System (INS) application for both Android and iPhones into the Bomb Arson Tracking System (BATS). Evaluate and commercialize the iLIVE inline video enhancement module for robot cameras. Develop a submersible, remotely operated vehicle to counter water borne IEDs. 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 IEDs. Develop a shock tube initiated remote wire cutting tool that will increase safe separation from command or detonator wires being cut while maintaining control of the procedure. Develop a remote window breaking tool to ensure breakage of improved safety glass to access VBIEDs. Demonstrate and evaluate diver mask-mounted display systems for underwater Mine Counter-Measure operations. Develop a heads-up display (HUD) capability for bomb suit helmets. Develop a handheld, manual entry multi-meter to be used for diagnostics on detonators, mechanical switches, and electromechanical switches. Develop a windshield-mounted VBIED disruption tool to provide explosively driven disruption forces through a windshield and into the interior of a vehicle, disrupting any IED circuit components within. Develop and enhance the X-ray Tool Kit (XTK) software to provide 3D x-ray capability and provide Information Assurance Approval testing for incorporation into the future Radiographic Program of Record. Develop a collapsible, tactical, combat ready charge container to counter IEDs on the battlefield. Evaluate and modify the Mobile Explosive Device Neutralizer (MEDN) that provides</p>			

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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
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<p>the capability to remotely unscrew end caps from pipe type IEDs to include jars and jugs of possible precursor materials used in drug or explosive manufacturing.</p> <p>FY 2015 Plans: Implement the 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. Finalize drawings and commercialize the Mobile Explosive Device Neutralizer (MEDN) that provides the capability to remotely unscrew end caps from pipe bomb IEDs, and removes caps from jars and jugs of possible precursor materials used in drug or explosive manufacturing. Evaluate a robotically deploy three dimensional scanner capability to image large vehicle cargo areas. Commercialize a VBIED threat assessment system. Commercialize the forensic collection tools for explosives and other hazardous materials. Deliver and evaluate a shock tube initiated remote wire cutting tool that will increase safe separation from command or detonator wires being cut while maintaining control. Evaluate a remote window breaking tool to ensure breakage of improved safety glass to access VBIED. Continue development of a heads-up display (HUD) capability for bomb suit helmets. Continue to develop a handheld manual entry multi-meter to be used for diagnostics on detonators, mechanical switches, and electromechanical switches. Deliver and evaluate a collapsible tactical charge container to counter IEDs on the battlefield.</p>			
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<p>Title: INVESTIGATIVE SUPPORT AND FORENSICS (ISF)</p> <p>Description: The IFS subgroup's objective is to advance combating terrorism capabilities in investigative and forensic science. IFS supports joint, interagency, and other partners who apply investigative and forensic science methods, means, or practices to 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.</p> <p>FY 2013 Accomplishments: Completed and validated a forensic technique that visualizes latent fingerprints and concurrently recovers any residue of explosive materials present in the print. Developed an automated digital communication analysis system that determines persons who are potential insider threats to commit physical violence, espionage, and sabotage. Completed and distributed an advanced forensic procedure that separates complex mitochondrial DNA mixtures and provides individual identification of each DNA source. Developed and fielded a new technology that locates, extracts, and forensically analyzes latent visual images on thermal printer ribbons. Completed development of an automated system that extracts, categorizes, and analyzes the data stored on memory components found in damaged electronic equipment. Completed the development of a catalyst based technique for visualizing previously undevelopable latent fingerprints. Initiated the development of an extensive forensic system and repository to establish the geographic origin of materials from homemade explosives and IEDs. Started the development of a forensic system that</p>	7.332	5.420	4.518
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analyzes counterfeit documents used for identity and travel and links the documents to other investigations. Started production of a comprehensive set of procedures to analyze inks to verify if documents are genuine or counterfeit. Initiated the design of an easy-to-use kit to collect post-blast residue evidence by persons without technical training. Started the development of a technology to visualize latent fingerprints based on novel human antibodies and nano-technology. Initiated establishment of an interagency research, development, test, and evaluation strategy and roadmap for the federal investigative and forensic science community.

FY 2014 Plans:

Continue and complete development of an extensive forensic system and repository to establish the origin of materials from homemade explosives and IEDs. Finish the development of a forensic system that analyzes counterfeit identity and travel documents and links them to other criminal and terrorist incidents. Finalize production of a comprehensive set of procedures to analyze inks to validate that the documents are genuine. Complete the design of an easy-to-use kit for persons lacking technical training to collect post-blast residue evidence. Finish the development of a technology to visualize latent fingerprints based on novel human antibodies and nano-technology. Complete an interagency research, development, test, and evaluation strategy and roadmap for the federal investigative and forensic science community. Test and evaluate commercially available rapid DNA instruments for use in combating terrorism operations. Assess and develop an effective forensic microbial proteomic methodology for microbial samples to aid in source attribution. Produce and distribute to all US law enforcement agencies an updated, advanced version of a system that enables witnesses to identify the makes and models of automobiles involved in criminal and terrorist incidents. Initiate the development of a field-deployable prototype system for automated rapid processing of human DNA profiles using short tandem repeat loci. Initiate development of advanced methods to analyze visual, verbal, and behavioral cues of persons to determine their likelihood of being an insider threat to commit physical violence, espionage, and sabotage. Start the development and validation of more productive and effective methods of interrogating and interviewing persons for human intelligence collection in law enforcement and tactical environments. Initiate establishment of a forensic opium poppy DNA methodology to determine the geographic origin of heroin. Start the development of a forensic process to calculate accurately the age of a bloodstain found at a terrorist incidence scene or its time of deposition.

FY 2015 Plans:

Complete the development of a field-deployable system for automated rapid analysis of short tandem repeat loci of human DNA. Finish the development of improved methods to determine the likelihood of persons being an insider threat to commit physical violence, espionage, and sabotage from their visual, verbal, and behavioral cues. Complete the development and validation of more productive and effective methods of interrogating and interviewing persons for human intelligence collection in law enforcement and tactical environments. Finalize a forensic opium poppy DNA methodology that can determine the geographic origin of heroin. Complete and validate a forensic protocol that calculates the age of a bloodstain or its time of deposition at the

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scene. Initiate the development of advanced proteomic technology to provide forensic information that cannot be established with DNA analysis.			
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Title: Irregular Warfare and Evolving Threats (IW/ET)	6.186	0.200	0.200
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Description: U.S. Forces face a threat environment where irregular, state-sponsored and non-state hybrid and conventional adversaries armed with easy to employ precision weapons, global surveillance and networking will have the capability to undercut the operational and technical superiority of U.S. Conventional and Special Operations Forces. These evolving threats will progressively blur the boundaries between conventional and irregular warfare. Offering foresight about disruptions of this nature through rapid, adaptive demonstration of novel operational concepts so that concept developers can explore new models and capabilities before a conflict begins must be a primary goal.

The IW/ET subgroup develops new concepts and capabilities for warfighters and inter-agency partners who are confronting the complexity of the current operational environment, while simultaneously looking outward rather than inward to appropriately size, shape and develop their forces. In accordance with the QDR’s emphasis on preparation to defeat adversaries and succeed in a wide range of contingencies, IW/ET will engage in operational assessment, concept development, and independent validation of unique prototype capabilities to identify, confront and defeat evolving threats.

FY 2013 Accomplishments:
Initiated “Operate to Know” experimentation roadmap to develop an initial intelligence management architecture that seeks to field activity based intelligence tactics, techniques and procedures, coupled with a unique “ISR-Playbook” for threat network agitation, sensing and targeting. Initiated a classified research project in response to specific SOF customer needs for vetted, focused open-source information and analysis. Under a project known as Nightingale, fielded a prototype digital content and persona management capability with members of the Counter Terrorism Strategic Communication community of practice. This effort provides critical test and evaluation for spiraled operational deployment on more sensitive, classified information related capabilities and objectives.

FY 2014 Plans:
Demonstrate “Operate to Know” live test at Trident Spectre 2014, proving the ability of massed sensors and processing, exploitation and dissemination to find, track and target threat organizations and individuals. Complete a classified research project in response to specific SOF customer needs for vetted, focused open-source information and analysis. Field pilot program with classified customer and mission set as a spiral from Project Nightingale. In order to enhance SOF ability to work through, by and with other forces, initiate a new project to develop within specific SOF community members a capability to develop human intelligence capacity and capability to their host/partner-nation counterparts that does not disclose U.S. tradecraft or intelligence TTPs. Initiate new efforts to map out threat ecosystem to understand mega-cities and the phenomenon of the megalopolis as a threat ecosystem in terms of its sanctuary, lines of communication, financing mechanisms, and media ecosystem. Initiate net-

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<p>assessment of SOF and Departmental-level, next-generation influence and information related capabilities through operational analysis, concept design and rapid draft pilot-course or seminar execution. Conduct "Red Cell" activities in support of USASOC UW Operating Concept. Convene Whole of Government Next Generation and Evolving Threats working group, focused on specific domains, critical vulnerabilities and functional threat areas to enhance understanding of distributed, networked threats and to draft novel whole of government responses.</p> <p>FY 2015 Plans: Transition "Operate to Know" capability, TTPs, and activity-based intelligence approach to service- or combat-support agency-level institution. Transition enhanced capabilities proven under Project Nightingale and its classified spiral to end-user organization. Expand on the work achieved through the experimentation under the SOF-specific exportable HUMINT by further developing innovative intelligence partnerships with our partners through an integrated Exportable Intelligence Capability that incorporates intelligence collection, planning, fusion and analysis for partnered counter-transnational organized crime and counter-terror mission sets. Continue to test, evaluate and field efforts that developed novel concepts to map out threat ecosystem to understand mega-cities and megalopolis as a threat ecosystem in terms of its sanctuary, lines of communication, financing mechanisms, and media ecosystem. Deliver a net-assessment of SOF and Departmental-level, next-generation influence and information related capabilities that was developed through operational analysis, concept design and rapid draft pilot-course or seminar execution. Complete "Red Cell" activities in support of USASOC UW Operating Concept. These efforts will feed in to the development and refinement of the ARSOF Operating Concept. Initiate multiple next-generation information related capabilities (IRCs) and associated technical means that advance concepts and pursue capabilities identified in IW/ET's FY14 net-assessment of next-gen IO and information related capabilities.</p>			
<p>Title: PERSONNEL PROTECTION</p> <p>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.</p> <p>FY 2013 Accomplishments: Developed systems to enhance situational awareness, intelligence collection capabilities, and personnel recovery efforts and delivered for operational evaluation and deployment. Developed a mobile surveillance platform that captures, records, encrypts, and streams multi-channel video and audio with associated GPS position information to a command center for enhanced situational awareness and incidence response. Enhanced flight performance of a micro unmanned aerial system that provides real-time situational awareness for individuals, and delivered to military and law enforcement personnel for operational evaluation. Designed a capability that activates a vehicle tracking, tagging, and locating device upon detection of a blast. Developed a multifunctional earpiece that provides in ear hearing protection as well the ability to collect pressure and acceleration data during</p>	11.567	8.757	7.893

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blast or blunt impact events. Designed and validated body armor materials with a reduced backface signature. Developed techniques to assess brain injury using magnetic resonance imaging (MRI) and magnetic resonance spectroscopy (MRS) to monitor neurochemical biomarkers for post traumatic stress disorder and mild traumatic brain injury. Developed a whole body deformation tool and analysis for the development of protective solutions for vehicles, ships, and buildings. Developed and distributed a training package to instruct senior officials who are not appointed a protection detail how to protect themselves and their families. Developed and delivered a portable system for vehicle protection in crowds. Delivered analysis report on the performance and safety capabilities of alternative fuel vehicles used in law enforcement and protective services operations. Designed and delivered a novel vehicle armor solution to be deployed on alternative fuel vehicles. Assessed the vulnerability of a vehicle's internal network against a range of potential threats. Designed a mobile blast mitigation barrier that mitigates the fragmentation effects of a behind the wall improvised explosive device. Rescheduled as an FY14 competitive contract award, the development a tethered aerial platform for enhanced situational awareness and communication capabilities.

FY 2014 Plans:

Develop and deliver systems to enhance situational awareness, intelligence collection capabilities, and personnel recovery efforts. Deploy a capability that activates a vehicle tracking, tagging, and locating device upon detection of a blast. Deliver 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 a whole body deformation tool and analysis for the development of protective solutions for vehicles, ships, and buildings. Deploy the mobile surveillance platform to gain situational awareness from moving platforms and man-portable assets. Design and develop a wireless tactical communications headset. Develop a tethered aerial platform for enhanced situational awareness and communication capabilities. Develop counter unmanned aerial vehicle capabilities. Develop a truly concealable armor system that provides rifle threat protection. Develop a novel lightweight armor material that provides rifle protection. Enhance automated exploitation algorithms for light detection and ranging data. Develop a three dimensional personnel tracking and locating system for use within structures. Analyze the performance of armored hybrid and fuel efficient vehicles to determine their feasibility for protection operations. Develop a capability for local data storage of maps for operational use in austere environments.

FY 2015 Plans:

Develop and deliver systems to enhance situational awareness, intelligence collection capabilities, and personnel recovery efforts. Deliver a wireless tactical communications headset. Test and evaluate tethered aerial platform for enhanced situational awareness and communication capabilities. Test and evaluate counter unmanned aerial vehicle capabilities. Validate a truly concealable armor system that provides rifle threat protection. Validate a novel lightweight armor material that provides rifle protection. Deliver automated exploitation algorithms for light detection and ranging data. Test and evaluate a three dimensional personnel tracking and locating system for use within structures. Analyze the performance of armored hybrid and fuel efficient

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vehicles to determine their feasibility for protection operations. Test and evaluate a capability for local data storage of maps for operational use in austere environments.			
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Title: PHYSICAL SECURITY	8.153	11.977	8.075
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Description: Develop capabilities to address physical security vulnerabilities associated with forward deployed military and civilian personnel; domestic security and first responder personnel; and U.S. Government facilities in the U.S. and abroad; and rapidly transition those capabilities to the users.
Focus technology development efforts in support of joint and interagency requirements that are directed along the U.S. borders, at U.S. embassies and consulates, at mass transportation and commerce nodes, in Maritime port and littoral environments and in support of large scale public gatherings.

FY 2013 Accomplishments:
Developed experimentally validated decision support tool to assist pre-event, preventative planning solutions for temporary, semi-permanent, or permanent facilities. Initiated database and Vulnerability Assessment and Protection Option (VAPO) development program on blast response against multi-layered systems and Forward Operating Bases to improve protection capabilities. Coordinated design standards with appropriate government agencies for increased force protection. Experimentally validated six blast models for urban environments to include novel explosives. Completed a non-ideal explosive equivalency methodology. Developed a comprehensive homemade explosives database with multiple levels of access. Developed decision support aids for the intelligence and technology community regarding novel explosives threats. Developed an International Homemade Improvised Explosive Devices (IED) Working Group Roadmap that coordinates and aligns communities of interest to facilitate collaboration and consolidation of ongoing parallel and complimentary efforts of over 40 agencies and 5 International partners. Developed the DoD/Interagency Draft Protocols on Homemade Explosives (HME) Safety and Performance Testing which consolidated testing and measurement standards as the common guidelines for interagency and International organizations. Continued development a first responder guide for desensitizing homemade explosives using commonly carried materials. Developed a man-portable Bandolier line charge system to disrupt a path of earth with the intent of exposing or disrupting non-metallic/metallic buried IED threats. Developed a rapidly and easily deployable and recoverable self-contained security and video observation/surveillance system. Developed a mobile, man-portable persistent surveillance system that is capable of continuously monitoring a large panoramic area, automatically detecting and tracking human-size targets. Continued development of a swimmer detection technology based on an electro-optical sensor. Demonstrated and delivered a system that provides enhanced night vision capabilities to austere outposts. Initiated a modular air-droppable force protection kit that includes mini-radar, trip wire sensor and electro-optical, IR camera sensors. Globally supported site security implementation and execution and large scale events public gatherings. Completed development of a system for detection of rocket attacks. Completed development of enhanced video assessment and tracking techniques. Operationally tested and evaluated a next generation Short Wave Infrared

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<p>(SWIR) capability for use in tactical environments to detect human intrusion in low light environment. Continued construction of an integrated test facility for technology demonstrations and pre-operational testing.</p> <p>FY 2014 Plans: Improve model capability by experimentally validating effects of blast wave propagation on frangible fronts in an urban environment. Develop a fast-running, CHINOOK-based computational tool to assist DoD, city planners and first responder personnel in predictive blast analysis in an urban environment. Develop in theater culvert retrofit technology. Initiate explosive testing to reinforce critical infrastructure design for mitigated and unmitigated brick tunnels. Develop protection capabilities and counter measure decision aids regarding ultra-high performance concrete. Complete the web-enabled Blast Information Systems database. Develop decision support aids for the intelligence and technology community regarding novel explosives threats. Develop a tool for an understanding of TNT equivalency that will provide operational forces necessary information for protecting personnel and infrastructure. Develop forced-entry/blast resistant doors to support US facilities abroad. Conduct user evaluation of a comprehensive homemade explosives database with multiple levels of access. Implement an International Homemade IED Working Group Roadmap that communities of interest to facilitate collaboration and consolidation of ongoing parallel and complementary efforts. Complete development of an HME desensitization guide for first responders. Operationally test and evaluate a man-portable Bandalier line charge system to disrupt a path of earth with the intent of exposing or disrupting non-metallic/metallic buried IED threats. Develop enhanced video assessment and tracking techniques. 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 of a security system with a camera observation system and a sensor alarm system coupled in an integrated package for concealable installation. Globally support site security implementation and execution of large scale events/large scale public gatherings. Deliver and evaluate a system for detection of rocket attacks. Develop automatic target recognition and improved gimbal control, to maneuver in rough terrain, for on-the-move, standoff IED detection and for stand-off underground void and tunnel detection. Develop a modular air-droppable force protection kit that includes mini-radar, trip wire sensor and electro-optical/IR camera sensor. Develop a temporary anti-personnel barrier system. Developed IR-based detection system with automatic focus to allow for enhanced detection of explosive and weapon threats in operational environments. Test and evaluate tactical arresting systems designed to stop vehicles over a short distance. Commercialize an Advanced Diver Data Display System prototype for combat swimmers. Develop a remote control adjustable charge capable of deployment by mobile platforms to effectively neutralize defined IED threats. Deliver a multi-purpose advanced tactical timer. Evaluate a swimmer/small vessel detection technology based on electro-optical sensors to provide situational awareness for port security and open water operations. Test and evaluate an advanced active diver thermal protection system for long exposure dives, including SEAL Delivery Vehicle (SDV) operations.</p> <p>FY 2015 Plans: Develop a rapidly deployable, non-lethal, temporary barrier system to protect fixed and expeditionary facilities in response to increased threat levels or to support special events. Deliver tactical arresting systems designed to stop vehicles over a</p>			

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<p>short distance. Deliver a remote control adjustable charge capable of deployment by mobile platforms to effectively neutralize defined IED threats. Demonstrate a tool for an understanding of TNT equivalency that will provide operational forces necessary information for protecting personnel and infrastructure. Develop decision aids for the intelligence and technology community regarding novel explosives threats. Test explosives effects in an urban environment to include Historic Masonry to form decision aide capabilities and results required by first responders for events and military engineers for retrofit solutions. Develop experimentally validated best practice guidelines for the use of Ultra High Performance Concrete and improve tools for design, its protective use, and vulnerability assessments. Evaluate a swimmer/small vessel detection technology based on Electro Optical sensors to provide situational awareness for port security and open water operations. Develop technologies and methods to detect and neutralize Unmanned Aerial Vehicles. Deliver a technology prototype for on-the-move, standoff IED detection and for stand-off underground void and tunnel detection and mapping. Support coordination, alignment and development of video analytic efforts.</p>			
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Title: SURVEILLANCE, COLLECTION AND OPERATIONS SUPPORT	21.207	14.974	11.072
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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 2013 Accomplishments:
 Evaluated commercially available pseudo explosive training odors to replicate families of explosives for explosive detector dog training. Transitioned a video triage system with media extraction and collection processes to allow for rapid triage in field operations. Delivered an interactive software application that provides the capability for an individual to be tested and/or self-study on specific skill sets, from a computer, in preparation for a specific threat or operational mission. Adapted and integrated existing foreign language applications, practices, and tools into a tactical site exploitation capability. Enhanced capability, force structure, and training programs to leverage information operations, sensitive site exploitation capabilities for Special Operations Forces missions. Designed custom force tracking applications.

FY 2014 Plans:
 Expand Special Operations Forces training programs to leverage Cyber-Warfare capabilities. Develop field technical surveillance capabilities. Construct template-based lessons for language learning, area and regional studies, and media analysis for Arabic, Chinese, and Spanish to easily update students, instructors, and personnel utilizing the Monitoring Media System. Develop a standard explosives scent kit for training explosive detector dogs. Assist with improving the selection and assessment process for Special Operations Forces. Enhance custom force tracking capabilities. Develop a capability to manage and protect privacy

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<p>and personal information to include social networks, public, and private databases. Utilize Unmanned Aerial Vehicles platforms as novel communication relay nodes.</p> <p>FY 2015 Plans: Develop an enhanced capability to leverage Cyber Operational Preparation of the Environment (C-OPE). Deploy field technical surveillance capabilities. Export template-based lessons and activities to a variety of mobile devices for continuous learning beyond the classroom. Deliver standardized canine explosive scent training kits. Transition customized force tracking capabilities into existing fielded technologies. Integrate public and databases into a single user interface application to protect privacy and personal information. Continue to work with Unmanned Aerial Vehicles to reduce payloads for effective and efficient communication relays. Develop and enhance research and technology to assist analysts with biometric intelligence and reporting. 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.</p>			
<p>Title: TACTICAL OPERATIONS SUPPORT</p> <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 2013 Accomplishments: Completed development of a specialized application for commercially available smart phones providing a mass alert tool capability that reports and disseminates incidents to U.S. Border Patrol agents enabling rapid response and increased interdictions, arrests and seizures via geo-rectified text messages, pictures and full motion video. Initiated and began completion of 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 an Android platform and applications. Delivered a lightweight organic cell phone network that provides secure voice and secure high speed data services to at least 16 users simultaneously. Delivered a system that will alert a ground force commander as to the status of his deployed sniper teams, to include still video of shooter’s visual on target, in real-time over organic radio links. Completed final stages of development of a system of clip-on small arms illumination, pointing and infrared imager devices that operate in both near and short wave infrared spectra. Initiated and delivered a micro tactical ground robot capable of negotiating rugged terrain and climbing complex obstacles for visual and acoustic surveillance and reconnaissance missions and to identify and defeat improvised explosive devices. Delivered a tactical audio video collection and recording system integrated and worn in civilian clothing. Delivered a hand emplaced, remotely operated, real-time, tactical visual surveillance system that has an integrated power supply and SATCOM/Cellular data link. Nearly completed a robotics platform which works</p>	16.877	26.094	10.192

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cooperatively with integrated guidance and situational awareness sensors for collecting visual and acoustic information and with the ability to interface with multiple payloads to cover a wide range of tactical missions. Delivered a real-time, standoff imaging capability for the detection of concealed weapons. Initiated development of 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 in under 60 seconds. Delivered a mobile-mesh network enabled Trojan Scout Unmanned Aerial system providing dismounted operators with an enhanced organic capability to identify threat networks in remote environments with safe stand-off from potential adversaries. Delivered a fused thermal and image intensified clip-on small arms night vision weapons sight. Initiated development of a miniature, highly maneuverable and rugged robotic system capable of being controlled by an Android-based controller with a secure mobile ad-hoc network communications to improve small tactical team ISR. Nearly completed development of a lightweight, modular handheld intelligence, surveillance, target acquisition, reconnaissance system. Delivered a concealable sniper rifle with all components measuring less than 16.5 inches. Generated internal flight and terminal ballistic data on the 6.8mm x 43 round optimized for military applications, in order to determine the suitability of an intermediate caliber for combat operations compared to 5.56mm and 7.62mm designs. Delivered a mobile mortar targeting system mounted on a non-standard vehicle with an integrated Fire Control System that provides rapid and accurate indirect fire solutions using legacy U.S. standard 81mm mortars and ammunition. Delivered an upper receiver group that provides a significant reduction in size and improvement to suppression of both sound and flash compared to the current U.S. standard M4 rifle. Provided program of instruction training and kit to SOF and select interagency tactical operations snipers to improve long range target interdiction at a maximum effective range of 1,800 meters. Initiated development of a small, weapon rail mounted, un-cooled long wave infrared detector system to provide snipers with high resolution thermal imagery to conduct target interdiction operations effectively and efficiently at distances out to 1,800 meters. Initiated and delivered social media training and awareness course for tactical user preparation of the environment, operational surety and force protection. Initiated and delivered a spiral development defensive tactical level cyber program of instruction. Delivered a comprehensive reference source to summarize the performance characteristics of available and proven breaching methods, tools, and tactics as they apply in a maritime environment. Delivered in-depth analysis and reference books on activities and motives of specific countries and threat subjects of interest. Delivered a tactical visual and thermal camouflage system. Delivered ballistic protective tactical eyewear capable of near instantaneous transition from clear to amber, blue, and dark gray for use in dynamic lighting environments in combat operations.

FY 2013	FY 2014	FY 2015
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FY 2014 Plans:

Deliver a specialized application for commercially available smart phones providing a mass alert tool capability that reports and disseminates incidents to U.S. Border Patrol agents enabling rapid response and increased interdictions, arrests and seizures via geo-rectified text messages, pictures and full motion video. 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 an Android platform and applications. Initiate a hand-held ruggedized operator control unit capable of operating ground, aerial, maritime small tactical unmanned platforms compatible with Android and Windows 7 operating systems. Deliver a system of

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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
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clip-on small arms illumination, pointing and infrared imager devices that operate in both near and short wave infrared spectra. Deliver an upgraded micro tactical ground robot capable of negotiating rugged terrain and climbing complex obstacles for visual and acoustic surveillance and reconnaissance missions and to identify and defeat improvised explosive devices. Deliver a robotics platform which works cooperatively with integrated guidance and situational awareness sensors for collecting visual and acoustic information and with the ability to interface with multiple payloads to cover a wide range of tactical missions. Initiate spiral development of an enhanced real-time, standoff imaging capability for the detection of concealed weapons. 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 in under 60 seconds. Deliver a miniature, highly maneuverable and rugged robotic system capable of being controlled by an Android-based controller with a secure mobile ad-hoc network communications to improve small tactical team ISR. Deliver a lightweight, modular handheld intelligence, surveillance, target acquisition, reconnaissance system. Enhance and upgrade intelligence, surveillance and reconnaissance payloads currently being used in SOF, US Army, USMC (Shadow UAS) programs and select tactical interagency aviation platforms. Initiate development of a maritime canister launched collapsible wing small unmanned aerial system. Initiate development of a two-man back-packable aerial radar system capable of detecting and tracking low-radar cross section objects such as small unmanned aerial systems and manned ultralight aircraft. Initiate development of a rapidly-deployable tethered aerial ISR system that is transported, launched, operated, recovered and redeployed from a tactical all-terrain vehicle or light duty non-standard truck. Develop and demonstrate intermediate caliber system that increases overall effectiveness and efficiency in combat operations as alternative to 5.56mm and 7.62mm designs. Nearly complete a small, weapon rail mounted, un-cooled long wave infrared detector system to provide snipers with high resolution thermal imagery to conduct target interdiction operations effectively and efficiently at distances out to 1,800 meters. Initiate development of a weapon mounted rangefinder and ballistic engine to increase the maximum effective range of currently issued combat rifles and machine guns. Initiate development of an organic small tactical team offensive system capability that consists of a sophisticated, stabilized sensor that can detect and designate targets for an integrated, lightweight laser guided munitions payload. Deliver social media training and awareness course for tactical user preparation of the environment, operational surety and force protection. Complete a spiral development defensive tactical level cyber program of instruction. Deliver advanced technologies for improved full spectrum open communications, specialized access, close target reconnaissance, point target intelligence, surveillance, and target acquisition capabilities to maintain small unit dominance of Special Warfare tactical teams deployed globally. Deliver ballistic protective tactical eyewear capable of near instantaneous transition from clear to amber, blue, and dark gray for use in dynamic lighting environments in combat operations. Initiate development of a discrete, lightweight, low-volume personal tactical micro marker system for identifying tactical operators. Initiate development of a visibly transparent material capable of being detected with night vision devices for the discrete marking of structures or mobility platforms in operational environments. Initiate development of an underwater vision enhancement hands-free device that allows divers

	FY 2013	FY 2014	FY 2015

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense	Date: March 2014
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Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 3: Advanced Technology Development (ATD)</i>	R-1 Program Element (Number/Name) PE 0603122D8Z <i>I Combating Terrorism Technology Support</i>
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<p>to inspect ship hulls, piers, and surface-level maritime structures for explosive devices without the use of visible light that is compatible with currently fielded dive masks.</p> <p>FY 2015 Plans: Deliver a hand-held ruggedized operator control unit capable of operating ground, aerial, maritime small tactical unmanned platforms compatible with Android and Windows 7 operating systems. Deliver an upgraded micro tactical ground robot capable of negotiating rugged terrain and climbing complex obstacles for visual and acoustic surveillance and reconnaissance missions and to identify and defeat improvised explosive devices. Deliver a robotics platform which works cooperatively with integrated guidance and situational awareness sensors for collecting visual and acoustic information and with the ability to interface with multiple payloads to cover a wide range of tactical missions. Deliver an enhanced real-time, standoff imaging capability for the detection of concealed weapons. 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 in under 60 seconds. Deliver enhanced and upgraded intelligence, surveillance and reconnaissance payloads currently being used in SOF, US Army, USMC (Shadow UAS) programs and select tactical interagency aviation platforms. Deliver a maritime canister launched collapsible wing small unmanned aerial system. Deliver a two-man back-packable aerial radar system capable of detecting and tracking low-radar cross section objects such as small unmanned aerial systems and manned ultralight aircraft. Initiate development of a rapidly-deployable tethered aerial ISR system that is transported, launched, operated, recovered and redeployed from a tactical all-terrain vehicle or light duty non-standard truck. Deliver an intermediate caliber system that increases overall effectiveness and efficiency in combat operations as alternative to 5.56mm and 7.62mm designs. Deliver a small, weapon rail mounted, un-cooled long wave infrared detector system to provide snipers with high resolution thermal imagery to conduct target interdiction operations effectively and efficiently at distances out to 1,800 meters. Deliver a weapon mounted rangefinder and ballistic engine to increase the maximum effective range of currently issued combat rifles and machine guns. Nearly complete development of an organic small tactical team offensive system capability that consists of a sophisticated, stabilized sensor that can detect and designate targets for an integrated, lightweight laser guided munitions payload. Deliver advanced technologies for improved full spectrum open communications, specialized access, close target reconnaissance, point target intelligence, surveillance, and target acquisition capabilities to maintain small unit dominance of Special Warfare tactical teams deployed globally. Deliver a discrete, lightweight, low-volume personal tactical micro marker system for identifying tactical operators. Deliver a visibly transparent material capable of being detected with night vision devices for the discrete marking of structures or mobility platforms in operational environments. Deliver an underwater vision enhancement hands-free device that allows divers to inspect ship hulls, piers, and surface-level maritime structures for explosive devices without the use of visible light that is compatible with currently fielded dive masks.</p>			
Title: TRAINING TECHNOLOGY DEVELOPMENT	7.189	6.459	5.558

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Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 3: Advanced Technology Development (ATD)</i>	R-1 Program Element (Number/Name) PE 0603122D8Z / <i>Combating Terrorism Technology Support</i>
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
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<p>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.</p> <p>FY 2013 Accomplishments: Designed and developed a program required to implement and evaluate a training program that improves a soldier’s kinetic eye movement and target acquisition skills. Installed and evaluated an immersive parachute simulation system for practicing static line and military free fall emergency procedures. Design and developed a PC-based simulation tool to train technical and tactical embassy security skills. Increased the existing Minigun simulator system’s fidelity through enhanced graphics, improved sound, and added hardware features. Developed interagency advanced training to enhance the skills of undercover operators. Designed models and a training capability for EOD technicians and first responders that identify safe areas/distances to perform duties with minimal risk of injury from overpressure and blast fragmentation caused by IEDs and breaching charges. Initiate and design a mobile application to train features and functions of non-standard and foreign weapons. Developed computer-based training and simulation exercises on the topic of sensitive site exploitation (SSE) differentiating between the basic, tactical, and ideal approaches to SSE for collectors, analysts, and operators. Developed an instructor-led, non-AOR specific training package for military personnel on the topic of sensitive site exploitation. Developed a 3D, interactive performance support app to assist users who received training on the Gas Chromatography - Mass Spectrometer (GC-MS). Analyzed and designed a software solution for a digital interactive visual dictionary (DIVD) and user training module to be used in an environment that allows instructor cadre role players and students to interact with data visually to increase and enforce learning, retention, and recall capabilities. Designed a decision path to assist the operational mobile learning community to determine which, if any, portion of an effort would benefit from a mobile learning solution. Developed a laser based dry-fire training tool which includes shot indicating lasers and a resetting trigger rather than the need to rack the slide or bolt between shots, for the M-4 rifle, M-9 Beretta Brigadier, and Glock 19. Implemented and evaluated technology designed to enhance visual acuity skillsets with tactical law enforcement users. Applied and evaluated a validated negotiations model to develop negotiation skills in high stakes situations. Analyzed and designed a browser-based simulation for military and emergency response personnel on the topic of chemical agent detection and response in various common environments.</p> <p>FY 2014 Plans: Evaluate a program designed to improve a soldier’s kinetic eye movement and target acquisition skills and expand to an OCONUS evaluation. Develop a browser-based simulation for military and emergency response personnel on the topic of chemical agent detection and response in various common environments. Implement and evaluate technology designed to enhance visual acuity skillsets with military users. Complete enhancements to the existing Minigun simulator system. Expand a validated negotiations model to develop negotiation skills in high stakes situations with additional users. Install and evaluate an</p>			
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Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 3: Advanced Technology Development (ATD)</i>	R-1 Program Element (Number/Name) PE 0603122D8Z / <i>Combating Terrorism Technology Support</i>
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<p>additional immersive parachute simulation system for practicing military free fall emergency procedures. Complete development and evaluation of a PC-based simulation tool to train technical and tactical embassy security skills. Develop and validate models and a training capability for EOD technicians and first responders that identify safe areas/distances to perform duties with minimal risk of injury from overpressure and blast fragmentation caused by IEDs and breaching charges. Develop software models and a mobile application to train features and functions of non-standard and foreign weapons. Develop a software solution for a digital interactive visual dictionary (DIVD) and user training module to be used in an environment that allows instructor cadre role players and students to interact with data visually to increase and enforce learning, retention, and recall capabilities. Develop interactive, video-based simulator training scenarios to enhance situational awareness and decision-making for novice and experienced law enforcement personnel during and immediately following incident response. Analyze and design an advanced game engine interface and additional 3D virtual target and range models to support advanced simulation training for mission readiness and risk reduction for military personnel. Design a system of systems that integrates psychological, physiological, and behavioral information and technology to predict and enhance human physical performance. Analyze, design, and develop a live fire targetry simulation training system for developing and maintaining long range shooting skill sets.</p> <p><i>FY 2015 Plans:</i> Develop and evaluate an advanced game engine interface and additional 3D virtual target and range models to support advanced simulation training for mission readiness and risk reduction for military personnel. Implement and evaluate a live fire targetry simulation training system for developing and maintaining long range shooting skill sets. Implement and evaluate a system of systems that integrates psychological, physiological, and behavioral information and technology to predict and enhance human physical performance. Design and develop a computer-based training for law enforcement personnel to enhance situational awareness and decision-making during, and immediately following, incident response. Design and develop a system and simulation that enables training for the tactical employment of task organized forces to conduct operations supporting efforts to combat transnational organized crime. Develop and evaluate a course on the topic of 802.11 standards and signature reduction for civilian law enforcement. Develop a Digital Interactive Survival, Evasion, and Recovery Manual (SERE Manual) App that will provide a digital interactive Survival training environment for Service members to prepare for operations in a counter-terrorism environment. Design and develop a technology research, integration, and development test bed to optimize current shooting simulation technology and training methodology, integrate dissimilar separate systems to form a common, scalable, SOF training and simulation architecture, and demonstrate the integrated simulation benefits to the SOF warfighter. Design, develop, and evaluate a full motion platform that can be mounted on an aerial work platform and that replicate air/boat movement for marksmanship training.</p>			
Accomplishments/Planned Programs Subtotals	108.245	100.754	69.675

D. Other Program Funding Summary (\$ in Millions) N/A

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> / BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 Program Element (Number/Name) PE 0603122D8Z / <i>Combating Terrorism Technology Support</i>
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D. Other Program Funding Summary (\$ in Millions)

Remarks

E. Acquisition Strategy

N/A

F. Performance Metrics

N/A

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 3: Advanced Technology Development (ATD)</i>	R-1 Program Element (Number/Name) PE 0603133D8Z / <i>Foreign Comparative Testing</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
Total Program Element	-	-	-	30.000	-	30.000	15.363	15.290	15.449	17.726	Continuing	Continuing
P313: <i>Foreign Comparative Testing</i>	-	-	-	30.000	-	30.000	15.363	15.290	15.449	17.726	Continuing	Continuing

The FY 2015 OCO Request will be submitted at a later date.

Note

Rapid Fielding (RF) and Comparative Test is being recast with a focus on operational and developmental prototypes derived from evaluation of foreign equipment and products that will provide the United States Armed Services and Special Operations Command (SOCOM) capabilities to counter emerging threats. The Foreign Comparative Testing (FCT) program will increase its focus on finding and leveraging foreign technology solutions that affordably extend the life of existing military platforms/capabilities, and enhance interoperability with foreign partners and between services. FCT's broad reach across our allies and friendly foreign countries will enable finding and developing innovative, cost effective, and potentially interoperable solutions for the DoD, Multi-Service and Combatant Command (COCOM) priority requirements.

In FY 2015, Foreign Comparative Testing (FCT) funding from Program Element (PE) 0605130D8Z is being realigned to PE 0603133D8Z for Budget Activity alignment and emphasis on prototypes.

A. Mission Description and Budget Item Justification

The Foreign Comparative Testing (FCT) program supports the warfighter by leveraging technologies and equipment from allied nations and coalition partners to satisfy U.S. defense requirements, thereby accelerating the United States acquisition process and lowering development costs. The FCTs enhance interoperability, facilitate international collaboration, expand opportunities for prototyping to increase competition in innovation and enable more efficient and affordable transition of technologies into acquisition programs of record. 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). The FCT projects are sponsored by the Services and SOCOM. Evaluation processes for project selection include a detailed review to confirm the proposed item addresses valid requirements and DoD priorities, a thorough market survey, and development of a viable acquisition strategy.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense	Date: March 2014
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Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 3: Advanced Technology Development (ATD)</i>	R-1 Program Element (Number/Name) PE 0603133D8Z / <i>Foreign Comparative Testing</i>
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B. Program Change Summary (\$ in Millions)	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO	FY 2015 Total
Previous President's Budget	-	-	-	-	-
Current President's Budget	-	-	30.000	-	30.000
Total Adjustments	-	-	30.000	-	30.000
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Transfer from PE 0605130D8Z	-	-	21.285	-	21.285
• DoD Priorities and Requirements	-	-	8.715	-	8.715

Change Summary Explanation

FY 2015: Increase of \$30.000 million reflects the \$21.285 million realignment from PE 0605130D8Z and the \$8.175 million provided to support DoD priorities and requirements for prototypes designed to counter current and emerging cross-domain (air, space, sea, cyber, etc.) threats that affect Joint and Coalition operations.

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603133D8Z / <i>Foreign Comparative Testing</i>	Project (Number/Name) P313 / <i>Foreign Comparative Testing</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
P313: <i>Foreign Comparative Testing</i>	-	-	-	30.000	-	30.000	15.363	15.290	15.449	17.726	Continuing	Continuing

The FY 2015 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 advanced 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. The FCTs enhance interoperability, facilitate international collaboration, expand opportunities for prototyping and enable more efficient and affordable transition of technologies into acquisition programs of record. 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). The FCT projects are sponsored by the Services and U.S. Special Operations Command (USSOCOM). Evaluation processes for project selection include a detailed review to confirm the proposed item addresses valid requirements and DoD priorities, a thorough market survey, and development of a viable acquisition strategy.

Since the program's inception in 1980, OSD has initiated 671 projects; 619 projects have been completed to date. Of the 324 evaluations that met the sponsors' requirements, 252 led to procurements worth approximately \$11.000 billion in FY 2013 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 2013 constant year dollars.

The FCT program is a catalyst for teaming and 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 United States. Other nations recognize the long-term value of such practices for competing in the United States 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 United States. To date, companies across 33 states benefited from FCT projects.

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

	FY 2013	FY 2014	FY 2015
Title: Lightweight M3A1 Recoilless Rifle (Army)	-	-	1.700
Description: The current M3 Carl Gustaf Recoilless Rifle was introduced to US forces in 1991. The original version used a thin steel barrel liner containing the rifling, strengthened by a carbon fiber outer sleeve. External steel parts were eventually replaced with aluminum alloys or plastics thereby reducing the weapon weight from 36 pounds to 21 pounds. At 21 pounds the weapon is extremely heavy, especially when also carrying 84mm ammunition. This M3A1 project will eliminate 6 pounds (28 percent) from the existing system by replacing various components (bolt, trigger, venturi, and ancillary parts) without changing the firing procedures, operations or ammunition. Since the weapons' operational characteristics will not be changed, this low risk approach will produce a lighter weight 84mm shoulder fired weapon without going through a costly and time consuming process to test,			

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603133D8Z / <i>Foreign Comparative Testing</i>	Project (Number/Name) P313 / <i>Foreign Comparative Testing</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
qualify, and re-certify an entirely new modernized weapon system. This is continuing project which was previously funded during FY 2014 in PE 0605130D8Z.			
<i>FY 2015 Plans:</i> Continue hardware testing, developmental testing and operational testing. Write an evaluation report, the closeout report, and determine an acquisition decision.			
<i>Title:</i> Mobile Gunnery Live Fire Monitoring System (MGLFMS) (Navy) <i>Description:</i> The project will test and evaluate a Tank and Infantry Fighting Vehicle gunnery training system that wirelessly transmits live audio and video feeds of weapon systems data to a mobile monitoring station. The MGLFMS enables instructors to evaluate crew functions, make instantaneous corrections, and provides recording capability for detailed after action reviews. Foreign data has shown that training with this system significantly increases probability of gunnery crews placing first round on target. The system also provides an essential tool for instructors to evaluate and make the necessary feedback to ensure the analytical abilities that encompasses all the gunnery skills required for accurate fire. Several North Atlantic Treaty Organization (NATO) allies currently train with this same equipment. This is continuing project which was previously funded during FY 2014 in PE 0605130D8Z. <i>FY 2015 Plans:</i> Receive Phase I test articles during 1Q FY 2015. Initiate Phase I Technical Testing throughout 1Q – 3Q FY 2015. Receive Phase II test articles during 3Q FY 2015. Initiate Phase II Performance Testing during 3Q FY 2015. Initiate Phase II Field User Evaluation during 4Q FY 2015.	-	-	1.000
<i>Title:</i> Minor Resource Projects: <i>Description:</i> Multifunctional Information Distribution System (MIDS) Joint Tactical Radio System (JTRS) Radio Frequency Amplifier (RFA) (Navy); Energy Absorbing Material for Improved Blunt Impact/Blunt Trauma Protection (Army); Computer Network Defense (CND) Advanced Persistent Threat (APT) Detection (Navy); H-1 Crash-resistant, Ballistic-tolerant, Fuel Cell Qualification (Navy); Rapid Airfield Damage Assessment System (RADAS) (Air Force); Electronic Underwater Navigation (United States Special Operations Command (USSOCOM)); and Enhanced Optical and Transceiver Capability. These continuing projects were previously funded during FY 2014 in PE 0605130D8Z. <i>FY 2015 Plans:</i> The following projects will finalize testing, receive articles, and complete reporting and transition plans: Multifunctional Information Distribution System (MIDS) Joint Tactical Radio System (JTRS) Radio Frequency Amplifier (RFA); Energy Absorbing Material for Improved Blunt Impact/Blunt Trauma Protection; Computer Network Defense (CND) Advanced Persistent Threat (APT) Detection	-	-	3.150

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603133D8Z / <i>Foreign Comparative Testing</i>	Project (Number/Name) P313 / <i>Foreign Comparative Testing</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
(Navy); H-1 Crash-resistant, Ballistic-tolerant, Fuel Cell Qualification; Rapid Airfield Damage Assessment System (RADAS); Electronic Underwater Navigation; and Enhanced Optical and Transceiver Capability.			
<p>Title: Foreign Comparative Testing (FCT) FY 2015 Focal Areas: Force Application</p> <p>Description: FCT will invest in cross-domain, innovative Force Application technologies for new and emerging capabilities with international partners, including but not limited to these defense-wide requirements: Anti-Access / Area Denial (A2/AD); Robotics and Autonomous Systems; Interoperability across Platforms and Systems; and Countering Unmanned Systems.</p> <p>FY 2015 Plans: During FY 2015, FCT will focus on selecting projects supporting the below Force Application Areas: -Anti-Access / Area Denial (A2/AD) will provide innovative technologies that enhance position, navigation and timing accuracies, improve targeting/delivery in GPS-denied environments and prevent exploitation of systems lost in denied areas (e.g., anti-tamper capabilities). -Robotics and Autonomous Systems will remotely control assets that reduce troop tasks and exposure for daily operations, including force protection, special operations, and detection. -Interoperability across Platforms and Systems invest into technologies for mission-based on-demand routing, network, and information management, with a focus on command and control interoperability with coalition capabilities through integrated multi-level security enabled networks. Transition of Modular Open Systems Approach (MOSA) capabilities which are portable, modular, partitioned, scalable, extendable, and secure. -Countering Unmanned Systems (Unmanned Aerial Vehicles (UAVs), Unmanned Underwater Vehicle (UUVs), and Unmanned Surface Vehicles (USVs)) will provide technologies that detect, monitor, and counter hostile threats with small signatures, including special operations missions in surface, underwater and onshore environments.</p>	-	-	9.750
<p>Title: Foreign Comparative Testing (FCT) FY 2015 Focal Areas: Force Logistics</p> <p>Description: FCT will invest in cross-domain, innovative Force Logistic technologies for new and emerging capabilities with international partners, including but not limited to these defense-wide requirements: Reducing Soldier Load and Interoperability across Platforms and Systems.</p> <p>FY 2015 Plans: During FY 2015, FCT will focus on selecting projects supporting the below Force Logistics Areas: -Reducing soldier load reduces the weight currently sustained by the individual dismounted soldier, including materials that enable weight reduction to individual weapons, ammunition, or portable missile systems. -Interoperability across Platforms and Systems will invest into technologies for mission-based on-demand routing, network, and information management, with a focus on command and control interoperability with coalition capabilities through integrated multi-</p>	-	-	7.200

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603133D8Z / <i>Foreign Comparative Testing</i>	Project (Number/Name) P313 / <i>Foreign Comparative Testing</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
level security enabled networks. Transition of Modular Open Systems Approach (MOSA) capabilities which are portable, modular, partitioned, scalable, extendable, and secure.			
<p>Title: Foreign Comparative Testing (FCT) FY 2015 Focal Areas: Force Support</p> <p>Description: FCT will invest in cross-domain, innovative Force Support evaluation of new and emerging capabilities with international partners, including but not limited to these defense-wide requirements: Increase Human Performance, Energy Solutions, and Training Systems.</p> <p>FY 2015 Plans: During FY 2015, FCT will focus on selecting projects supporting the below Force Support Areas: -Increasing human performance involves developing and demonstrating advanced technologies to assess and optimize human cognitive load during combat operations and training. Increasing human performance will also utilize cognitive-load assessment technologies to enhance training of tasks with high cognitive load such as in aviation operations, combined arms engagements, mission command, air and missile defense, or multiple intelligence sensor training. -Energy solutions will include power systems and electronics designed for extreme cold to support Arctic strategy and renewable energy options that can reduce force support and logistics requirements. -Training Systems will demonstrate augmented reality capability that allows representation of fixed objects from a synthetic terrain environment and ability to overlay those objects within the augmented reality display.</p>	-	-	7.200
Accomplishments/Planned Programs Subtotals	-	-	30.000

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

N/A

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

In FY 2015, 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 has invested about \$1.170 billion in FY2013 constant year dollars to initiate 671 projects; 619 projects have been completed to date. Of the 324 evaluations that met the sponsors' requirements, 252 led to procurements worth over \$11.000 billion. In FY 2013, efforts in FCT Program Element 0605130D8Z had a transition rate of 84 percent for completed projects, exceeding the objective of 40 percent for demonstration programs.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 3: Advanced Technology Development (ATD)</i>	R-1 Program Element (Number/Name) PE 0603225D8Z I <i>Joint DOD/DOE Munitions Technology Development</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
Total Program Element	19.538	17.828	19.292	19.335	-	19.335	19.514	19.634	19.707	19.858	Continuing	Continuing
P225: <i>Joint DOD/DOE Munitions</i>	19.538	17.828	19.292	19.335	-	19.335	19.514	19.634	19.707	19.858	Continuing	Continuing

The FY 2015 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.

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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.

The JMP has a long history of successful transitions and significant Return on Investment (ROI).

- 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 Armament Research, Development & Engineering 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).

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– 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.

The JMP also works with the Defense Ordnance Technology Consortium (DOTC) and the National Armaments Consortium (NAC) 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 2013	FY 2014	FY 2015 Base	FY 2015 OCO	FY 2015 Total
Previous President's Budget	20.032	19.305	20.628	-	20.628
Current President's Budget	17.828	19.292	19.335	-	19.335
Total Adjustments	-2.204	-0.013	-1.293	-	-1.293
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-1.621	-			
• Congressional Rescissions	-0.026	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.557	-			
• Strategic Efficiency Savings	-	-	-1.293	-	-1.293
• FFRDC Adjustments	-	-0.013	-	-	-

Change Summary Explanation

The reduction is a strategic efficiency approach to reduce funding and staffing. As a result, we provide a better alignment of funding and provide support to a smaller military force.

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
Title: Computational Mechanics and Material Modeling	6.444	6.978	5.902

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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
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Description: Projects in this technical focus area develop physics-based 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 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. 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.

The specific projects in computational mechanics and material modeling are:

- CTH shock physics and SIERRA / Solid Mechanics (SM) codes & 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.

FY 2013 Accomplishments:

- Mechanical Threshold Stress (MTS) constitutive model algorithm developed for implementation into FEM (Finite Element Modeling) codes.
- Generalized Multi-Scale Shell Theory (GMSST) formulated for shell structural elements.
- Developed Dilational-ViscoPlastic-Fast Fourier Transform (D-VP-FFT) model to allow consideration of shocked, voided polycrystals; supported with 3D in situ and ex situ data sets of damage evolution.
- Characterized the mechanical and ignition properties of MinSmoke propellant (MSP).
- Implemented the ViscoSCRAM High Explosive mechanical model in the Material Point Method (MPM) code CartaBlanca.
- Delivered data to clarify the role of unique deformation mechanisms for relevant energetic materials.
- Performed mechanical experiments on DoD explosive AFX (Air Force Explosive) 757.
- Completed ball impact experiments for PBX (Plastic Bonded Explosive) 9501, PBX 9502, PBX N9 and HPP (High Performance Propellant).
- Floret test was completed for 46 samples of PBX 9501 with variable density and damage.

	FY 2013	FY 2014	FY 2015

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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<ul style="list-style-type: none"> - Executed Taylor impact experiments using an oblique view to provide time-resolved information on deformation, failure and dispersal of HPP (High Performance Propellant). - Several enhancements to ALE3D code to improve usability and enlarge application space including: improved element erosion criteria; geometry imports for Pro/Engineer models now include beams, shells, and 3D tetrahedra overlaid on 2D meshes; new condition number (CN) mesh relaxer to optimize element shapes; addition of "mortar" slides for improved mechanics across faceted surfaces; new material models for cast iron and cellular foam; void insertion coupled directly through Gurson D model for failure and fragmentation modeling; and, implemented crystal plasticity model with porosity. - Developed dynamic DSD (Detonation Shock Dynamics) to calculate lighting times on deformed HE (High Explosive) geometries. - Characterized thermal sensitivity and thermally-driven damage of composites of interest. - Development of a framework to capture damage and response of chopped fiber composites initiated. - Line Velocity Interferometer System for Any Reflector (VISAR) measurements of shocked PBX 9501, PBX 9502, and PBX N-9 performed to support heterogeneous material modeling. - Equation of State (EOS) characterization of IMX (Insensitive Munitions Explosive) 101 and IMX 104 explosives. - SIERRA release (v4.28 in April 2013) distributed to DoD HPC (High Performance Computing) sites. - Distributed Beta versions of the CompSim user interface (UI) to DoD sites. - SIERRA explosives finite element model (XFEM) generalized and extended to model pervasive failure mechanisms. <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. - Develop and apply methods to incorporate 3-dimensional microstructure data into continuum calculations. - 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. - Complete energetics damage experiments (rubbery tear, interfacial damage, friability). - CTH Versions 11.2 and 11.3 will be released: Improve memory management, and improved parallel processing/communications. - Implement robust and accurate coupling between Sierra/SM and CTH. <p>FY 2015 Plans:</p>			

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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
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- Implement shell structural element into ALE3D. Demonstrate on an applicable problem, such as the simulation of impact and penetration of a composite structure rocket motor case, by one or more projectiles.
- Implement dynamic strength model / rate-sensitive damage model into ALE3D or other codes and validate against experimental data.
- Complete integrated 3D damage simulation w/ mesoscale input for CartaBlanca calculation. Begin transition of CartaBlanca as general tool for use in typical DoD weapon calculations.
- Transition Mechanically Activated Thermal Chemistry (MATCH)-ignition model to DOE code teams.
- Design and conduct new experiments to further validate or refine the ignition criterion.
- Enhance ALE3D code capabilities through continued development of implicit multi-physics.
- Develop improved continuum models that couple void nucleation to shear band failure.
- Implement realistic EOS of failed composite material into ALE3D or other codes.
- Characterize shock and damping response of commonly used carbon fiber materials, and explore relevant modeling techniques.
- Develop methods for analyzing and fitting thermodynamic data of energetic materials.
- Release CTH Versions 11.3 and 12.0 with exascale improvements (12.0).

Title: Energetic Materials (EM)	4.150	4.302	5.512
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Description: The goals of this technical focus area are to develop new energetic materials (EMs) 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 EMs, including new molecules in a range of particle sizes 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 costs must be reasonable, chemical feed stocks reliable, and manufacturing processes suitable for scale-up to production levels.

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, and 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.

The Department also needs munitions that provide selectable effects. To achieve these effects, weapons designers need to thoroughly understand the performance of EMs used in both the main weapon fill and the initiation systems. Distributed fuzing

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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
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<p>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 EMs 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 EMs 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 EMs to high accelerations and shock loads. To support the development of these new systems, we need to improve our ability to model EM under higher 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 EMs that survive impact loads while maintaining lethality and initiability.</p> <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 2013 Accomplishments:</p> <ul style="list-style-type: none"> - Completed synthesis and characterization of insensitive energetic materials for booster applications. - Designed deflagration to detonation transition experiments for proton radiography. - Compared simulations with pop plot behavior and onionskin experiments for microwave-sensitized explosives. - Released 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. - Expanded detonation calorimetry capabilities with post-shot analysis techniques. - Completed mesoscale simulations of energetic materials under stress and pressure/confinement. 			
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
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<ul style="list-style-type: none"> - Developed technique to characterize high-pressure deflagration. - Scaled-up the syntheses of new energetic material compounds to produce 20-30 grams for performance testing and heat of formation measurements. - Scaled thin-film deposition of explosives to gram scale. - Developed and validated models for thermally induced damage in TATB explosives and AP propellants. - Completed thermal decomposition study of propellant binder PNO with and without candidate stabilizers. - Determined low and moderate temperature reaction networks for pyrotechnic actuator materials. - Completed initial microfluidic nitration reactor experiments. <p>FY 2014 Plans:</p> <ul style="list-style-type: none"> - Develop new tunable sensitivity formulations based on TATB/HMX/KeF or Estane/BDNPA-F mixtures using graphite as a microwave absorber. - Investigate the complex permittivity of PBX 9502, Composition B (CompB) and IMX 101 under x-ray exposure. - Determine the dielectric strength of selected booster explosives. - Demonstrate sensitivity control for a 1.9" hemispherical booster. - Perform burn rate studies on promising burn rate modifiers including tetranitroimidazole (N4BIM) salts. - Perform synthesis of C,H,N,O oxidizer materials. - Deliver thermal data on IMX 104. - Perform pre-ignition x-ray experiments on IMX 104. - Develop consistent ionic thermodynamics model to improve equation of state (EOS) and speciation predictions for all energetic materials, including halogenated formulations, metal-loaded explosives, propellants, etc. Test and validate model against EOS data and small scale experiments (cylinder, plate push, detonation calorimeter, etc.) using Cheetah and hydro/Cheetah calculations. - Develop post-detonation carbon kinetics models for conventional and insensitive high explosives. Test and validate against small scale experiments (e.g. cylinder) for TNT-based explosives, TATB-based explosives, conventional explosives, NTO-based explosives, etc. Integrate reactive flow calculations and carbon kinetics modeling with ionic thermodynamics capability. - Develop Cheetah thermochemistry for major metallic additives (Al, Si, B, Mg) and other relevant elements (W, Ti, Zr, Bi, Sb, P, Hf, Ni, K, Na, etc.) and compounds, e.g. oxides, fluorides, nitrides, carbides, etc. to enable thermochemical predictions for complex and novel formulations. - Perform EOS and/or sound speed measurements in support of Cheetah modeling development. Ex.: TiF4, ZrF4, H2O+HCl, H2O+HF, N2+CO, N2+H2O, B2O3, possibly SiF4, etc. - Capture reaction (ignition) front measurements in damaged energetic materials. - Complete the spiral 1 deflagration-induced deconsolidation model. 			
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<ul style="list-style-type: none"> - Perform porous and pristine minimum signature propellant (MSP) shock initiation experiments for recompaction ignition of damaged material (XDT) model - Deliver completed Disc Acceleration Experiment (DAX) design for conventional EMs (½ to ¾ in.). - Synthesize and scale-up new plasticizer materials. - Synthesize 25-50 grams of LLM-196 and LLM-198 and their nitrogenous salts for evaluation by Navy partners. - Develop preparation-structure relationship for Hexanitrostilbene (HNS). Test effect of deposition conditions on HNS microstructure. Relate surface roughness to microstructure. - Determine conditions for multiple material (e.g. co-crystal) formation and test for homogeneous or heterogeneous nucleation. - Characterize the damage evolution of PBX 9502 and Ammonium Perchlorate (AP) propellant, including the determination of permeability as a function of temperature history. - Perform aging study of RDX. - Characterize the chemical interactions that control thermal response of IMX-104. - Investigate the reactive processes that control release of reactive oxygen in KClO4 pyrotechnic oxidizers. - Report on interaction between two Navy Propellants. <p>FY 2015 Plans:</p> <ul style="list-style-type: none"> - Deliver the fully integrated (electromagnetic, heat transport, kinetic, mechanical, and hydrodynamic) model for down-selected energetic materials. - Report on the overall performance results for shock and thermal initiation, including environmental effects, model predictions, etc. of down-selected energetic materials. - Investigate the sensitivity properties of synthesized C, H, N, O oxidizers. - Systematically evaluate and improve code predictions at low pressure/high temperature for specific impulse calculations and gun propellants by expanding library of gaseous and condensed products available for such calculations, as well as available ingredients. - Benchmark High Explosive Reaction to Mechanical Stimulus (HERMES) model to sub-detonative fragment impact response experiments. - Perform cook-off-induced Deflagration to Detonation Transition (DDT) experiments. - Deliver completed DAX design for non-ideal EMs. - Scale-up the syntheses of new compounds (e.g. LLM-200, LLM-196, LLM-198, LLM-175 and LLM-201) to produce 20-30 grams for performance testing and heat of formation measurements. - Understand effects of incorporated metal film on propagation (detonation). Complete experiments on incorporation of metal films (one metal, two configurations) into deposited explosives (one explosive). - Publish best available models and Sandia instrumented thermal ignition (SITI) data for pressure dependence and gas generation rates of thermal decomposition of a representative MSP and Pentaerythritol tetranitrate (PETN). 			

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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
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| <ul style="list-style-type: none"> - Complete aging study of underwater explosive formulations and/or ingredients. - Investigate reactive processes that occur during shock loading of PETN and/or HNAB. | | | |
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Title: Initiators, Fuzes, and Sensors	3.022	3.243	3.359
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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 explosives, higher energy and power density power sources, or enhanced guidance systems; increasing reliability through redundancy (use of 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 may 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. Projects in this focus area are developing technologies to achieve this level of performance in compact packages.

The specific projects in the initiators, fuzes, and sensors technical focus area are:

- 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.
- MESASAR synthetic aperture radar (SAR) sensors.
- Vertical cavity surface emitting laser (VCSEL) sensors for proximity fuzing.

FY 2013 Accomplishments:

- Completed an electrochemical model which can predict voltage and current output for a single cell test.

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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<ul style="list-style-type: none"> - Validated the mechanical model developed to describe the thermal battery separator and the height displacement; the model was within 10 percent of the experimental data. - Implemented one-dimensional thermal battery electrochemical model into SIERRA code. - Performed a full series of 2-D axi-symmetric small-scale gap tests to study detonation across gaps for explosive materials. - Performed fundamental studies in hydrocode calculations involving overdriven high explosive systems. - Integrated Schlieren Inverse Analysis Software (SIAS) has been updated to use ALE3D in a genetic algorithm to iterate a hydro code simulation towards a solution that mimics detonator output. - Utilized photonic doppler velocimetry (PDV) diagnostic suite to characterize the output of large size detonators in order to provide baseline performance data. - Demonstrated ALE3D model of DoD slapper detonator. - Assessed modified three phase equation of state for metals for predicting slapper performance. - Performed experiments to assess the effect of spot size on LX-10 (high explosive). - Utilized larger printhead (200 μm) to deposit a potential lead azide replacement. - Created validated tabular equation of state for the explosive HNS. - Determined burn model parameters (reaction rates, run distance) for the explosive HNS. - Determined initiation threshold and performance data for micronized PBX 9502. - Developed a methodology to assess the safety and reliability of slapper-based fuze systems based on initiation threshold criterion. - Developed physics-based model of exploding foil initiator (EFI) bridge burst and flyer launch. - Filed non-provisional patents for barium titanate (BTO) nanoparticle synthesis and for Lead zirconate titanate (PLZT) nanoparticle synthesis. - Released packaging Design Guide II summarizing the computational packaging study of a single component on a board in quasi-statics & dynamics. - Built and tested second prototype flyback transformer using new tape-cast materials. - Completed the fabrication and initial evaluation testing of the 2nd iteration Ku-Band transmit / receive (T/R) module. - Completed the detailed design of the Ku-Band active array antenna (AAA) incorporating 24 T/R modules. - Designed and tested low-divergence high-power vertical cavity surface laser emitter array designs for proximity fuzing. <p>FY 2014 Plans:</p> <ul style="list-style-type: none"> - Deliver data packages on DOD detonators to the respective technical POCs as the tests are completed. - Build and release tabular equation of state (EOS) for CL-20 - Demonstrate electrochemical modeling for a single cell battery with the Sierra framework - Demonstrate methodology for using microstructural data and performance data in grain-scale and continuum simulations. - Perform microstructural characterization of CL-20 and HMX 			

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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
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| <ul style="list-style-type: none"> - Validate ALEGRA-MHD (magneto hydrodynamics) simulations of flyer launch for EFI's - Increase mechanical robustness of explosives - Optimize tape-cast BTO device using nanoparticle precursors. - Develop platform and process for measuring the permittivity of discrete nanoparticles in solution. - Develop process for field assisted sintering (FAST) of BTO nanoparticles. - Perform additional iterations of build and test of flyback transformers using new tape formulations. <p>FY 2015 Plans:</p> <ul style="list-style-type: none"> - Measurement of temperature dependent impedance of battery separator as a function of applied load. - Delivery of desktop code with a Graphical User Interface (GUI) for coupled thermal & mechanical capability for axisymmetric battery geometry materials designed to start explosive decomposition via photo-dissociation. - Perform experiments to assess wave divergence in charge transfer systems by measuring the effect of corner turning on booster diameter for insensitive explosives. - Develop next generation of the four-channel embedded Fiber Bragg Grating (FBG) for detonation wave diagnostics. - Determine the performance parameters (including combustion & detonation, deposition surface mobility and susceptibility to boundary conditions) of energetic materials deposited using microelectromechanical systems (MEMS) compatible techniques. - Develop tabular equations of state for explosives (e.g. TATB, PETN) and binder/HE combinations (e.g. RSI-007, PBX's). - Nanoparticle coatings for tape-cast capacitors optimized to maximize dispersion and loading while mitigating breakdown. - Assess performance of encapsulated components in fuze-like geometries in quasi-static & dynamic environments. - Additional iterations of build and test of flyback transformers using new tape formulations. - Develop lower-divergence 980nm emitter arrays for VCSEL-based proximity fuze. | | | |
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<p>Title: Warhead and Penetration Technology</p> <p>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 significant 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.</p> <p>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</p>	3.429	3.626	3.448
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Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 3: Advanced Technology Development (ATD)</i>	R-1 Program Element (Number/Name) PE 0603225D8Z <i>I Joint DOD/DOE Munitions Technology Development</i>
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<p>mass destruction. The work addresses high-velocity penetration into granular materials (sand and soil), penetration into high strength concrete, new penetrator materials and designs, and non-inertial onboard instrumentation.</p> <p>The specific projects in the warhead and penetration technology focus area are:</p> <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 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. <p><i>FY 2013 Accomplishments:</i></p> <ul style="list-style-type: none"> - Conducted sweeping detonation-wave loading experiment on Fe to quantify the effect on phase transition. - Completed characterization of tantalum EFP (explosively formed penetrator) liners to support research and development efforts at U.S. Army Armament Research, Development and Engineering Center (ARDEC). - Completed first sweeping-wave spallation experiment on zirconium to determine shock effects on the microstructure of munitions materials. - Completed characterization of the strength and damage behavior of depleted-uranium. - Processed and characterized the first batch of W-Fe-Ni alloy powder samples with dilute concentrations of low melting point Bi-Sn alloy powders. - Processed and characterized the first batch of 4340 steel powder samples with dilute concentrations of low melting point Bi-Sn alloy powders. - Rigorously applied melt infiltration methods in the composite processing methodology. - Completed fragmentation calculations on 4340 steel pipe bomb experiments. - Completed a suite of validated erosive initiation computational models including: three ALE3D models of zirconia-lined shaped charges; ALE3D models which utilize experimentally measured force data to provide a computational boundary loading; and meso-scale models which explicitly model individual particles of the granular jet. 			

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Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 3: Advanced Technology Development (ATD)</i>	R-1 Program Element (Number/Name) PE 0603225D8Z <i>I Joint DOD/DOE Munitions Technology Development</i>
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<ul style="list-style-type: none"> - Implemented improvements to the multiphase model in ALE3D: demonstrated usability for MBX munition design and deployment (2-D & 3-D); improved the usability of the multiphase model; corrected numerical implementation errors; added Lagrangian particle drag model; added slider collision model for Lagrangian particles to model particle-particle interaction; added momentum back-coupling of aerodynamics forces between particles and multiphase; added energy back-coupling of work due to aerodynamic forces between particles and multiphase; added interpolation of velocity and fluid scalar quantities to particle location for more accurate calculation of forces on the particles; added the pressure gradient force on Lagrangian Particles from multiphase flows; and improved computational efficiency of Lagrangian particles. - Initial release of the Kraken fragment-analysis software with inputs from Sierra Solid Mechanics; the software is capable of outputting fragment mass and velocity distributions and writing a z-data file for use in DoD lethality software. - Applied the Kracken fragment-analysis software to analyze results of an ARDEC fragmentation test. - Lagrangian Marker implemented, which allows for nonlinear elasticity and advanced mechanics of materials, finished with beta release in CTH. - Completed validation of mesoscale simulations of granular materials (i.e. sand) against split hopkinson pressure bar (SHPB) data in order to probe the physical mechanisms driving comminution in sand. - Provided a synthetic database for use in constitutive model development of granular materials; the data from the mesoscale simulations will be used to “fit” the constitutive model. - Implemented the Sandia Concrete Model (SANDCON) into a prototype version of CTH; the SANDCON model was developed to improve the ability to model the brittle behavior observed for high strength concrete with an unconfined compressive strength of 10-15 ksi. - Completed instrumented small scale penetration experiments into generic ultra-high performance concrete targets. <p>FY 2014 Plans:</p> <ul style="list-style-type: none"> - Complete baseline data collection on alloy steel 4340, titanium, and copper to determine the effect of geometric scale, shell thickness (strain rate), heat treatment / annealing states and defect density have on fragment size, homogeneous background strain and time to fragmentation. - Implement multi-field techniques for the description of explosive / metal interactions into validated computer codes (Pagosa+). - Complete oblique high explosive-driven shock hardening & damage microstructural quantification on Ta, Zr, and complete initial oblique HE-driven spall on U-6Nb. - Implement tensile plasticity model (TEPLA) into CartaBlanca and compare improved representation of plate impact response to Lagrange code representation. - Perform laser based shock experiments on first batch of 4340 steel powder composites to understand the phase transforming behavior of the composite architecture. - Conduct a parametric study on the laser-based shock experiments using ALE3D with microstructures generated through Particle Pack. 			

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C. Accomplishments/Planned Programs (\$ in Millions)		FY 2013	FY 2014	FY 2015
<ul style="list-style-type: none"> - Implement improvement to the multiphase model in ALE3D: enhanced detonics capability with particle movements guided by meso-scale simulations and validation experiments; this will benefit the design and optimization of multiphase munitions. - Complete cylinder-expansion and perforation-test simulations using Sierra Solid Mechanics and assess the capability of peridynamics for this class of problems. - Incorporate the second iteration of the multifield theory into CTH with advanced Lagrangian and Eulerian numerics. - Deliver improved constitutive sand model to the GEODYN material library. - Perform field scale penetrator tests into sand and update model. - Complete feasibility study of methods to measure or calculate the full projectile trajectory into complex targets. - Complete evaluation of coupled finite element / peridynamics algorithms in Sierra to improve simulations of ballistic events into complex targets. <p>FY 2015 Plans:</p> <ul style="list-style-type: none"> - Complete application of full field interferometry to dynamic defect studies at the nucleation scale of metals. - Investigate the jet formation melting of the eutectic Ag-Cu to probe the effects of allotropic and thermal phase transitions. - Complete oblique HE driven shock hardening and damage microstructural characterization on Zr & Cu-Pb alloy. - Develop modeling & simulation (M&S) tools that will enable optimization of engineering microstructures with multi-phase material fragmentation. - Implement improvements to the multiphase model in ALE3D. - Complete ARDEC test simulations using Sierra Solid Mechanics and assess the capability of peridynamics for DoD and DOE fragmentation problems. - Complete the incorporation of the multi-field theory into CTH; this will allow for multiple material interactions controlled through internal boundary conditions that are inherent to the numerical techniques. - Complete full scale simulations into sand and update model. - Issue experimental dynamic friction database containing characterizations of mechanical (shear, compression and tensile) interfaces. - Evaluate CTH- (Material Point Methods (MPM)-Multi-field capabilities for modeling penetration into complex targets. 				
Title: Munitions Lifecycle Technologies		0.783	1.143	1.114
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, subassemblies, and/or components. These objectives are achieved by: identifying aging mechanisms, quantifying the				

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Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 3: Advanced Technology Development (ATD)</i>	R-1 Program Element (Number/Name) PE 0603225D8Z <i>I Joint DOD/DOE Munitions Technology Development</i>
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<p>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 munitions lifecycle technologies focus area are:</p> <ul style="list-style-type: none"> - Predictive materials aging including: solder interconnect reliability, corrosion of electronics, and adhesive degradation. - Microelectromechanical systems (MEMS) reliability. - Military use of commercial off-the-shelf (COTS) electronics. - Complex system health assessment. <p>FY 2013 Accomplishments:</p> <ul style="list-style-type: none"> - Developed methodology for integrating unit-by-unit summaries into inputs for Environmental Science Condition-based Reliability (ESCR) process. - Tested statistical methodology for reliability predictions on 50 caliber round stockpile data. - Developed a method for measuring a packaged MEMS device seal strength. - Developed engineered aging structures with measurement and data acquisition capabilities that can be used to monitor corrosion in-situ in electronics. - Determined silicon on insulator (SOI) sidewall and high temperature degradation of MEMS silicon at high temperatures. <p>FY 2014 Plans:</p> <ul style="list-style-type: none"> - Validate bondpad corrosion model with modified plastic encapsulated microelectronics (PEM) parts. - Assess 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. <p>FY 2015 Plans:</p> <ul style="list-style-type: none"> - Develop a software program for general reliability resource allocation problems that will allow the user to understand the robustness of different choices. - Develop a methodology to combine the multiple failure mode models at the component level into an overall model, capable of estimating and predicting system reliability. - Build GUI for connector and bondpad corrosion models 			

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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<ul style="list-style-type: none"> - Assess the role of adhesive swelling due to water absorption on the stress state of the adhesive within the napkin-ring joint and on the stress at failure observed for the joint - Compile the dormant storage data both internal and external to the Hellfire missile case. - Validate the most promising tin whisker mitigation methods in actual operating environments. 			
Accomplishments/Planned Programs Subtotals	17.828	19.292	19.335

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

N/A

Remarks

E. Acquisition Strategy

N/A

F. Performance Metrics

1. Transition of technologies developed by the Joint Munitions Technology Program are tracked and documented. In FY 2013 there were more than 45 transitions to DoD.
2. Attendance and technical interactions at the biannual meetings of the eight 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.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 3: Advanced Technology Development (ATD)</i>	R-1 Program Element (Number/Name) PE 0603288D8Z / <i>Science and Technology (S&T) Analytic Assessments</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
Total Program Element	-	-	-	12.000	-	12.000	12.000	12.000	12.000	12.000	Continuing	Continuing
P328: <i>Science and Technology Analytic Assessments</i>	-	-	-	12.000	-	12.000	12.000	12.000	12.000	12.000	Continuing	Continuing

The FY 2015 OCO Request will be submitted at a later date.

Note

This is a new start Program/Program Element.

A. Mission Description and Budget Item Justification

This PE directly supports the call for developing innovative capabilities to meet the emerging threats in the areas of Anti-Access/Area Denial (A2/AD) environments, missiles, advanced Integrated Air Defense Systems (IADS), surface warfare, warfare from under the sea, counter-terrorism, and counter-Weapons of Mass Destructions (WMD), with cross-domain challenges in areas such as cyber, electronic warfare, and Intelligence, Surveillance, Reconnaissance (ISR) defense outlined in Sustaining U.S. Global Leadership: Priorities for the 21st Century Defense. The S&T analytic assessments performed under this budget item will include the following activities:

- Threat envelope assessments beyond intelligence community products for identifying gaps in U.S. capability for critical threats (Red teaming)
- Independent assessment of critical capability and technology development (Red teaming)
- Architecture development and evaluation to develop new U.S. capability (Blue teaming)
- Experimentation campaigns to demonstrate technologies enabling the Commons in preparation for rapidly transitioning the capability either directly to warfighters or to acquisition programs (Blue teaming)

B. Program Change Summary (\$ in Millions)	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015 Base</u>	<u>FY 2015 OCO</u>	<u>FY 2015 Total</u>
Previous President's Budget	-	-	-	-	-
Current President's Budget	-	-	12.000	-	12.000
Total Adjustments	-	-	12.000	-	12.000
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• DoD Priorities and Requirements	-	-	12.000	-	12.000

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Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> / BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 Program Element (Number/Name) PE 0603288D8Z / <i>Science and Technology (S&T) Analytic Assessments</i>
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Congressional Add Details (\$ in Millions, and Includes General Reductions)

Project: P328: *Science and Technology Analytic Assessments*

Congressional Add: *Science and Technology Analytic Assessments*

Congressional Add Subtotals for Project: P328

Congressional Add Totals for all Projects

	FY 2013	FY 2014
	-	-
	-	-
	-	-

Change Summary Explanation

FY 2015: This is a new start program in FY 2015, PE 0603288D8Z, Science and Technology Analytic Assessments. Program increase is to support the higher priorities of agency operations.

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603288D8Z / <i>Science and Technology (S&T) Analytic Assessments</i>	Project (Number/Name) P328 / <i>Science and Technology Analytic Assessments</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
P328: <i>Science and Technology Analytic Assessments</i>	-	-	-	12.000	-	12.000	12.000	12.000	12.000	12.000	Continuing	Continuing

The FY 2015 OCO Request will be submitted at a later date.

A. Mission Description and Budget Item Justification

This PE directly supports the call for developing innovative capabilities to meet the emerging threats in the areas of A2/AD environments, missiles, advanced IADS, surface warfare, warfare from under the sea, counter-terrorism, and counter-WMD, with cross-domain challenges in areas such as cyber, electronic warfare, and ISR defense outlined in Sustaining U.S. Global Leadership: Priorities for the 21st Century Defense. The S&T analytic assessments performed under this budget item will include the following activities:

- Threat envelope assessments beyond intelligence community products for identifying gaps in U.S. capability for critical threats (Red teaming)
- Independent assessment of critical capability and technology development (Red teaming)
- Architecture development and evaluation to develop new U.S. capability (Blue teaming)
- Experimentation campaigns to demonstrate technologies enabling the Commons in preparation for rapidly transitioning the capability either directly to warfighters or to acquisition programs (Blue teaming)

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

	FY 2013	FY 2014	FY 2015
Title: Science and Technology Analytic Assessments	-	-	12.000
<p>FY 2015 Plans:</p> <p>In order to accomplish a balanced program, the target ratios of studies, experiments and prototypes, and testing and integration is roughly 20%/40%/40%. The activities in FY 2015 deviate slightly from this balance as studies completed during FY 2014 (funded through other PEs) mature into experiments, prototypes, then subsequently testing and integration. Accordingly, the following activities are planned for FY 2015:</p> <ul style="list-style-type: none"> - Quick Reaction Analytic efforts responding to critical questions related to vulnerabilities to developing missiles, options for electronic warfare capability applied to missile defense, Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR), and undersea engagements. - Prototype development of an electronic attack capability for a high priority ballistic missile threat. - Prototype development of an electronic attack for a high priority surface naval engagement. - Analytic prototype development of a next generation electronic warfare capability for both air and surface based kill chains. - Development of analytic tools and analysis for electronic warfare in a complex environment. - Development of capability improvement prototype concept for resilient ISR. - Development of capability improvement architecture and prototype concept for assured tactical communications. 			

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Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603288D8Z / <i>Science and Technology (S&T) Analytic Assessments</i>	Project (Number/Name) P328 / <i>Science and Technology Analytic Assessments</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
- Experimental data collection applied to ISR capabilities. - Architecture assessment and element prototyping for countering situational awareness resources. - System and technology assessment for warfare from under the sea.			
Accomplishments/Planned Programs Subtotals	-	-	12.000

	FY 2013	FY 2014
Congressional Add: Science and Technology Analytic Assessments	-	-
FY 2013 Accomplishments: N/A		
FY 2014 Plans: N/A		
Congressional Adds Subtotals	-	-

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

N/A

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

- Critical gaps in U. S. capability are identified.
- Gaps in U. S. technology development are identified.
- New architectures and evaluation criteria for developing U. S. capability are identified.
- Experiments and prototypes demonstrate new technologies or new tactics, techniques and procedures for dealing with emerging threats.

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Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 3: Advanced Technology Development (ATD)</i>	R-1 Program Element (Number/Name) PE 0603289D8Z I <i>Advanced Innovative Analysis and Concepts</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
Total Program Element	-	-	-	60.000	-	60.000	60.000	60.000	60.000	60.000	Continuing	Continuing
P329: <i>Advanced Innovative Analysis and Concepts</i>	-	-	-	60.000	-	60.000	60.000	60.000	60.000	60.000	Continuing	Continuing

The FY 2015 OCO Request will be submitted at a later date.

Note

FY 2015 New Start Program.

A. Mission Description and Budget Item Justification

The Strategic Capabilities Office (SCO) conducts analysis in support of ongoing efforts to shape and counter emerging threats with special emphasis on innovative and architecture-level concepts, cross-Service and cross-Defense/Intelligence concepts, red-teaming, and, on a case-by-case basis, research and development projects to demonstrate concept. It will identify, analyze, and accelerate the development, demonstration, and transition of selected capabilities to shape and counter emerging threats and improve U.S. security posture. In a partnership endeavor across the Office of the Secretary of Defense (OSD), Joint Staff, Combatant Commands (COCOMs), the Services, the Intelligence Community (IC), and other U.S. Government agencies, the SCO combines capability innovation with concepts of operation and information management to develop novel, high-leverage approaches to addressing pressing national security challenges. The SCO conducts projects on accelerated timelines, at any classification or access level.

The Advanced Innovative Analysis and Concepts Program Element 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, upon request.

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Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 3: Advanced Technology Development (ATD)</i>	R-1 Program Element (Number/Name) PE 0603289D8Z / <i>Advanced Innovative Analysis and Concepts</i>
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B. Program Change Summary (\$ in Millions)	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015 Base</u>	<u>FY 2015 OCO</u>	<u>FY 2015 Total</u>
Previous President's Budget	-	-	-	-	-
Current President's Budget	-	-	60.000	-	60.000
Total Adjustments	-	-	60.000	-	60.000
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Internal Realignment of funds to support DoD Priorities and Requirements	-	-	60.000	-	60.000

Change Summary Explanation

FY 2015: Program increase is to support the higher priorities of agency operations.

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603289D8Z / <i>Advanced Innovative Analysis and Concepts</i>	Project (Number/Name) P329 / <i>Advanced Innovative Analysis and Concepts</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
P329: <i>Advanced Innovative Analysis and Concepts</i>	-	-	-	60.000	-	60.000	60.000	60.000	60.000	60.000	Continuing	Continuing

The FY 2015 OCO Request will be submitted at a later date.

Note

This is a FY 2015 New Start Program. The PE 0603289D8Z Advanced Innovative Analysis and Concepts was created to meet the new defense strategy. Funds were realigned to meet the Department's highest priorities for accelerating capabilities to address future threats.

A. Mission Description and Budget Item Justification

The Strategic Capabilities Office (SCO) conducts analysis in support of ongoing efforts to shape and counter emerging threats with special emphasis on innovative and architecture-level concepts, cross-Service and cross-Defense/Intelligence concepts, red-teaming, and, on a case-by-case basis, research and development projects to demonstrate concept. It will identify, analyze, and accelerate the development, demonstration, and transition of selected capabilities to shape and counter emerging threats and improve U.S. security posture. In a partnership endeavor across the Office of the Secretary of Defense (OSD), Joint Staff, Combatant Commands (COCOMs), the Services, the Intelligence Community (IC), and other U.S. Government agencies, the SCO combines capability innovation with concepts of operation and information management to develop novel, high-leverage approaches to addressing pressing national security challenges. The SCO conducts projects on accelerated timelines, at any classification or access level.

SCO-developed The Advanced Innovative Analysis and Concepts Program Element 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, upon request.

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

	FY 2013	FY 2014	FY 2015
Title: Advanced Innovative Analysis and Concepts	-	-	60.000
Description: The Disruptive Technology Demonstrations project is a technology initiative to address pre-conflict-centric capability needs and anticipatory concerns while maintaining low cost, small footprint operations. Technology demonstrations of innovative concepts and prototypes, backed by detailed performance and effects analysis, will focus on Secretary/Department Strategic Vectors, and Chairman's Gap Assessment of capability shortfalls. Concepts that provide capability improvements to Combatant Commanders will be identified for accelerated prototype demonstration and worked as joint projects with the Services to speed transition time for rapid fielding. The program objectives are to develop disruptive anticipatory products, processes and services suited for quick deployment to fulfill emerging pre-conflict requirements. Disruptive technology and process demonstrations will leverage low cost, commercial, and often low technology options that don't conform to the typical DoD acquisition business			

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<p>model but have the potential to disrupt and change warfighting capabilities by avoiding or creating technological surprise. Demonstrations will include protection capabilities in an era of increased theft of Defense-related Intellectual Property (IP).</p> <p><i>FY 2015 Plans:</i></p> <ul style="list-style-type: none"> • Design and conduct unconventional capabilities proof-of-concept and end-to-end demonstrations. • Develop and demonstrate platforms with novel payloads. • Explore new methodologies to characterize DoD networks while under stress. • Establish a Department-wide architecture for fusing and managing Operations Security and Acquisition Program Protection Plans (P3) into a single threat oriented Common Operating Picture (COP). 			
Accomplishments/Planned Programs Subtotals	-	-	60.000

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

N/A

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

Performance metrics are specific to each Advanced Innovative Analysis and Concepts 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.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 3: Advanced Technology Development (ATD)</i>	R-1 Program Element (Number/Name) PE 0603618D8Z I <i>Joint Electronic Advanced Technology</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
Total Program Element	-	6.108	8.996	10.965	-	10.965	11.969	11.998	12.098	12.693	Continuing	Continuing
P619: <i>Joint Electronic Advanced Technology</i>	-	6.108	8.996	10.965	-	10.965	11.969	11.998	12.098	12.693	Continuing	Continuing

The FY 2015 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 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 quicker 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 electronic 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 electronic components are proliferating and pose a threat both as military capability and as 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 established three pillars that will support the JEAT approach to innovation: 1) experimentation/demonstration, 2) advanced technology development/verification, 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.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 3: Advanced Technology Development (ATD)</i>	R-1 Program Element (Number/Name) PE 0603618D8Z I <i>Joint Electronic Advanced Technology</i>
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B. Program Change Summary (\$ in Millions)	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO	FY 2015 Total
Previous President's Budget	6.983	9.009	14.196	-	14.196
Current President's Budget	6.108	8.996	10.965	-	10.965
Total Adjustments	-0.875	-0.013	-3.231	-	-3.231
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-0.588	-			
• Congressional Rescissions	-0.009	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-0.170	-			
• SBIR/STTR Transfer	-0.105	-			
• FFRDC Adjustment	-	-0.013	-	-	-
• Strategic Efficiency Savings	-	-	-3.231	-	-3.231
• Other Program Adjustments	-0.003	-	-	-	-

Change Summary Explanation

The reduction is a strategic efficiency approach to reduce funding and staffing. As a result, we provide a better alignment of funding and provide support to a smaller military force.

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603618D8Z / <i>Joint Electronic Advanced Technology</i>	Project (Number/Name) P619 / <i>Joint Electronic Advanced Technology</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
P619: <i>Joint Electronic Advanced Technology</i>	-	6.108	8.996	10.965	-	10.965	11.969	11.998	12.098	12.693	Continuing	Continuing

The FY 2015 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 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 quicker 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 electronic 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 electronic 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; 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 established three pillars that will support the JEAT approach to innovation: 1) experimentation/demonstration, 2) advanced technology development/verification, 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/Demonstration:

Vigilant Hammer - A recurring multi-year, multi-agency, live, virtual, and constructive (LVC) venue of increasing complexity and difficulty which advances the state of the art for the detection, classification, geolocation and prosecution of electromagnetic signals of interest using DoD and national resources. The event will be modeled after the BLACK DART and Trident Spectre venues, and will include scripted and free play scenarios intended to give participants an opportunity to identify synergies and incrementally build capabilities to engage threats. Engagement (Hammer) payloads will be developed and vetted through distributed electronic effects development.

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense	Date: March 2014
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Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603618D8Z / <i>Joint Electronic Advanced Technology</i>	Project (Number/Name) P619 / <i>Joint Electronic Advanced Technology</i>
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Advanced Technology Development/Verification:

Distributed electronic effects development – A laboratory and developmental construct that will assess emerging Electronic Warfare (EW) technologies, allowing more effective coordination of sensor and electronic attack capabilities to deliver multi-point, collaborative EW services to warfighters. Distributed electronic effects development will seek to identify and match technologies together that have natural synergies and produce more capability than the sum of the individual capabilities.

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 began 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), Director EW and Countermeasures (EW&C) 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 2013	FY 2014	FY 2015
<p>Title: Integrated Situational Awareness and Countermeasures (FY 2013 effort)</p> <p>Description: DoD aircraft currently use a federated architecture of sensors and countermeasures 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 countermeasures that include off-board systems.</p> <p>FY 2013 Accomplishments: Demonstrated free space laser communications capability based upon magnetically actuated optics during Trident Spectre. This technology leveraged off of technology related to the Hostile Fire Detection / countermeasures with the magnetically actuated optics.</p> <p>Rotorcraft Aircraft Survivability Equipment (ASE) Experiment (RASE) – JEAT completed its objectives during a RASE experiment in FY 2013, conducting the third and final annual RASE event. Objectives for this event included geo-location of the point of origin</p>	1.875	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014		
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603618D8Z / <i>Joint Electronic Advanced Technology</i>	Project (Number/Name) P619 / <i>Joint Electronic Advanced Technology</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2013	FY 2014	FY 2015
of a hostile projectile, networking the point of origin information off-board and exploring the technical feasibility of delivering non-lethal countermeasures to the shooter.				
<p>Title: Low Cost/Near Term Counter Asymmetric Systems (FY 2013 effort)</p> <p>Description: Low cost, near term technologies solutions to asymmetric EW threats.</p> <p>FY 2013 Accomplishments: Initiated JEAT funded efforts to gather information necessary to develop countermeasures against an advanced category of missile seekers threatening all military aircraft.</p> <p>Based upon the Office of the Secretary of Defense Advanced Threat study, completed in FY 2010, JEAT continued to study possible solutions to emerging threats. JEAT evaluated techniques to rapidly develop countermeasures to advanced, fourth and fifth generation missile seekers. This effort supported signature measurements, modeling, and evaluation as well as laboratory trials and joint collaboration.</p>		0.146	-	-
<p>Title: Disruptive Technology Defeat and Utilization (FY 2013 effort)</p> <p>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. 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 2013 Accomplishments: JEAT sponsored a portion of the Trident Spectre demonstration for the final time before it transitions to SOCOM sponsorship in FY 2014. Trident Spectre 2013 included more than 100 experiments and produced technical solutions that transition directly and nearly immediately into the hands of warfighters and intelligence professionals.</p>		4.087	-	-
Title: Experimentation/Demonstration		-	2.376	4.143

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014	
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603618D8Z / <i>Joint Electronic Advanced Technology</i>	Project (Number/Name) P619 / <i>Joint Electronic Advanced Technology</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2013	FY 2014
<p>Description: FY 2015 efforts will leverage the methodologies of past, successful JEAT experimentation/demonstration efforts including the BLACK DART counter Unmanned Aircraft Systems (UAS) demonstration and the Rotorcraft Aircraft Survivability Equipment (ASE) Experiment (RASE) to establish a new venue to investigate ways of providing distributed delivery of electronic effects. This new venue called Vigilant Hammer will evaluate the ability to provide Electronic Warfare (EW) effects using a collaborative, distributed set of electronic systems which can provide a robust, adaptive and effective network of electronic attack delivery methods. Vigilant Hammer participation will emphasize UAS at first with future years adding surface and other delivery platforms.</p> <p>FY 2014 Plans: Distributed Electronic Effects Delivery (DEED) – Assess emerging EW technologies that allow more effective coordination of sensor and electronic attack capabilities to deliver multi-point, collaborative EW services to warfighters. DEED will issue a call to government organizations for proposals to bring new EW technology forward for laboratory evaluations that lead to eventual use in live, virtual, and constructive demonstrations. The goal is to identify and match technologies together that have natural synergies and produce more capability than the sum of the individual components.</p> <p>UAV Payload Demonstration and Experimentation – Avenues to either own or secure assured access to six UAVs to support Electronic Attack (EA) payload experimentation and testing will be pursued. UAVs will be used to support EA payload evaluation in a series of experiments/demonstrations executed over several short, discrete events.</p> <p>FY 2015 Plans: Vigilant Hammer – Formally known as DEED, Vigilant Hammer is a recurring multi-year, multi-agency, live, virtual, and constructive (LVC) venue of increasing complexity and difficulty which advances the state of the art for the detection, classification, geolocation and prosecution of electromagnetic signals of interest using DoD and national resources. The event will be modeled after the BLACK DART and Trident Spectre venues, and will include scripted and free play scenarios intended to give participants an opportunity to identify synergies and incrementally build capabilities to engage threats. Engagement (Hammer) payloads will be developed and vetted through a laboratory environment under the distributed electronic effects development effort. In this first year of JEAT sponsorship of Vigilant Hammer, demonstration activities will focus on potentially game changing tactical applications of several signal location techniques.</p>			
Title: Advanced Technology Development/Verification		-	5.000
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			4.799

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<p>systems vulnerability to degradation by electronic attack (both air and surface domain) and UAS electronic attack vulnerability assessments.</p> <p>FY 2014 Plans: Advanced Threat Countermeasures – Focuses on the development of innovative, low cost, near-term countermeasures solutions that can be rapidly fielded to counter new classes of advanced missile seekers. Builds on prior collaborative work with the Services (signature collections and analyses of countermeasures techniques) to begin the process of assessing potential countermeasure solutions. In FY 2014, we will apply unique signature management techniques to representative surfaces and evaluate their effectiveness with respect to reducing the effectiveness of advanced seekers.</p> <p>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. In FY 2014 JEAT will begin to adapt software configurable communications technology for use as part of a distributed, networked, EA capability that may be readily adapted for installation in a wide variety of host platforms. One technology will be brought to a Preliminary Design Review level of development.</p> <p>FY 2015 Plans: Advanced Technology Development/Verification – This effort will seek new and innovative EW technologies. These technologies will be created by combining two or more existing components to produce a new and unique capability that provides more warfighting value than the sum of its parts. Laboratory evaluation of these capabilities will seek to integrate and quantify the benefits of the new approaches, and will ultimately prepare products for evaluation in venues like Vigilant Hammer. Specific technologies of interest will be identified via a government proposal process conducted at the beginning of FY 2015.</p>			
<p>Title: Innovative Technology Exploration</p> <p>Description: This effort directly supports ASD(R&E), Director EW&C 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.</p> <p>FY 2014 Plans: Innovative Technology Exploration efforts will focus on creating an adjunct to the DEED venue which seeks 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 to quickly produce actionable, decision quality information that allows us to use the spectrum to our advantage. The objective of this effort is to encourage better</p>	-	1.620	2.023

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense	Date: March 2014
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Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603618D8Z / <i>Joint Electronic Advanced Technology</i>	Project (Number/Name) P619 / <i>Joint Electronic Advanced Technology</i>
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
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.			
<i>FY 2015 Plans:</i> Innovative Technology Exploration efforts in FY 2015 will focus on analysis of alternative courses of action related to packaging and deploying advanced EW technology, particularly that which is of interest in related development efforts. Evaluation of complex spectrum environments, system-to-system interactions, link budget analyses, size, weight and power analysis, and other relevant analytic studies will be accomplished under this effort.			
Accomplishments/Planned Programs Subtotals	6.108	8.996	10.965

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

N/A

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 3: Advanced Technology Development (ATD)</i>	R-1 Program Element (Number/Name) PE 0603648D8Z <i>I Joint Capability Technology Demonstration (JCTD)</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
Total Program Element	192.297	138.374	165.008	131.960	-	131.960	146.878	140.496	146.502	144.865	Continuing	Continuing
P648: <i>Joint Capability Technology Demonstration (JCTD)</i>	192.297	138.374	152.408	131.960	-	131.960	146.878	140.496	146.502	144.865	Continuing	Continuing
P264: <i>Disruptive Demonstrations</i>	0.000	-	12.600	-	-	-	-	-	-	-	Continuing	Continuing

The FY 2015 OCO Request will be submitted at a later date.

Note

Historically, the Joint Capability Technology Demonstration (JCTD) Program has worked primarily with the Combatant Commands (COCOMs) and Services to identify DoD priorities and accelerated the development and demonstration of technical solutions. However, with the end of current conflicts there has been a strategic shift to a more balanced approach that will continue to address COCOM needs in conjunction with initiating broader, longer-term JCTDs to address DoD's strategic initiatives to mitigate emergent threats, address affordability and interoperability of defense systems. The JCTD Program will begin to employ developmental and operational prototypes to address these longer-term DoD priorities.

The shift in the JCTD Program will also result in a shift in Program metrics. JCTDs supporting the DoD's strategic initiatives will tend to be longer and larger, with less focus on transition and partner funding. Overall, we envision initiating fewer yet more impactful JCTD projects.

In FY 2015, Disruptive Demonstrations (Project P264) funding will be transferred from Program Element (PE) 0603648D8Z (Joint Capability Technology Demonstration (JCTD)) to PE 0603289D8Z (Advanced Innovative Analysis & Concepts).

A. Mission Description and Budget Item Justification

The JCTD Program directly addresses DoD, multi-Service and COCOMs' priorities through partnering and cost sharing with solution providers and resource sponsors. The value and impact of the JCTD Program is to cost-effectively address the COCOMs' priorities and the Department's strategic initiatives to mitigate emergent threats, address affordability and interoperability of defense systems through developmental and operational prototyping. JCTDs provide key partnerships with the Department, Services, and other government agencies, select allies, and industry that allow for expedited development, deployment, and evaluation of capability solutions with the potential to close validated warfighting capability gaps. The JCTD Program typically demonstrates solutions in two - four years and has a transition rate to the warfighter greater than 80 percent. At least 57 JCTD projects supported Operation Enduring Freedom, 74 projects supported Operation Iraqi Freedom, and over 30 percent of JCTD projects involved partner nations. These JCTD partnerships also enable interdepartmental cooperation and joint capability development (e.g. Departments of Homeland Security, State, Transportation, National Aeronautics and Space Administration and Justice). In FY 2013, the JCTD Program successfully demonstrated and transitioned several key warfighter capabilities that address operational warfighting needs of the Department, providing affordable and sustainable solutions.

Key values demonstrated by the JCTD program are:

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense	Date: March 2014
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Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 3: Advanced Technology Development (ATD)</i>	R-1 Program Element (Number/Name) PE 0603648D8Z <i>I Joint Capability Technology Demonstration (JCTD)</i>
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- The JCTD Program has a long history of providing enduring capabilities. See “Section D. Acquisition Strategy” for more details on transition.
- The JCTD Program delivers capabilities rapidly and projects execute far quicker than the traditional DoD Planning, Programming, Budgeting, and Execution (PPBE) process. The result is that 74 JCTD 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 – if not for the JCTD program. Recent examples include:
 1. A robust “detect and track” capability of "dark" (i.e. non-emitting) maritime targets. This is accomplished through automated data fusion of an existing suite of sensors supporting the Maritime Domain Awareness (MDA) function. This capability was successfully transitioned into the Sealink Advanced Analysis system at Office of Naval Intelligence and is now used by multiple agencies to provide a MDA capability.
 2. An operational, internet-based, open-access, Arctic-focused, environmental research and decision-support system that enables local, regional, and international cooperation and coordination on long-term environmental planning and near-term actions in response to climatic and environmental changes occurring in the Arctic Region.
 3. A vastly improved capability for U.S., NATO, and Coalition naval forces boarding operations, data collection, and sharing of time-critical boarding and biometrics information during an international operational assessment in April 2013.
- The JCTD 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, and the Republic of Korea.
- The JCTD Program enables development and execution of interdepartmental cooperation projects, such as projects with the Department of Homeland Security, State, Transportation, and the National Aeronautics and Space Administration.
- The JCTD Program enables rapid response to new DoD priorities before Service PPBE cycles can respond. For example, the DoD has 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 the warfighter today.

MEASURABLE OUTCOMES:

- Capabilities delivered and technologies transitioned have been key metrics:
 1. JCTDs typically transition capability within 24 - 36 months with initial spiral products and deliverables in less than 24 months.
 2. The JCTD program has been achieving 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(s) of Record, 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 DoD users. In FY 2013, 12 of 12 completed JCTDs successfully transitioned.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 3: Advanced Technology Development (ATD)</i>	R-1 Program Element (Number/Name) PE 0603648D8Z <i>I Joint Capability Technology Demonstration (JCTD)</i>
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B. Program Change Summary (\$ in Millions)	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO	FY 2015 Total
Previous President's Budget	158.263	174.428	156.756	-	156.756
Current President's Budget	138.374	165.008	131.960	-	131.960
Total Adjustments	-19.889	-9.420	-24.796	-	-24.796
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-14.331	-9.400			
• Congressional Rescissions	-0.210	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-2.067	-			
• SBIR/STTR Transfer	-3.220	-			
• Transfer of Disruptive Demonstrations funding to PE 0603289D8Z	-	-	-21.000	-	-21.000
• Efficiency Savings	-	-	-3.796	-	-3.796
• Other Program Adjustments	-0.061	-	-	-	-
• FFRDC Adjustments	-	-0.020	-	-	-

Change Summary Explanation

FY 2015: Net decrease of \$21.000M due to transfer of Disruptive Demonstrations (P264) funding from PE 0603648D8Z to new PE 0603289D8Z Advanced Innovative Analysis and Concepts.

Net decrease of \$3.796M is the result of promoting efficient spending to support agency operations.

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400 / 3					R-1 Program Element (Number/Name) PE 0603648D8Z / <i>Joint Capability Technology Demonstration (JCTD)</i>				Project (Number/Name) P648 / <i>Joint Capability Technology Demonstration (JCTD)</i>			
COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
P648: <i>Joint Capability Technology Demonstration (JCTD)</i>	192.297	138.374	152.408	131.960	-	131.960	146.878	140.496	146.502	144.865	Continuing	Continuing

The FY 2015 OCO Request will be submitted at a later date.

Note

Historically, the Joint Capability Technology Demonstration (JCTD) Program has worked primarily with the Combatant Commands (COCOMs) and Services to identify DoD priorities and accelerated the development and demonstration of technical solutions. However, with the end of current conflicts there has been a strategic shift to a more balanced approach that will continue to address COCOM needs in conjunction with initiating broader, longer-term JCTDs to address DoD's strategic initiatives to mitigate emergent threats, address affordability and interoperability of defense systems. The JCTD Program will begin to employ developmental and operational prototypes to address these longer-term DoD priorities.

The shift in the JCTD Program will also result in a shift in Program metrics. JCTDs supporting the DoD's strategic initiatives will tend to be longer and larger, with less focus on transition and partner funding. Overall, we envision initiating fewer yet more impactful JCTD projects.

In FY 2015, funds will be transferred from the JCTD Program Element (PE) to establish a new PE 0603289D8Z (Advanced Innovative Analysis & Concepts).

A. Mission Description and Budget Item Justification

The JCTD Program directly addresses DoD, multi-Service and COCOMs' priorities through partnering and cost sharing with solution providers and resource sponsors. The value and impact of the JCTD program is to cost-effectively address the COCOMs' priorities and the Department's strategic initiatives to mitigate emergent threats, address affordability and interoperability of defense systems through developmental and operational prototyping. JCTDs provide key partnerships with the Department, Services, and other government agencies, select allies, and industry that allow for expedited development, deployment, and evaluation of capability solutions with the potential to close validated warfighting capability gaps. The JCTD Program typically demonstrates solutions in two - four years and has a transition rate to the warfighter greater than 80 percent. At least 57 JCTD projects supported Operation Enduring Freedom, 74 projects supported Operation Iraqi Freedom, and over 30 percent of JCTD projects involved partner nations. These JCTD partnerships also enable interdepartmental cooperation and joint capability development (e.g. Departments of Homeland Security, State, Transportation, National Aeronautics and Space Administration and Justice). In FY 2013, the JCTD Program successfully demonstrated and transitioned several key warfighter capabilities that address operational warfighting needs of the Department, providing affordable and sustainable solutions.

Key values demonstrated by the JCTD program are:

- The JCTD Program has a long history of providing enduring capabilities. See "Section D. Acquisition Strategy" for more details on transition.
- The JCTD Program delivers capabilities rapidly and projects execute far quicker than the traditional DoD Planning, Programming, Budgeting, and Execution (PPBE) process. The result is that 74 JCTD 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 – if not for the JCTD program. Recent examples include:

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1. A robust “detect and track” capability of "dark" (i.e. non-emitting) maritime targets. This is accomplished through automated data fusion of an existing suite of sensors supporting the Maritime Domain Awareness (MDA) function. This capability was successfully transitioned into the Sealink Advanced Analysis system at Office of Naval Intelligence and is now used by multiple agencies to provide a MDA capability.
2. An operational, internet-based, open-access, Arctic-focused, environmental research and decision-support system that enables local, regional, and international cooperation and coordination on long-term environmental planning and near-term actions in response to climatic and environmental changes occurring in the Arctic Region.
3. A vastly improved capability for U.S., NATO, and Coalition naval forces boarding operations, data collection, and sharing of time-critical boarding and biometrics information during an international operational assessment in April 2013.
 - The JCTD 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, and the Republic of Korea.
 - The JCTD Program enables development and execution of interdepartmental cooperation projects, such as projects with the Department of Homeland Security, State, Transportation, and the National Aeronautics and Space Administration.
 - The JCTD Program enables rapid response to new DoD priorities before Service PPBE cycles can respond. For example, the DoD has 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 the warfighter today.

MEASURABLE OUTCOMES:

- Capabilities delivered and technologies transitioned have been key metrics:
 1. JCTDs typically transition capability within 24 - 36 months with initial spiral products and deliverables in less than 24 months.
 2. The JCTD program has been achieving 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(s) of Record, 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 DoD users. In FY 2013, 12 of 12 completed JCTDs successfully transitioned.

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<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 2013 Accomplishments:</p>	1.150	-	-

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2013	FY 2014	FY 2015
Provided Extended Operational Use and transitioned MADSS to Defense Information Systems Agency. Completed the JCTD.				
Title: Tactical Edge Data Solutions (TEDS)		1.955	-	-
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 the North Atlantic Treaty Organization (NATO) and coalition partners who adopt UCore. Transition of the C2 Core extensions and Web services for 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.				
FY 2013 Accomplishments: 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.				
Title: Command and Control Gap Filler (C2GF)		3.910	0.690	-
Description: 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.				
FY 2013 Accomplishments: Completed Operational Utility Assessments at an US Northern Command exercises. Provided expanded disparate sensor integration and integrated Air and Missile Defense sensor netting. Provided sensor integration capability among DoD and Federal Aviation Administration (FAA) sensors in the Air Operations Center.				
FY 2014 Plans: Finalize JCTD Transition Documents and complete the JCTD.				
Title: National Technical Nuclear Forensics (NTNF)		4.083	1.600	-

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<p>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 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.</p> <p>FY 2013 Accomplishments: Completed and produced operational assessment of integrated yield determination software tool. Completed technical development and training with unmanned advanced ground sampling collection platform and particulate airborne collection system capabilities. Operationally demonstrated and exercised advanced ground sampling collection platform capabilities with line-of site communications systems. Operationally demonstrated and exercised particulate airborne collection system and particulate airborne collection system capabilities on Department of Homeland Security Customs and Boarder MQ-9 Predator unmanned aerial system/platform. Produced advanced ground sampling collection and particulate airborne collection system interim operational assessments. Conducted integration and technical testing of advanced ground sampling collection with non-line-of-sight (satellite) communications. Conducted integration, ground/technical testing and initial flight testing of particulate airborne collection system on manned C-130 aircraft.</p> <p>FY 2014 Plans: Continue integration, ground/technical testing and initial flight testing of particulate airborne collection system on manned C-130 aircraft. Complete the JCTD.</p>			
<p>Title: Dark Fusion (DF)</p> <p>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).</p> <p>FY 2013 Accomplishments: Conducted technical demonstration and final operational demonstration. Transitioned spiral capabilities to the Office of Naval Intelligence (ONI) program of record. Completed Military Utility Assessment. JCTD Completed.</p>	1.725	-	-
<p>Title: Combat Commander Direct Participation, Transition Enabling, and Special Programs</p> <p>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</p>	17.908	24.150	33.150

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<p>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 Service or Agency 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.</p> <p>FY 2013 Accomplishments: COCOM direct participation enabled COCOM staff participation in developing and executing JCTD projects, ensuring direct warfighter input, and proper focus of JCTD projects. JCTD transition enabling funds provided transition bridge funding for several projects, sustaining the efforts for a year until committed Program of Record (POR) funds were received. The Program Integration Office executed projects as approved and developed new projects that address the most critical COCOM and Department needs.</p> <p>FY 2014 Plans: 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.</p> <p>FY 2015 Plans: 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.</p>			
<p>Title: Enabling Technologies (ET)</p> <p>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.</p> <p>FY 2013 Accomplishments: Projects were selected based on the rapid assessment or maturing of emerging capabilities requested by COCOMs, inter-agency partners, and/or DoD leadership that were intended to mitigate technical risks prior to determining whether a JCTD project should be initiated. Selected efforts were small, focused, and executable in less than one year and required a concrete deliverable (prototype hardware and/or software, integrated subsystem, tech assessment report, etc.). Desired ET attributes include</p>	31.511	8.050	8.050

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2013	FY 2014	FY 2015
<p>technology maturation, leads to risk mitigation, partner contributions, and directly responded to COCOM needs. Additionally, in FY 2013, ETs included funding for "Disruptive Demonstrations" to support development/demonstration of time-sensitive capabilities that addressed Secretary/Department Strategic Vectors, and Chairman's Gap Assessment of capability shortfalls.</p> <p>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 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.</p> <p>FY 2015 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 a JCTD project should be initiated.</p>				
<p>Title: Smart Power Infrastructure Demonstration for Energy Reliability and Security (SPIDERS)</p> <p>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.</p> <p>FY 2013 Accomplishments: Conducted first circuit level technical and operational demonstration at Joint Base Pearl Harbor-Hickam (JBPHH), HI. Transitioned JBPHH micro-grid ownership to Navy Facilities Engineering Command, HI. Held first SPIDERS industry day to share results. Conducted second technical demonstration at Fort Carson Army Base in Colorado. Fort Carson adds more complexity to the micro-grid including electric vehicles.</p> <p>FY 2014 Plans:</p>		0.690	2.013	0.575

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2013	FY 2014	FY 2015
<p>Perform second operational demonstration at Fort Carson, CO. Transition micro-grid to Fort Carson tenants. Conduct second SPIDERS industry day to share results. Complete micro-grid design for third phase at Camp Smith, HI Begin construction to install micro-grid technologies at Camp Smith.</p> <p>FY 2015 Plans: Perform third and final technical and operational demonstration on the entire installation at Camp Smith, Hawaii to include an economic opportunity to save electrical costs at the base. Transition micro-grid to Camp Smith stakeholders. Complete 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 2013 Accomplishments: Hardened leave behind/transition ready VSE Secret Internet Protocol Router Network (SIPRNET) C2 capability at U.S. Pacific Command, U.S. Pacific Fleet/Joint Task Force 519, and functional components. Transitioned capability to U.S. Navy.</p> <p>FY 2014 Plans: Complete transition to Defense Information Systems Agency. Complete the JCTD.</p>		1.280	0.227	-
<p>Title: Collaborative Coalition Collection Environment (C3E)</p> <p>Description: C3E is a language independent intelligence data collection interface usable by US and Coalition forces with initial fielding to support the Operational Control (OPCON) transformation on the Korean Peninsula. C3E reduces data collection errors 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.</p> <p>FY 2013 Accomplishments:</p>		3.061	-	-

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2013	FY 2014	FY 2015
<p>Conducted final Technical Demonstration event. Conducted final Operational Demonstration event. Provided Joint/Military Utility Assessment. Finalized Concept of Operations (CONOPs). Provided United States Pacific Command with a leave behind capability to support current missions. Initiated transition through Technology Transfer Agreements (TTA). Completed the JCTD.</p> <p>Title: Joint Warfighting Integrated Network Operations (NetOps) (JWIN)</p> <p>Description: JWIN consolidates independent Situational Awareness (SA) data sources into an integrated network management framework for analysis, planning, and display. JWIN translates Service specific network information into a common actionable format. This approach enables employment of Network Operations tools to enhance the Joint Force Commander (JFC) or Joint Task Force (JTF) Commander's decision making process over tactical edge network resources. Key benefits include enhanced situational awareness to understand the impact of network events on critical operations and network distributed policy collaboration and management capabilities used to communicate authoritative direction over tactical network resources. Concept of Operations (CONOPS) is developed to ensure a Joint procedural construct is established, and proposed Joint Tactics, Techniques and Procedures (JTTPs) will be identified during initial prototype fielding at United States Pacific Command (USPACOM). Providing the JFC/JTF a consolidated network view affords them the ability to monitor and influence tactical NETOPS supporting associated missions to implement the commander's intent.</p> <p>FY 2013 Accomplishments: Conducted final Technical Demonstration and Operational Demonstration. Provided Joint/Military Utility Assessment. Finalized CONOPs and proposed JTTPs. Provided USPACOM with a leave behind capability. Completed the JCTD.</p>		1.431	-	-
<p>Title: Autonomous Technologies for Unmanned Aerial Systems (ATUAS)</p> <p>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.</p> <p>FY 2013 Accomplishments: Installed Electro-Optical/Infrared (EO/IR) Camera, Beyond Line of Sight (BLOS), 3D Light Detection and Ranging (LiDAR) and upgraded BLOS data link onto K-MAX (an unmanned helicopter). Integrated and tested autonomous en route re-programming (Dynamic Route Planner). Conducted Operational Utility Assessment focusing on autonomous delivery of multiple loads to multiple locations and retrograde operations. Transitioned the technologies to new Navy Autonomous Aerial Cargo Utility System</p>		4.888	-	-

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2013	FY 2014	FY 2015
(AACUS) Program of Record and Joint Cargo UAS Programs of Record. Determined the military utility of the technologies and procedures demonstrated. Completed the JCTD.				
<p>Title: Countermeasure Expendable with Replaceable Block Elements for Reactive Unmanned Systems Multi-Mission Jammer (CERBERUS)</p> <p>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.</p> <p>FY 2013 Accomplishments: Completed advanced radar jamming payload assembly and data link electronic attack payload assembly. Conducted technical demonstration of first nose cone assembly.</p> <p>FY 2014 Plans: Integrate final nose cone assemblies. Complete Operational Utility Assessment. Complete the JCTD.</p>		1.339	0.225	-
<p>Title: Regional Domain Awareness (RDA)</p> <p>Description: 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.</p> <p>FY 2013 Accomplishments: Finalized development and Information Exchange Package Documents (IEPD) for defined data sets. Completed RDA Certification and Accreditation. Conducted Technical Demonstration number two which demonstrated data sharing between U.S. Southern Command and the Joint Inter-Agency Task Force-South, U.S. Africa Command, and U.S. European Command. Finalized Management and Transition Plan and Technology Transition Agreement. Deployed RDA with U.S. Navy's 6th Fleet and initiated transition deployment to the Defense Information Systems Agency Multi-National Information Systems portfolio.</p> <p>FY 2014 Plans:</p>		2.346	0.817	-

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2013	FY 2014	FY 2015
Conduct Operational Demonstration and Operational Utility Assessment (OUA). Complete transition to Defense Information Systems Agency and U.S. Southern Command. Complete the JCTD.				
<p>Title: Three Dimensional Landing Zone (3D-LZ)</p> <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 2013 Accomplishments: Conducted technical demonstrations of sensor package in flight tests.</p> <p>FY 2014 Plans: Complete Operational Utility Assessment. Transition to Air Force Global Reach Program Office. Complete the JCTD.</p>		5.486	2.622	-
<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 2013 Accomplishments: Completed home-on-jam sensor assembly. Completed laboratory demonstrations. Completed Anti-jam sensor assemblies.</p> <p>FY 2014 Plans: Integrate sensor assemblies. Conduct technical demonstrations and final operational demonstration on integrated assemblies. Complete Operational Utility Assessment. Transition to Air Combat Program of Record. Complete the JCTD.</p>		5.031	2.130	-
<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 2013 Accomplishments:</p>		5.865	2.070	-

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2013	FY 2014	FY 2015
<p>Conducted technical demonstrations of the Joint Enterprise Terminal (JET) radio with Intra-Flight Data Link through a series of early flight tests and a limited operational utility assessment. Completed development and range test of a prototype dual-band, multi-beam antenna and dual band remote electronics.</p> <p>FY 2014 Plans: Complete operational utility demonstration of a complete flyable JETpack shipset. Initiate transition to the F-15C community.</p>				
<p>Title: Autonomous Mobility Appliqué System (AMAS)</p> <p>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.</p> <p>FY 2013 Accomplishments: Conducted Technical Demonstration One (TD-1) of the By-Wire and Autonomy kits installed on four Army and Marine tactical vehicles.</p> <p>FY 2014 Plans: Complete final development of autonomy system. Conduct second Technical Demonstration (TD-2) and Operational Demonstration (OD-1) culminating with final Military Utility Assessment. Residuals planned for transition to Army and Marine Corps users. AMAS JCTD technologies will spiral into existing Army Husky Mounted Detection System Program of Record and proposed Route Clearance and Integration System Program of Record. AMAS also plans to transition to the proposed new Army Semi-Autonomous Convoy Operations (SACO) Program of Record. Complete the JCTD.</p>		2.185	4.594	-
<p>Title: CELESTIAL REACH</p> <p>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 U.S. Special Operations Command the capability and capacity to communicate effectively using a robust C-17 portable hatch mounted satellite antenna (HMSA) during crisis in response to the Chairman, Joint Chiefs of Staff Concept of Operations Plan and other contingency requirements.</p> <p>FY 2013 Accomplishments:</p>		2.317	1.996	-

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2013	FY 2014	FY 2015
Completed Technical Demonstration #1, a static over-the-air test, and the preliminary HMSA fit-check on the C-17.				
<p>FY 2014 Plans: Complete the antenna-to-hatch integration. Conduct the in-flight Operational Demonstration; Joint Utility Assessment; and deliver HMSA flight certified prototype. Deliver the JCTD Final Report. Complete the JCTD.</p>				
<p>Title: Deep Seaweb (DSW)</p> <p>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.</p> <p>FY 2013 Accomplishments: Fabricated two sensor-node-systems, one mobile gateway, and prototype system server/clients. Updated concepts of employment and operations. Conducted a technical demonstration in deep water to validate undersea communication ranges and data-throughput. Evaluated procedures for deep water sensor node deployment, sensor node localization, and recovery. Conducted end-to-end system tests from bottom nodes through the communications gateway to demonstrate connectivity to operational center. Developed Technical Demonstration Two plan to include data processing/classification, and mobile gateway acoustic communications to satellite communications interface. Identified/funded Joint Test Assessment Group. Updated concepts of employment and operations.</p> <p>FY 2014 Plans: Procure remaining five bottom-nodes, one-gateway, and deployment hardware. Conduct Technical Demonstration two (two-node, one-gateway) in operationally representative environment to detect, classify (sensor node processing acoustic signature to yield type/course/speed/etc.), pass to mobile gateway for forwarding to shore facility via email to evaluate integration with operations center workflow. Complete manufacture of seven sensor-node-systems and two mobile gateways and server. Conduct Operational Utility Assessment, operational demonstration and JCTD Final Report. Transition operations to Joint Inter-Agency Task Force, South. Complete the JCTD.</p>		1.760	3.220	-
<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>		3.324	3.482	-

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2013	FY 2014
<p><i>FY 2013 Accomplishments:</i> Identified and coordinated resolution of relevant policy and privacy issues. Integrated installation access control systems with the Defense Enrollment Eligibility Reporting System, DoD local population database, Interoperability Layer Service, and Continuous Information Management Engine. Demonstrated the full architecture integrating National Crime Information Center.</p> <p><i>FY 2014 Plans:</i> Conduct technical and operational demonstrations of the architecture with the added input from the Terrorist Screening Database, Service Criminal Justice System databases, and non-DoD credential revocation lists. 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>			
<p><i>Title:</i> Foliage Penetrating Airborne Light Detection and Ranging (LIDAR) for Reconnaissance Imaging (FALCON-I)</p> <p><i>Description:</i> 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><i>FY 2013 Accomplishments:</i> Completed FALCON-I system integration and testing. Performed 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. Developed Concept of Operations and Tactics, Techniques and Procedures, and an initial polarimetric LIDAR assessment.</p> <p><i>FY 2014 Plans:</i> Complete Operational Testing, Demonstration, and Joint Military Utility Assessment. Complete the JCTD.</p>		3.679	3.393
<p><i>Title:</i> Information Volume & Velocity (IV2)</p> <p><i>Description:</i> 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.</p> <p><i>FY 2013 Accomplishments:</i></p>		1.438	0.575

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2013	FY 2014	FY 2015
<p>Established a Control Board to oversee the protection of personal information in response to the Office of General Counsel's concerns over personally identifiable information (PII). Developed and executed a prototype user interface and web-based application. Conducted an operational demonstration using the Kenyan elections as a test case, examining multiple data types, integrating with other analytical tools, and gathering user feedback for improvement of the tool. Developed the architectural documentation to support transition of the capability. Finalized the operations requirements document and placed the developer on contract.</p> <p>FY 2014 Plans: Develop a final application for use by Combatant Commands including lessons learned from the IV2 prototype application. Test application for acceptance of multiple data types and integration. Test the system in multiple operational scenarios, and refine the system based on operator feedback. Test for scalability and begin the Certification and Accreditation process. Transition of the IV2 capability to the Defense Information Systems Agency.</p>				
<p>Title: Kestrel Eye</p> <p>Description: Kestrel Eye is a very small, 25 kilogram class satellite that provides "good enough" 1.5 meter resolution and visible imagery. Imagery tasking and delivery is controlled directly by the Combatant Commander to ensure sufficient timelines for near real-time situational awareness and decision-making in the field. The cost of less than \$1.500 million enables an affordable constellation for persistence, near continuous converge between 45 degrees North/South. The primary outputs and efficiencies are: (1) Finish one Block one "proof of concept" design, launch Block one Kestrel Eye and conduct on-orbit evaluation and upgrade Block two design with propulsion system and improved telescope pointing using a star tracker. The JCTD will build and launch three Block two design Kestrel Eye satellites.</p> <p>FY 2013 Accomplishments: Launched one Block one design. Completed construction of three Block two design Kestrel Eyes, adding propulsion for station-keeping and a star tracker for increasing pointing accuracy.</p> <p>FY 2014 Plans: Depending on launch opportunities, launch three Block two design Kestrel Eyes and conduct operational demonstrations and assessments. Initiate transition to the U.S. Army Program Executive Office, Missiles & Space. Complete the JCTD.</p>		4.221	3.229	-
<p>Title: Kinetic/Non-kinetic Integrated Force Effects (KNIFE)</p> <p>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</p>		5.670	2.266	-

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2013	FY 2014	FY 2015
<p>comprised of cyber, electronic warfare, kinetic and space effects. The primary metric is more robust, accurate and timely targeting management during planning and execution.</p> <p>FY 2013 Accomplishments: Dynamically updated and shared 4 dimensional views of effects. Provided machine to machine consumption of cyber, electronic warfare, space, and kinetic data. Produced composite effects and collection objectives. Conducted Operational Demonstration.</p> <p>FY 2014 Plans: Publish sequenced tasks for in-line approval by decision makers. Address Diplomatic, Informational and Economic effects analysis and incorporate into KNIFE. 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 non government 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 2013 Accomplishments: Developed and implemented five applications addressing differing classes of functionality. Integrated software solutions to the Geospatial software platform. Developed open back-end services to include the incorporation and managing of geospatial updates from various sources. Developed four location based applications that have a direct connection to data storage and Support Service Oriented Software and Cloud implementation with scalability based upon the virtual Machine Template. Developed “end to end” Geographical Information System service. Performed developmental testing and operational assessments.</p> <p>FY 2014 Plans: Perform final operational utility demonstration and complete independent assessor report. Transition ROGUE tools and standards across the community of interest. Complete the JCTD.</p>		2.645	1.967	-
<p>Title: Space & Missile Defense Command (SMDC) Nanosatellite Program (SNaP-3)</p> <p>Description: SNaP-3 provides low orbit tactically integrated beyond-line-of-sight communications nanosatellites for the U.S. as well as for partner nations' radios and unattended ground sensors. It provides user service on demand with minimal training</p>		1.494	0.317	-

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2013	FY 2014	FY 2015
<p>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.</p> <p>FY 2013 Accomplishments: Completed the building and testing of three nanosatellites and associated ground hardware.</p> <p>FY 2014 Plans: Launch three nanosatellite. Conduct an operational demonstration and utility assessment. Initiate transition.</p>				
<p>Title: Soldier-Warfighter Operationally Responsive Deployer for Space (SWORDS)</p> <p>Description: SWORDS provides a dedicated, low cost, rapid and predictable launch of small satellites to precise, optimum orbits. It provides the 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.</p> <p>FY 2013 Accomplishments: Prime contractor incorporated changes in the propulsion engine and the first stage separation design as a result of analyses provided by National Aeronautics and Space Administration (NASA). Completed conceptual design of launch vehicle, ground support equipment, Concept of Operations, and procured materials for fabrication of engines and launch vehicle first stage. Completed wind tunnel testing of launch vehicle. Completed avionics hardware design and began procurement of components. Constructed and test fired first stage engine in ground test stand. Designed and began fabrication of full scale first stage ground test article.</p> <p>FY 2014 Plans: Conduct sub-orbital flight test. Conduct orbital flight test. Initiate transition through the US Army Program Executive Office Missiles & Space (PEOMS).</p>		4.946	3.782	-
<p>Title: Unified Command and Control (UC2)</p> <p>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.</p> <p>FY 2013 Accomplishments:</p>		2.444	3.306	-

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2013	FY 2014	FY 2015
<p>Installed and tested the Common Mission Network Transport (CMNT) and Agile Virtual Enclave (AVE) at three U.S. Pacific Component Commanders for data exchange with Defense Information Systems Agency and Services on DoD networks. Conducted technical demonstrations</p> <p>FY 2014 Plans: Install and test CMNT and AVE at three additional sites. Conduct the Operational Demonstration and Joint Utility Assessment. Transition to Defense Information Systems Agency and U.S. Navy for sustainment. Complete the JCTD.</p>				
<p>Title: Vector</p> <p>Description: Vector will demonstrate two cube satellites for an on-orbit Technical Demonstration (TD), Operational Demonstration (OD) and Operational Utility Assessment (OUA). The system will continue to be used for operations until reaching their respective end-of-life. Additional details are classified.</p> <p>FY 2013 Accomplishments: Completed Information Assurance assessment; final end-to-end testing; flight readiness review and pre-ship review. Shipped two Cube Satellites to Kirtland Air Force Base, New Mexico for launch vehicle integration.</p> <p>FY 2014 Plans: Launch two Cube Satellites, complete on-orbit checkout and conduct TD and OD. Conduct Operational Utility Assessment. Complete Final Report and finalize Joint Capabilities Integration and Development System documentation for transition. Complete the JCTD.</p>		1.648	1.060	-
<p>Title: Minor Resource Projects</p> <p>Description: Provide resources for approved JCTD projects requiring less than one million dollars.</p> <p>FY 2013 Accomplishments: Completed and transitioned, Arctic Collaborative Environment (ACE), a web-based, open-source military, civilian system that integrates disparate data focused on arctic sea ice flow and temperature to observe climate adjustments and military applicability. Completed Cooperative Security & Engagement (CSE), a regionally based interagency adaptive planning, decision-making and assessment framework for cooperative security operations with external partners. Completed Fixed Wing Advanced Precision Kill Weapon System (FW APKWS), a precision 2.75 rocket for Low-collateral-damage. Completed Hardened Installation Protection for Persistent Operation (HIPPO), a scalable, resilient-structured solution to enhance continuity of operations in the face of major disruptions from war. Completed Maritime Predator (MP), an unmanned underwater delivery system and other classified</p>		3.025	2.875	2.875

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2013	FY 2014	FY 2015
capabilities. Completed Preferred Force Generation (PFG), a planning capability to automatically generate preferred force lists with greater speed and fidelity to support planning processes and assessments. FY 2014 Plans: Continue to provide resources for approved projects requiring less than one million dollars. FY 2015 Plans: Continue to provide resources for approved projects requiring less than one million dollars.				
Title: SPICE 202 (CLASSIFIED) Description: Details are Classified. FY 2013 Accomplishments: Details are Classified. FY 2014 Plans: Details are Classified.		2.444	0.431	-
Title: Advanced Weapons Enhanced by Submarine Unmanned Aerial System against Mobile targets (AWESUM) Description: AWESUM will deliver an undersea launched Unmanned Aerial System (UAS), optimized for deployment through existing submarine three inch countermeasure launcher to perform targeting, Intelligence Surveillance and Reconnaissance (ISR), and the potential for limited attack capabilities. This effort will specifically address requirements from an Anti-Access Area Denial (A2AD) perspective and the unique challenges to US Forces. It will enhance the ability to find, fix, target, and track maritime targets to support standoff weapon engagements, provide targeting for long range torpedo engagements, enhance ISR and Battle Damage Assessment capabilities and provide Special Operations support functions. FY 2013 Accomplishments: Tested a redesigned Switchblade Unmanned Aerial Vehicle (UAV) from submarine three inch launcher. Improved submarine and UAS antenna. Integrated a multiple UAV control to provide a targeting solution over a tactical data link during an at-sea demonstration event in a Tactical Development Exercise. FY 2014 Plans: Continue shipboard integration activities, increase UAV endurance, encrypt UAV communications, and increase inert lethality upgrades. FY 2015 Plans:		0.575	1.926	2.812

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2013	FY 2014	FY 2015
Conduct Operational Demonstration during an at-sea United States Fleet Forces Experimentation event. Transition AWESUM capabilities into a Program of Record. Complete the JCTD.				
Title: FY 2014 Combatant Commands' (COCOM) Priorities		-	41.812	40.250
<p>Description: FY 2014 will be a transition year for the JCTD program as it shifts its focus from supporting the current fight to developing technologies that will support future threats and capability shortfalls. As a result, the FY 2014 JCTD Program will primarily work with the Combatant Commands (COCOMs) and Services to develop JCTD projects to address Defense strategic initiatives that can be identified from the Chairman's Risk Assessment or multi-service technology challenges in response to DoD priorities. In addition, the JCTD Program will work with the acquisition community, via the AT&L Defense Acquisition Board process, to identify acquisition challenges facing the Department that can be addressed by the JCTD Program through the initiation of development and operational prototypes. Operational prototypes will focus in areas of concepts for space defense, solid state technologies for maritime defense, advancements in counter electronic systems and space capability without a space layer (precision navigation and timing, communications, battle-space awareness, international and interagency collaboration (Australian, Canadian, Department of Homeland security)).</p> <p>FY 2014 Plans: Fund the first year of FY 2014 projects selected by Senior Department Leadership or COCOM Commanders to solve COCOM priority shortfalls.</p> <p>FY 2015 Plans: Fund the second year of the FY 2014 projects that are scheduled to proceed to a second year.</p>				
Title: FY 2015 Combatant Commands (COCOM) Priorities		-	-	30.223
<p>Description: In FY 2015, the JCTD Program will seek a balance between projects that address the broader strategic DoD priorities that support future threats and capability shortfalls, as well as traditional JCTD projects that address the Combatant Commands' (COCOMs') capability gaps and their most pressing needs not being addressed by the Service programs. These COCOM-focused projects will be identified through the traditional candidate identification and selection process. In addition, the JCTD Program will continue to develop JCTD projects to address broader Defense strategic initiatives in areas such as anti-access / anti-denial, defense support to civil authorities, and counter weapons of mass destruction. Operational prototypes will focus in areas of concepts for space defense, solid state technologies for maritime defense, advancements in counter electronic systems and space capability without a space layer (precision navigation and timing, communications, battle-space awareness, international and interagency collaboration (Australian, Canadian, Department of Homeland security)).</p> <p>FY 2015 Plans:</p>				

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2013	FY 2014	FY 2015
Fund the first year of the FY 2015 projects that are selected by Senior Leadership. Complete JCTD projects started in FY 2013 and FY 2014. Work closely with the Joint Staff and the various Combatant Commanders to develop technology to shape future engagements.				
<p>Title: Body Wearable Antenna (BWA)</p> <p>Description: BWA will demonstrate a meta-material based antenna design to replace multiple conventional whip antennas worn by all service radio operators. BWA offers greater performance and concealment than whip antennas, increasing the capability and survivability of the Warfighter. The prototype antenna will be integrated onto the load-bearing belt with mission necessary enhanced features identified and addressed. BWA also predicts greater performance and signal strength at several different positions versus current whip antennas, including the limiting prone position. BWA will replace four distinct whip antennas, totaling over five pounds, necessary to cover the same communication band. BWA weighs three lbs creating a lighter load and increasing operator maneuverability by dispersing weight around the waist. Radiation patterns for BWA will demonstrate much lower radiation levels to the head compared to legacy antennas.</p> <p>FY 2013 Accomplishments: Initiated planning and concepts of operations development.</p> <p>FY 2014 Plans: Complete subsystem development: systems requirement definitions; integrate with communications systems; preliminary verification testing; and, operational utility assessment. Complete the JCTD.</p>		0.100	1.610	-
<p>Title: Coalition Tactical Awareness and Response (CTAR)</p> <p>Description: CTAR provides the capability to maintain adequate awareness of the Theater maritime domain and austere operating environments by sharing information to insure maritime security is maintained in national systems architecture. CTAR's wide area Synthetic Aperture Radar (SAR) field of view will be used to cue commercial Electro-Optical imaging satellites for higher resolution collection against vessels of interest.</p> <p>FY 2013 Accomplishments: Procured a commercial 2.4 meter X-band antenna and integrated it into the Mobile Ground Terminal (MGT) system with signal downlink processor, universal image processor, ship detection software application, communications suite and transportable shelter.</p> <p>FY 2014 Plans:</p>		0.100	5.003	1.908

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2013	FY 2014	FY 2015
<p>Conduct functional demonstration of MGT receiving/processing SAR data at Department of Homeland Security's (DHS) Customs and Border Control (CBP) Air Maritime Operations Center (AMOC) in Riverside Ca, and during U.S. Africa Command (AFRICOM) exercise in West Africa.</p> <p>FY 2015 Plans: Operate CTAR system at the Naval Research Laboratory to demonstrate support of other DoD agency functional capability requirements. Conduct CTAR JCTD operational demo in AFRICOM theater.</p>				
<p>Title: Dense Pack Access Retrieval and Transit (DPART)</p> <p>Description: DPART will demonstrate a suite of remotely controlled lithium-ion (Li-Ion) and Hybrid (Diesel/Li-Ion) powered material handling equipment (MHE) to selectively access wheeled/tracked vehicles and containers and omni-directionally move them throughout confined spaces (including ships underway, hangars, and land based facilities) and ready them for movement to shore.</p> <p>FY 2013 Accomplishments: Integrated wheeled propulsion to the existing flat surface Container Lift and Maneuver System (C-LMS). Began work on the detailed design of the Autonomous Naval Transport, Large Wheeled Vehicle (ANT-LWV) and the production of the common remote control for the system.</p> <p>FY 2014 Plans: Complete the wheeled propulsion integration effort to the Container Lift and Maneuver System (C-LMS) and test the capability of the system to transport loads up and down internal ship ramps. DPART will also conclude the design of the ANT-LWV and begin the development of the full scale prototype of that system. Pursue certification of the required Li-ion battery system for shipboard use. Complete final in-house testing of the battery system and the common remote control. Conduct Technical Demonstration One (TD-1).</p> <p>FY 2015 Plans: Complete the development and construction of the full scale prototype of the ANT-LWV, and conduct its Operational Demonstration and Operational Utility Assessment on all systems.</p>		0.100	2.632	2.313
<p>Title: Joint Biological Agent Decontamination System (JBADS)</p> <p>Description: JBADS will provide biological decontamination by employing an innovative closed-loop, hot /humid forced air technique to significantly decontaminate the exterior/interior of a fully encapsulated aircraft. The system provides a significant leap forward from the currently approved use of hot, soapy water without the corrosive properties inherent with commonly used biological disinfectants used for rolling stock but not permitted on aircraft. This fully air-transportable green technique is</p>		0.100	2.956	0.575

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2013	FY 2014	FY 2015
<p>designed for aircraft, however, the building block approach of the Thermal Decontamination Containment System allows for infinite configurations to encapsulate contaminated equipment in the future</p> <p>FY 2013 Accomplishments: Completed one of two Biological Thermal Units that provided the hot/humid environment required for biological decontamination and wrote the contract for the second Biological Thermal Unit. Began the design and construction phase of a stand-alone rigid Thermal Decontamination Containment System that will fully encapsulate a C-130 test aircraft.</p> <p>FY 2014 Plans: Complete and integrate the second Biological Thermal Unit with the Thermal Decontamination Containment System and successfully demonstrate the capability to provide the environment needed to decontaminate an aircraft. Conduct the operational assessment; publish Joint/Interagency Concept of Operations, Tactics, Techniques and Procedures, and doctrine change recommendations. Complete the JCTD.</p> <p>FY 2015 Plans: Maintain a residual operational capability for biological decontamination that is also easily adaptable for rolling stock and other aircraft sizes.</p>				
<p>Title: Joint Operational Long Term Evolution Deployable Tactical Cellular System (JOLTED TACTICS)</p> <p>Description: JOLTED TACTICS will demonstrate a joint architecture for an interoperable, lightweight, portable, ground mobile, airborne, and/or maritime communications-on-demand packages that allow users to quickly establish secure (Sensitive But Unclassified (SBU) and Suite-B for classified) wireless Long Term Evolution (LTE) Line-of-Sight and Beyond-Line-Of-Sight networks anytime, anywhere with minimal training and equipment.</p> <p>FY 2013 Accomplishments: Initiated the JCTD and completed the Implementation Directive. Conducted Technical Demonstration number one with an integrated SBU capability.</p> <p>FY 2014 Plans: Conduct Operational Demonstration number one with an integrated SBU capability and complete the Limited Operational Utility Assessment. Conduct Technical Demonstration number two and Operational Demonstration number two both with integrated Suite-B for classified capability.</p> <p>FY 2015 Plans:</p>		0.100	2.415	1.495

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2013	FY 2014	FY 2015
Complete Information Assurance Certification; complete the Operational Utility Assessment; deliver the JCTD Final Report, complete the JCTD.				
<p>Title: Mobility</p> <p>Description: Mobility allows the use of Commercial of the Shelf (COTS) mobile devices to wirelessly access multiple security domains using security enhanced thin-client applications and thick-client solutions in sanctuary and expeditionary environments. Mobility will provide the ability for classified and unclassified access on a single hand-held device with the use of National Security Agency commercial cryptography. Access will be provided to mobile domains through various communications transports in enterprise and expeditionary environments.</p> <p>FY 2013 Accomplishments: Completed JCTD Implementation Directive, Management Plan, and Technical Transition Agreement.</p> <p>FY 2014 Plans: Integrate key technologies in unclassified networks. Obtain security approval to operate on unclassified Network. Conduct Operational Demonstration number one.</p> <p>FY 2015 Plans: Integrate key technologies on classified networks. Obtain security approval to operate on Classified networks. Conduct Operational Demonstration Conduct operational user assessment, provide operational utility assessment, determine military utility and conduct close-out.</p>		0.100	2.099	1.610
<p>Title: Multi Domain Simultaneous Access Virtual Environment (MD-SAVE)</p> <p>Description: MD-SAVE reduces overall networking infrastructure and allows a single workstation to access multiple domains utilizing one wire, while maintaining security separation. This solution will reduce the total cost of ownership of the networks. MD-SAVE leverages technology to enable the collapse of multi-tower workstations into one box. This approach is hardware-based and a prototype exists. Current design will allow for the collapse of up to 16 domains, ensuring physical separation and no cross-domain information flow. The result is a reduced multi-domain workspace that is certified and accredited saving space, weight and power at U.S. Central Command (USCENTCOM) Headquarters.</p> <p>FY 2013 Accomplishments: Conducted a technical demonstration at USCENTCOM demonstrating a Technology Readiness Level seven.</p> <p>FY 2014 Plans:</p>		0.100	3.968	-

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense	Date: March 2014
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Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603648D8Z / <i>Joint Capability Technology Demonstration (JCTD)</i>	Project (Number/Name) P648 / <i>Joint Capability Technology Demonstration (JCTD)</i>
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
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Conduct a Limited Utility Assessment (LUA) with multiple MD-SAVE Desktop Workstations to test at multiple levels. Complete certification and accreditation (Secret and Below Information and Top Secret and Below Information), and complete an operational demonstration to an enterprise network.			
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<p>Title: Signal Intelligence Derived Electromagnetic Spectrum (SDEST)</p> <p>Description: SDEST will leverage National Security Agency (NSA) modernization initiatives to deliver ElectroMagnetic Spectrum (EMS) Target Folders (TF) providing a comprehensive view of the environment. It will compile relevant EMS Object Models (OM) supporting Kinetic/Non-Kinetic targeting, utilizing data from across the Global Cryptologic Enterprise. SDEST uses Cloud, Public Key Infrastructure (PKI), Smart Data Tagging and Cyber-Pilot technologies to enable timely and legal extraction and dissemination. It will deliver OMs via Electromagnetic Space Analysis Center (E-Space) managed Secret Internet Protocol Router Network and Joint Worldwide Intelligence Communications System widget query capabilities, and develop subscription services tailored to user-specified criteria.</p> <p>FY 2013 Accomplishments: Initiated planning and concepts of operations development.</p> <p>FY 2014 Plans: Define information flow and data environment Identify information needs for desired OM/TFs. Develop OM/TF delivery and display capabilities (details are classified).</p> <p>FY 2015 Plans: Incorporate OM/TFs utilizing Cloud-based data processing and correlation, Smart Data Tagging and PKI access, widget/app-based query/subscription mechanism and thin client display/analysis tools. Complete the JCTD.</p>	0.100	4.600	4.514
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<p>Title: Tactical Infrastructure Enterprise Services (TIES)</p> <p>Description: TIES provides capabilities to perform web services in the Denied- Disconnected Intermittent Limited (D-DIL) environment and the enterprise needs capabilities to pass data to the Tactical Edge (TE). TIES enable this information sharing environment by delivering reference implementations for federated services: Collaboration (chat), Security Framework (Identity Management)); optimize D-DIL information exchange to US Army (USA), US Air Force (USAF), US Navy (USN), US Marine Corps (USMC) and Special Operations Command and Control (SOF C2) systems for exchanging data based compression, prioritization, synchronization, replication, and aggregation in the D-DIL environment. TIES will transition these TE secured reference implementations to the Services tactical C2 systems for the D-DIL environment.</p> <p>FY 2013 Accomplishments:</p>	0.100	2.300	1.610
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Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603648D8Z / <i>Joint Capability Technology Demonstration (JCTD)</i>	Project (Number/Name) P648 / <i>Joint Capability Technology Demonstration (JCTD)</i>
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
Completed JCTD Implementation Directive Management Plan and Technical Transition Agreement.			
<i>FY 2014 Plans:</i> Provide TE implementations for USA, USAF, USN, USMC C2 systems to exchange data in D-DIL environment. Conduct Operational Demonstration number one.			
<i>FY 2015 Plans:</i> Provide TE secured implementations. Provide TE implementation for Unclassified Information Sharing Service (UISS) to exchange information with USN ships in the D-DIL Operational. Conduct Operational Demonstration number two. Conduct operational user assessment. Complete the JCTD.			
Accomplishments/Planned Programs Subtotals	138.374	152.408	131.960

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:
- 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 2015:
- Project Selection Focus
 - Spiral Technologies to Fielded Capabilities
 - Time to Final Demonstration
 - 70 Percent Transition Rate

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603648D8Z / <i>Joint Capability Technology Demonstration (JCTD)</i>	Project (Number/Name) P648 / <i>Joint Capability Technology Demonstration (JCTD)</i>
<ul style="list-style-type: none"> - 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) 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> <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. In FY 2013, 12 of 12 completions successfully transitioned.</p>		

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense										Date: March 2014		
Appropriation/Budget Activity 0400 / 3					R-1 Program Element (Number/Name) PE 0603648D8Z / <i>Joint Capability Technology Demonstration (JCTD)</i>				Project (Number/Name) P264 / <i>Disruptive Demonstrations</i>			
COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
P264: <i>Disruptive Demonstrations</i>	-	-	12.600	-	-	-	-	-	-	-	Continuing	Continuing

The FY 2015 OCO Request will be submitted at a later date.

Note

The "Disruptive Demonstrations" Program code 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.

In FY 2015, funds will be transferred from the JCTD Program Element to PE 0603289D8Z (Advanced Innovative Analysis & Concepts).

A. Mission Description and Budget Item Justification

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

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

	FY 2013	FY 2014	FY 2015
Title: Disruptive Demonstrations	-	12.600	-
<p>Description: In FY 2014, the department will allocate a portion of the Joint Capability Technology Demonstration 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. As part of The Strategic Capabilities Office development efforts, analysis and demonstration of diagnostics for Department of Defense networks; cognitive Intelligence, Surveillance, and Reconnaissance tools to enhance Theater Security Cooperation Plan activities; Command and Control tools for pre- and post-conflict periods; and enhanced Operations Security procedures to protect critical acquisition and operational data will be developed to meet Combatant Command urgent operational requirements. Due to nature of this project, specific descriptions and detailed plans are available at higher classification levels.</p> <p>FY 2014 Plans: As part of Strategic Capabilities Office development efforts, analysis, prototyping, and subsystem testing of game-changing uses of existing technologies will be conducted to meet a critical Combatant Commander requirement. These efforts include:</p> <ul style="list-style-type: none"> - Completing Preliminary Design Reviews of four prototype designs, - Completing approximately 100 subsystem data collections to develop high-fidelity models, - Completing proof-of-principle demonstrations of four prototype systems to anchor high-fidelity modeling and simulation, 			

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603648D8Z / <i>Joint Capability Technology Demonstration (JCTD)</i>	Project (Number/Name) P264 / <i>Disruptive Demonstrations</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
- Completing mission-level analysis of system effectiveness in partnership with the Combatant Commands. Due to nature of these efforts, specific descriptions and detailed plans are available at higher classification levels.			
Accomplishments/Planned Programs Subtotals	-	12.600	-

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.

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.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 3: Advanced Technology Development (ATD)</i>	R-1 Program Element (Number/Name) PE 0603662D8Z / <i>Networked Communications Capability</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
Total Program Element	-	21.476	5.000	-	-	-	-	-	-	-	Continuing	Continuing
P663: <i>Network Communications Analysis</i>	-	21.476	5.000	-	-	-	-	-	-	-	Continuing	Continuing

The FY 2015 OCO Request will be submitted at a later date.

Note

Change from FY 2013 to FY 2014 reflects Departmental decision to conduct this program with a five-year “sunset” clause, which has elapsed.

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. Today's Warfighter 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 Network Operations (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.
 - 1) Wireless mobile network design, development and operations, spectrum management, information assurance and information dissemination management software tools.
 - 2) 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.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense	Date: March 2014
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Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> / BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 Program Element (Number/Name) PE 0603662D8Z / <i>Networked Communications Capability</i>
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B. Program Change Summary (\$ in Millions)	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO	FY 2015 Total
Previous President's Budget	25.393	20.000	-	-	-
Current President's Budget	21.476	5.000	-	-	-
Total Adjustments	-3.917	-15.000	-	-	-
• Congressional General Reductions	-	-15.000			
• Congressional Directed Reductions	-2.325	-			
• Congressional Rescissions	-0.033	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-0.951	-			
• SBIR/STTR Transfer	-0.598	-			
• Other Program Adjustments	-0.010	-	-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603662D8Z / <i>Networked Communications Capability</i>	Project (Number/Name) P663 / <i>Network Communications Analysis</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
P663: <i>Network Communications Analysis</i>	-	21.476	5.000	-	-	-	-	-	-	-	Continuing	Continuing

The FY 2015 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 (CJSMP) 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 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.

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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.

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.

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

	FY 2013	FY 2014	FY 2015
<p>Title: Tactical Mobile Networking</p> <p>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, Satellite Communications (SATCOM) and Tactical NetOps, MANET Project (with the National Security Agency [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.</p> <p>Overall goals: 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.</p> <p>FY 2013 Accomplishments:</p>	5.513	0.700	-

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<ul style="list-style-type: none"> - Performed distributed spectrum sensing Small Unmanned Aircraft System (SUAS) experiments. Investigated integration of compressive sensing based compression and encryption. Demonstrated Capability Enabler Network enabling advanced collaborative/secure networks. - Continued extension of the system for operation in tactical environments. Developed enhanced user interface functionality. Integrated MARTENS capability into Network Agent Technology for Management (NATM) (Air Force Research Laboratory (AFRL)) and Joint Integrated Network Management System Exchange (JINX) (Communications-Electronics Research, Development and Engineering Center (CERDEC)) systems. - Developed location and path aware protocol tuning mechanisms. Designed basic protocol architecture integrating multiple transport protocols. Emulated protocol architecture to analyze performance in realistic tactical environments. - Began SATCOM planning and control software early prototypes. Evaluated design architectures for using the Mobile User Objective Systems (MUOS). Developed implementation methods to apply Precision Polarization for Terrestrial SATCOM. - Tested and matured prototype software code and standards. Analyzed, modeled and designed prototype server-less Voice over Internet Protocol (VOIP) systems. Evaluated and developed new Stochastic Routing protocols for Disruption Tolerant Networking (DTN). - Explored opportunities to transition advances in the protocol development to programs or services. Extended the network coding protocols to different scenarios. - Explored alternatives to Border Gateway Protocol (BGP) that can handle the dynamics of mobile tactical networks, with potential applications to emerging networks across programs and services (Warfighter Information Network-Tactical (WIN-T), JALN, etc.). - Defined communication risk environment. Developed autonomous decision making algorithms. - Collected feedback on the initial prototypes from networking research staff. Expanded visualization prototypes which hold the most promise. Defined specifications for a full-featured Network Visualization Toolkit. - Conducted initial field experiment at Naval Post-graduate School (NPS) Tactical Network Testbed (TNT) facility. Continued development of network protocol mechanisms to support distributed, autonomous group-wise communication. Enhanced the Adaptive Reliable Video Service (ARVIS). - Performed science and technology (S&T) in efficient dissemination backbones and adaptive ad hoc routing. Investigated performance trade-off of reliable multicast and unicast transport methods for mobile tactical edge communications. Researched decentralized mobile service discovery mechanisms. Researched serverless group messaging. <p>FY 2014 Plans:</p> <ul style="list-style-type: none"> - Complete research for Adaptive Rate Video Service (ARViS), Nack-oriented Reliable Multicast (NORM) and NORM Proxy (NORP), Distributed Service Discovery (iNDI/ProtoSD), and Extendable Mobile Ad-hoc Network Emulator (EMANE). - Produce final reports and documentation. 			
Title: Network Management Tools and Analysis	2.816	-	-

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

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 NATM, JINX, Tiger Team Analysis, Tactical Resource Management and Control, End-to-End Network Management (NEEMO), Naval Research Laboratory (NRL) Information Assurance, Optimal Scheduling in Time Division Multiple Access (TDMA) Networks, and Dynamic Policy Management (DPM).

Overall goals: 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.

FY 2013 Accomplishments:

- Developed Enhanced Anomaly Detection. Augmented system to support Dynamic Spectrum Access decisions. Initialized integration with Net Design capability.
- Evaluated requirements for integrating physical layer and networking layer designs for the multifunctional waveform to provide a complete solution. Evaluated results of integration studies for implementing Mobile User Objective System (MUOS) satellite systems into tactical networks.
- Integrated 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.
- Researched 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. Researched 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. Researched utilizing network data analysis to optimize network bandwidth usage.
- Researched solutions to address the fair negotiation human factor problem. Matured the Dynamic Policy Management (DPM) algorithm and software. Integrated policy negotiation to Policy-based Network Management (PBNM) systems.

Title: Spectrum Management Tools and Analysis

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

FY 2013	FY 2014	FY 2015
5.130	1.000	-

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

Aware Cognitive Radios, DSA Enhancements, Spectrum Sharing Trade Study, and Directional Ad hoc Networking Technology - 2 (DANTE - 2).

Overall goal: Develop the technical basis to support changes regarding the operational use of spectrum both within the military and among spectrum regulatory bodies.

FY 2013 Accomplishments:

- Continued airborne spectrum data collection. Implemented DSA algorithm hardware. Validated previously simulated DSA techniques via experiments.
- Continued prototype RF control software development. Implemented three node prototype controllable spectrum capability. Conducted experimentation utilizing framework.
- Completed development of measurement-based DSA and policy management software. Developed and tested on a radio emulation test bed negotiated spectrum access algorithms and evaluated its inclusion into current tactical waveforms. Tested and demonstrate real time DSA algorithm. Developed spectrum sharing mechanisms with commercial providers/systems to address the limitation imposed on tactical networks by the National Broadband Plan.
- Investigated generalized media access control (MAC) layer electronic attack techniques. Researched joint networked comm/jammer waveform. Demonstrated promising capabilities. Continued investigations of joint Network comm/jamming architectures.
- Completed Signals Intelligence (SIGINT) -assisted Spectrum Management and Control project.
- Developed a set of spectral scenarios to evaluate DSA radios, including individual and environmental radios. Expanded and increased the fidelity of the modeled environment and explore Electronic Attack (EA) effectiveness against cognitive jammers. Created cooperative sensing strategies for heterogeneous environment and real-time RF channel emulation interface RF with propagation models to Extendable Mobile Ad-hoc Network Emulator (EMANE).
- Developed scheduling mechanisms in wireless networks that employ multi-user detection (MUD) for allowing simultaneous transmissions. Analyzed the multicast throughput and stability for a two-user cognitive radio system and analyzed the capacity-delay tradeoffs in cognitive radio networks. Developed throughput maximization schemes for secondary nodes in a cognitive network under the transparent co-existence paradigm, and continued to develop a protocol framework of bandwidth exchange (BE)-based networking.
- Developed alternate spectrum architectures. Estimated incumbent and entrant implementation and recurring costs for each architecture. Developed test plan to validate key assumptions and results.
- Extended DANTE-2 to other frequencies. Extended network topology automation to multiple frequencies.

FY 2014 Plans:

- Integrate spectrum sensing effort, Advanced Real-Time Global Surveillance User Surveillance (ARGUS), with both NEEMO and SATCOM Planning and Execution Services (SPES).

FY 2013	FY 2014	FY 2015

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014		
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603662D8Z / <i>Networked Communications Capability</i>	Project (Number/Name) P663 / <i>Network Communications Analysis</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2013	FY 2014	FY 2015
<ul style="list-style-type: none"> - Transition spectrum sharing demonstrations for with ongoing LTE Test and the Soldier Radio Waveform (SRW) Real-Time Frequency Management (SRFM) effort. - Conduct at least one additional transition demonstration at the AFRL Stockbridge Spectrum Testing Facility. 				
<p>Title: Integrated Network Management Capability</p> <p>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 Measurement Lab (M-Lab) Characterization of the Unmanned aerial vehicle [UAV] Network Environment (CUNE)/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.</p> <p>Overall goals: 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.</p> <p>FY 2013 Accomplishments:</p> <ul style="list-style-type: none"> - Conducted routine administration and maintenance of the WNL. Demonstrated WNL at targeted conferences. Examined technology refresh and additional software features. - Worked on verification and validation (V&V) of waveforms and protocols in the scalable emulation. Improved the ability to set up and operate large scale emulations. Transitioned capability to other DoD programs. - Continued Common Open Research Emulator (CORE) and EMANE development. Matured Network Modeling Framework (NMF) and additional wireless models. Collected and analyzed field test data to validate emulation modeling through various test, visualization, and data analysis tools. 		5.073	-	-
Title: Tactical Networking Evolution and Expansion		2.944	3.300	-

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603662D8Z / <i>Networked Communications Capability</i>	Project (Number/Name) P663 / <i>Network Communications Analysis</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<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 Electronic Warfare [EW] /Communications[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 2013 Accomplishments:</p> <ul style="list-style-type: none"> - Tested Joint Concept process inserts. Completed Joint Concept analysis documentation. - Began algorithmic and architectural improvements to the ATHENA physical, MAC, and network layer designs, incorporating feedback from network simulation and emulation performance experiments. Began a hardware implementation of the ATHENA algorithms and architectures as an integrated air tactical domain solution. - Conducted a field demonstration of various application layer tools and network services in a heterogeneous tactical network. - Developed a Multifunctional Electronic Warfare & Communications Waveform components capable of providing simultaneous communications and EW functions. Developed hardware interface and software architectures. Developed scheduling algorithms advanced routing features and Physical/Media Access features. Developed integrated comms/EW models. <p>FY 2014 Plans:</p> <ul style="list-style-type: none"> - Transition ATHENA to the Robust TDL Modernization (RTDLM) effort. - Transition Networks Program network management and situational awareness Tools to the Joint Multilayer Command and Control at the Tactical Edge (JMC2TE) effort. - Transfer network management testbeds and CORE/EMANE Tools to the Joint Assessment Research Testbed (JART) in support of JALN-Asia Pacific (JALN-AP) and JALN-NarrowBand (JALN-NB) efforts. 			
Accomplishments/Planned Programs Subtotals	21.476	5.000	-

C. Other Program Funding Summary (\$ in Millions) N/A
Remarks

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603662D8Z / <i>Networked Communications Capability</i>	Project (Number/Name) P663 / <i>Network Communications Analysis</i>

D. Acquisition Strategy

The Netted Iridium (NI) capability was transitioned directly to production and sustainment to the Distributed Tactical Communications System (DTCS)-Army program by the Army for use in the U.S. Central Command Area of Responsibility. Other program capabilities were transitioned to appropriate acquisition programs.

E. Performance Metrics

Strategic Goals Supported: Net-Centric Warfare/Joint Interoperable Communication. Meet current needs of tactical warfighter.

Existing Baseline: Prototype relays and gateways; initial federated, laboratory test beds; and prototype joint network management tools.

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.

Actual Performance Improvement: Prototype and transition able relays and gateways; usage of federated test beds; and demonstration of prototypes and software tools.

Planned Performance Metric / Methods of Measurement: Utilization of federated test beds; and demonstration of prototypes and software tools.

Actual Performance Metric / Methods of Measurement: Progress on test bed development; prototype software demonstrated; and prototype architectures developed.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 3: Advanced Technology Development (ATD)</i>	R-1 Program Element (Number/Name) PE 0603663D8Z / <i>Data to Decisions Advanced Technology</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
Total Program Element	-	9.217	-	-	-	-	-	-	-	-	Continuing	Continuing
P366: <i>Data to Decisions Advanced Technology</i>	-	9.217	-	-	-	-	-	-	-	-	Continuing	Continuing

The FY 2015 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 Advanced Development PE 0603663D8Z to higher Department of Defense (DoD) priorities.

The goals of this program will be shifted to the DoD Components under the direction of the Research and Engineering (R&E) 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 in support of 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 to advance a particular priority area of that Component. As a result the R&E Database has over 388 references to Decision Support programs, all of which are designed to address 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

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense	Date: March 2014
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Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 3: Advanced Technology Development (ATD)</i>	R-1 Program Element (Number/Name) PE 0603663D8Z / <i>Data to Decisions Advanced Technology</i>
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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)	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015 Base</u>	<u>FY 2015 OCO</u>	<u>FY 2015 Total</u>
Previous President's Budget	13.754	-	-	-	-
Current President's Budget	9.217	-	-	-	-
Total Adjustments	-4.537	-	-	-	-
• Congressional General Reductions	-5.000	-			
• Congressional Directed Reductions	-0.709	-			
• Congressional Rescissions	-0.012	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	1.378	-			
• SBIR/STTR Transfer	-0.191	-			
• Other Program Adjustments	-0.003	-	-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603663D8Z / <i>Data to Decisions Advanced Technology</i>	Project (Number/Name) P366 / <i>Data to Decisions Advanced Technology</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
P366: <i>Data to Decisions Advanced Technology</i>	-	9.217	-	-	-	-	-	-	-	-	Continuing	Continuing

The FY 2015 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 Advanced Development PE 0603663D8Z to higher Department of Defense (DoD) priorities.

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 four step development model. 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 2013	FY 2014	FY 2015
Title: Operational Initiative	1.843	-	-
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			

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014		
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603663D8Z / <i>Data to Decisions Advanced Technology</i>	Project (Number/Name) P366 / <i>Data to Decisions Advanced Technology</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2013	FY 2014	FY 2015
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 2013 Accomplishments:</i></p> <ul style="list-style-type: none"> - Used the challenge problem scenarios and data sets to perform statistical analysis and evaluation plans for experimentation to support information fusion and decision support tests of emerging technologies. Demonstrated prototype applications in one or more COCOM exercises. - Completed 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 a need for continued study/support. Delivered results to the D2D Priority Steering Council for inclusion into roadmaps and Component plans. - Extended efforts to broadly understand the current state of D2D domains such as space operations, counter weapons of mass destruction, human, social, culture, and behavior modeling, health information technology, and logistics. - Identified mature technologies being developed within the D2D program, small business innovation research (SBIR) performers, and across DoD to fuse data, clean dirty data, triage data, and compress data to improve decision support. Delivered appropriate metrics through the knowledge engineering process. - Delivered MOVINT data sources for the Development team. 				
<p><i>Title:</i> Assessment Initiative</p> <p><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 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> <p><i>FY 2013 Accomplishments:</i></p> <ul style="list-style-type: none"> - Completed the assessment of MOVINT modules; provided extensive feedback to the Operational Team on test results to guide further FY 2013 collections. - Developed and delivered ground-truth data for text/imagery analysis relevant to challenge problem. - Transitioned the Automated Online Data Repository (AODR) to the wider development community by including additional datasets with analytic studies of tools/applications. - Adapted testbed to accommodate text workflow that supports the AFRICOM centric challenge problem. 		3.226	-	-
<p><i>Title:</i> Transition Initiative</p>		4.148	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603663D8Z / <i>Data to Decisions Advanced Technology</i>	Project (Number/Name) P366 / <i>Data to Decisions Advanced Technology</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<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 2013 Accomplishments:</p> <ul style="list-style-type: none"> - Completed experiments in scalability of algorithms and modules over large data sets. - Developed and delivered the roadmap for algorithm advancements in data management layer. - Transitioned the D2D system testbed to the DoD D2D Priority Steering Council members to conduct architectural analysis and transitioning the prototype algorithms. - Investigated expansion of the testbed to support text analytics by DoD Component programs. - Completed experiments in scalability of algorithms and modules over large data sets. 			
Accomplishments/Planned Programs Subtotals	9.217	-	-

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

<u>Line Item</u>	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015</u> <u>Base</u>	<u>FY 2015</u> <u>OCO</u>	<u>FY 2015</u> <u>Total</u>	<u>FY 2016</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• BA 2, PE# 0602663D8Z, P266: <i>Data to Decisions Applied Research</i>	8.605	-	-	-	-	-	-	-	-	-	Continuing Continuing

Remarks
Change from FY 2013 to FY 2014 reflects a realignment of the program from the Data to Decisions Applied Research PE 0602663D8Z to higher Department of Defense (DoD) priorities. 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

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 3: Advanced Technology Development (ATD)</i>	R-1 Program Element (Number/Name) PE 0603668D8Z / <i>Cyber Security Advanced Research</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
Total Program Element	-	11.103	9.667	-	-	-	-	-	-	-	Continuing	Continuing
P113: <i>Cyber Advanced Technology Development</i>	-	11.103	9.667	-	-	-	-	-	-	-	Continuing	Continuing

The FY 2015 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 advanced development in both cyber security and computer network operations to mature 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 to explore and exploit 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 Cyber Science & Technology Priority Steering Council Roadmap, as determined by assessments conducted by the Office of the Assistant Secretary of Defense for Research and Engineering (OASD(R&E)).

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 3: Advanced Technology Development (ATD)</i>	R-1 Program Element (Number/Name) PE 0603668D8Z I <i>Cyber Security Advanced Research</i>
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B. Program Change Summary (\$ in Millions)	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO	FY 2015 Total
Previous President's Budget	19.935	19.668	29.221	-	29.221
Current President's Budget	11.103	9.667	-	-	-
Total Adjustments	-8.832	-10.001	-29.221	-	-29.221
• Congressional General Reductions	-7.500	-10.000			
• Congressional Directed Reductions	-1.030	-			
• Congressional Rescissions	-0.016	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.281	-			
• FFRDC Adjustment	-	-0.001	-	-	-
• Efficiency Savings	-	-	-29.221	-	-29.221
• Other Program Adjustments	-0.005	-	-	-	-

Change Summary Explanation

Program decreases are a result of promoting efficient spending to support agency operations.

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603668D8Z / <i>Cyber Security Advanced Research</i>	Project (Number/Name) P113 / <i>Cyber Advanced Technology Development</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
P113: <i>Cyber Advanced Technology Development</i>	-	11.103	9.667	-	-	-	-	-	-	-	Continuing	Continuing

The FY 2015 OCO Request will be submitted at a later date.

A. Mission Description and Budget Item Justification

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 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 Community of Interest.

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 2013, the program will expanded 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
- RESILIENT INFRASTRUCTURE
- AGILE OPERATIONS
- ASSURING EFFECTIVE MISSIONS
- CYBER MODELING, SIMULATION, AND EXPERIMENTATION (MSE)
- EMBEDDED, MOBILE, AND TACTICAL ENVIRONMENTS (EMT)

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603668D8Z / <i>Cyber Security Advanced Research</i>	Project (Number/Name) P113 / <i>Cyber Advanced Technology Development</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<p>Title: Foundations of Trust</p> <p>Description: 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.</p> <p>FY 2013 Accomplishments:</p> <ul style="list-style-type: none"> - Host Integrity at Startup capability integrated into Host Based Security System (HBSS) and currently in the Defense Information Systems Agency (DISA) Change Management process. - Conducted real world red team testing reviews using the Chimera framework. - Demonstrated the application of trusted computing and measurement technologies to a modern cloud computing infrastructure. <p>FY 2014 Plans:</p> <ul style="list-style-type: none"> - Develop scalable reverse engineering and analysis. - Explore and identify trust establishment, propagation, and maintenance techniques. - Integrate userspace integrity measurements with larger system measurement. 	1.111	0.967	-
<p>Title: Resilient Infrastructure</p> <p>Description: 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 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>FY 2013 Accomplishments:</p> <ul style="list-style-type: none"> - Documented high assurance separation architecture using multi-core technology for applications in tactical assured information sharing environments. - Improved computer network defense decision making through data sharing across classification levels in a tactical environment. - Demonstrated fully operational protection system that enhances mission assurance. - Augmented an evolving set of mission assurance services to specifically counter advanced persistent threat effects at the operational level. 	4.441	3.867	-

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603668D8Z / <i>Cyber Security Advanced Research</i>	Project (Number/Name) P113 / <i>Cyber Advanced Technology Development</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<ul style="list-style-type: none"> - Demonstrated tactical information sharing could be integrated into a cross-domain solution by integrating the architecture into the Navy's Network Pump-II security appliance. - Optimized the tactical information sharing architecture to achieve multiple security enforceable data flows and higher data throughputs. <p>FY 2014 Plans:</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. - Pilot host integrity for virtual platforms. 			
<p>Title: Agile Operations</p> <p>Description: 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>FY 2013 Accomplishments:</p> <ul style="list-style-type: none"> - Demonstrated cyber fingerprinting capabilities and identify vulnerabilities in HyperText Markup Language 5 for rich content. - Developed countermeasures to mitigate hardware and firmware based attacks. - Demonstrated fully operational protection system that enhances mission assurance. - Characterized the advanced persistent threat against the agility/maneuver defensive technologies, enabling direct assessment of effectiveness against an advanced persistent threat class. <p>FY 2014 Plans:</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. - Integrate advanced Computer Network Defense (CND) components and management features into the CND framework. 	1.665	1.450	-

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603668D8Z / <i>Cyber Security Advanced Research</i>	Project (Number/Name) P113 / <i>Cyber Advanced Technology Development</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
- Cyber command and control architecture and toolset being considered for adoption by U.S. Cyber Command.			
<p>Title: Assuring Effective Missions</p> <p>Description: 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>FY 2013 Accomplishments:</p> <ul style="list-style-type: none"> - Developed trust management schemes to capture mission performance metrics in tactical networks. - Developed means for identifying and monitoring of steganography while assuring integrity of data channels. <p>FY 2014 Plans:</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 framework scalability in a representative laboratory environment (1000+ Nodes). 	1.111	0.967	-
<p>Title: Cyber Modeling, Simulation & Experimentation (MSE)</p> <p>Description: 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</p>	1.110	0.966	-

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014		
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603668D8Z / <i>Cyber Security Advanced Research</i>	Project (Number/Name) P113 / <i>Cyber Advanced Technology Development</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2013	FY 2014	FY 2015
<p>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>FY 2013 Accomplishments:</p> <ul style="list-style-type: none"> - Developed practical input/output metrics for assessment of classified technologies associated with offensive, defensive, and mission oriented capabilities. - Provided opportunities for cross-service and cross-computer multi-disciplinary experiments using the Joint Information Operations range. - Demonstrated the use of Graphical Processor Units and multicore processors to dramatically increase the computational parallelism available to model and simulate cyberspace effects on a country or global scale. <p>FY 2014 Plans:</p> <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. 				
<p>Title: Embedded, Mobile & Tactical (EMT)</p> <p>Description: 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.</p> <p>FY 2013 Accomplishments:</p> <ul style="list-style-type: none"> - Developed new hybrid time of arrival / phased array antenna system for protocol-independent ability to geo-locate wireless emitters. - Developed analytical model of the resiliency of routing techniques in the presence of wireless jamming. <p>FY 2014 Plans:</p>		1.665	1.450	-

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603668D8Z / <i>Cyber Security Advanced Research</i>	Project (Number/Name) P113 / <i>Cyber Advanced Technology Development</i>
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<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. 			
Accomplishments/Planned Programs Subtotals	11.103	9.667	-

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

<u>Line Item</u>	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015</u> <u>Base</u>	<u>FY 2015</u> <u>OCO</u>	<u>FY 2015</u> <u>Total</u>	<u>FY 2016</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• BA 2, PE # 0602668D8Z, P003: <i>Cyber Applied Research</i>	10.542	13.907	15.000	-	15.000	15.285	15.575	15.871	16.173	Continuing	Continuing

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400: Research, Development, Test & Evaluation, Defense-Wide I BA 3: Advanced Technology Development (ATD)	R-1 Program Element (Number/Name) PE 0603670D8Z I Human Social Culture Behavior (HSCB) Modeling Advanced Development
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
Total Program Element	-	6.994	2.000	-	-	-	-	-	-	-	Continuing	Continuing
P370: Human Social Culture Behavior (HSCB) Modeling Advanced Development	-	6.994	2.000	-	-	-	-	-	-	-	Continuing	Continuing

The FY 2015 OCO Request will be submitted at a later date.

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.

B. Program Change Summary (\$ in Millions)	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO	FY 2015 Total
Previous President's Budget	8.235	-	-	-	-
Current President's Budget	6.994	2.000	-	-	-
Total Adjustments	-1.241	2.000	-	-	-
• Congressional General Reductions	-	-	-	-	-
• Congressional Directed Reductions	-0.688	-	-	-	-
• Congressional Rescissions	-0.011	-	-	-	-
• Congressional Adds	-	2.000	-	-	-
• Congressional Directed Transfers	-	-	-	-	-
• Reprogrammings	-0.312	-	-	-	-
• SBIR/STTR Transfer	-0.227	-	-	-	-
• Other Program Adjustments	-0.003	-	-	-	-

PE 0603670D8Z: Human Social Culture Behavior (HSCB) Modeling
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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603670D8Z / <i>Human Social Culture Behavior (HSCB) Modeling Advanced Development</i>	Project (Number/Name) P370 / <i>Human Social Culture Behavior (HSCB) Modeling Advanced Development</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
<i>P370: Human Social Culture Behavior (HSCB) Modeling Advanced Development</i>	-	6.994	2.000	-	-	-	-	-	-	-	Continuing	Continuing

The FY 2015 OCO Request will be submitted at a later date.

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 2013	FY 2014	FY 2015
<p>Title: Modeling Capabilities</p> <p>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.</p> <p>FY 2013 Accomplishments: Developed a wargaming and planning engine enabling Commanders and staff to more easily analyze the impact of sociocultural factors in determining optimal Courses of Action (COAs) for hybrid threat operation and irregular warfare. Developed a technology tool that provides Commanders with a capacity to monitor the velocity, scope, and magnitude of social change in politically fragile societies. Model-building instruments within Virtual Strategic Analysis and Forecasting (V-SAFT) tool double as situation awareness instruments for operators, featuring wiki-style windows into the human terrain of complex societies. Delivered 14</p>	5.465	1.000	-

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

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603670D8Z / <i>Human Social Culture Behavior (HSCB) Modeling Advanced Development</i>	Project (Number/Name) P370 / <i>Human Social Culture Behavior (HSCB) Modeling Advanced Development</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<p>country models covering a variety of Combatant Command areas of responsibility and types of regimes. Released version 1.0 of Versatile Multiscale Strategist (vmSTRAT), a decision support tool that represents conflict interactions of nation-states. Incorporated social media into national level instability monitoring. Developed and implemented methods, techniques, standards and tools that support model selection and verification and validation.</p> <p>FY 2014 Plans: Extend the Worldwide Integrated Crisis Early Warning System (W-ICEWS) by developing and demonstrating sub regional forecasting models for finer grained event forecast and analytics. Develop, in iTRACE/iCAST, the ability for COCOM-specific focus into news event processing (e.g., trafficking, humanitarian efforts, economic events) and additional instability event forecasting (e.g. coups).</p>			
<p>Title: Sociocultural Data Collection and Management</p> <p>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.</p> <p>FY 2013 Accomplishments: Developed enhanced dynamic analytics for networks, including new tested dynamic metrics, visualization of key dynamics in networks, assessment of group dynamics, identification of stable emergent and dispersing groups, identification of stable emergent and degrading patterns of influence and trust, and automated workflows for dynamic data, all of which are robust and scalable for big data. Developed a collection and decision tool to aid an analyst or planner in rapidly evaluating and exploiting crowd contributions via an extensible, computational trust assessment framework. Incorporated non-English text data into a system for providing advance sensing of national and sub-national scale crisis. Demonstrated methods for collecting and analyzing HSCB-relevant data in denied areas using readily available commercial imagery.</p> <p>FY 2014 Plans: Extend the W-ICEWS capability by improving op-tempo for news event processing in iTRACE/iCAST (daily or even real-time as opposed to weekly). Develop finer grained geo-spatial news event coding in iTRACE/iCAST (region vs country). Develop capability to add new foreign languages support in the news event processing cycle.</p>	1.529	1.000	-
Accomplishments/Planned Programs Subtotals	6.994	2.000	-

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603670D8Z / <i>Human Social Culture Behavior (HSCB) Modeling Advanced Development</i>	Project (Number/Name) P370 / <i>Human Social Culture Behavior (HSCB) Modeling Advanced Development</i>

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

<u>Line Item</u>	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2015</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>Cost To</u>		
			<u>Base</u>	<u>OCO</u>	<u>Total</u>					<u>Complete</u>	<u>Total Cost</u>	
• PE 0602670D8Z BA 2: <i>HSCB Applied Research</i>	5.049	2.000	-	-	-	-	-	-	-	-	Continuing	Continuing
• PE 0604670D8Z BA 4: <i>HSCB Research & Engineering</i>	4.492	2.000	-	-	-	-	-	-	-	-	Continuing	Continuing

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 3: Advanced Technology Development (ATD)</i>	R-1 Program Element (Number/Name) PE 0603680D8Z / <i>Defense Wide Manufacturing Science and Technology Program</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
Total Program Element	49.026	49.532	59.014	91.095	-	91.095	62.640	58.361	50.538	23.927	Continuing	Continuing
P680: <i>Manufacturing Science and Technology Program</i>	49.026	49.532	59.014	91.095	-	91.095	62.640	58.361	50.538	23.927	Continuing	Continuing

The FY 2015 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.

The total sequestration reduction executed as a result of the FY 2013 DoD appropriation act was -\$4.438, of which -\$3.430 was applied to FY 2012 and -\$1.008 was applied to FY 2013. Sequestration of these amounts impacted the ability of the OSD Defense-wide ManTech program to execute DoD and Administration priorities for Advanced Manufacturing by investing in fewer manufacturing processes and improved materials, which are intended to drive in affordability for reduction of system life-cycle costs of major weapons systems.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 3: Advanced Technology Development (ATD)</i>	R-1 Program Element (Number/Name) PE 0603680D8Z / <i>Defense Wide Manufacturing Science and Technology Program</i>
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B. Program Change Summary (\$ in Millions)	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO	FY 2015 Total
Previous President's Budget	21.966	34.041	22.539	-	22.539
Current President's Budget	49.532	59.014	91.095	-	91.095
Total Adjustments	27.566	24.973	68.556	-	68.556
• Congressional General Reductions	-1.008	-0.027			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-0.069	-			
• Congressional Adds	30.000	25.000			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-0.022	-			
• SBIR/STTR Transfer	-1.335	-			
• Innovation Manufacturing Institutes (IMI)	-	-	71.250	-	71.250
• Reduction	-	-	-2.690	-	-2.690
• Travel efficiencies savings	-	-	-0.004	-	-0.004

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

Project: P680: *Manufacturing Science and Technology Program*

Congressional Add: *Industrial Base Innovation Fund (IBIF)*

Congressional Add Subtotals for Project: P680

Congressional Add Totals for all Projects

	FY 2013	FY 2014
	28.939	25.000
Congressional Add Subtotals for Project: P680	28.939	25.000
Congressional Add Totals for all Projects	28.939	25.000

Change Summary Explanation

Adjustments for Innovation Manufacturing Institute (IMI) program priorities of the Administration and the Department of Defense:

- 1) FY 2013 to FY 2014 +\$12.000
- 2) FY 2014 to FY 2015 +\$59.250
- 3) FY 2015 to FY 2019 decreases annually, with no funds programmed after FY 2019 when all IMIs are expected to be financially self-sustaining

-\$4.438 Sequestration total rescission executed as a result of the FY 2013 DoD appropriation act. Of this amount, -\$3.430 was applied to FY 2012 and -\$1.008 was applied to FY 2013. Sequestration of these amounts impacted the ability of the OSD Defense-wide ManTech program to execute DoD and Administration priorities for Advanced Manufacturing by investing in fewer manufacturing processes and improved materials, which are intended to drive in affordability for reduction of system life-cycle costs of major weapons systems.

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603680D8Z / <i>Defense Wide Manufacturing Science and Technology Program</i>	Project (Number/Name) P680 / <i>Manufacturing Science and Technology Program</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
P680: <i>Manufacturing Science and Technology Program</i>	49.026	49.532	59.014	91.095	-	91.095	62.640	58.361	50.538	23.927	Continuing	Continuing

The FY 2015 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 2013	FY 2014	FY 2015
Title: Advanced Electronics Manufacturing - Advanced RF Packaging	1.950	-	-
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-hermetic, commercial Monolithic Microwave Integrated Circuit (MMIC) packaging and automated Surface Mount Technology			

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

	FY 2013	FY 2014	FY 2015
<p>(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 2013 Accomplishments: Developed 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. Completed the SOCKET Critical Design Review. Completed SOCKET integration and testing, and a SOCKET string test. Wrote SOCKET test reports and the user manual. Completed the SOCKET LRU based verification system and delivered the SOCKET hardware and software to the Navy.</p> <p>Completed gallium nitride (GaN) component supplier evaluation and selection for the Transmit/Receive (T/R) module. Completed PowerBook T/R module Preliminary Design Review (PDR), Critical Design Review (CDR). Built, tested, and qualified the PowerBook module. Conducted System Engineering training. Completed land-based radar integration and testing. Initiated the sub-array string testing. Completed the String Test Verification Demonstration. Delivered the final Intelligent Technical Data Package (ITDP). Completed the transfer of radar system production from the offshore COTS manufacturer to the domestic manufacturer. Completed the Radar Producibility Analysis and Final Project Report.</p>			
<p>Title: Advanced Electronics Manufacturing - Chip Scale Atomic Clock</p> <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</p>	4.160	-	-

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<p>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 2013 Accomplishments: Completed demonstration of a batch manufacturing tool for atomic vapor cell filling. Completed design of a vacuum sealing tool of physics packages in a batch mode. Demonstrated the automatic assembly process of physics packages. Improved Vertical Cavity Surface Emitting Laser (VCSEL) yield: VCSEL unit cost was lowered from \$100 to less than \$20. Completed redesign of physics package for high-volume producibility at a low unit cost. Completed cost analyses independently by the vendors, verified unit cost of less than \$300. Delivered Phase I prototypes to CERDEC for independent government testing. The Technology Transition Agreement was signed with Product Director, Positioning, Navigation and Timing (PD PNT) for potential transition to Positioning, Navigation and Timing (PNT) Family of systems which include the PNT mobile, PNT Hub and PNT Embedded products.</p>			
<p>Title: Advanced Electronics Manufacturing - Large Affordable Substrates</p> <p>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.</p> <p>FY 2013 Accomplishments: Completed installation of the furnace for boule and substrate manufacturing. Evaluated the potential growth of boules of increasing size. Improved uniformity and reduce precipitates size in boule. Evaluated critical substrate factors that are part of the final substrate specification, such as parallelism, total thickness variation, chipping, scratches, etc. Initiated a Low Rate Production status. Conducted a final demonstration of the product. Obtained a TRL6/MRL7 level. Participated in a 3rd Gen Forward Looking Infrared Radar Development and Demonstration build.</p>	0.520	-	-
<p>Title: Advanced Electronics Manufacturing - Sensor Hardening</p>	0.780	-	-

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

	FY 2013	FY 2014	FY 2015
<p>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-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 2013 Accomplishments: Concluded FPA production scale-up activities to achieve a TRL6/MRL6 level. Made available a Hardened EOTS FPA and a Hardened EODAS FPA. Concluded system engineering studies on targeting and warning systems. Continued life cycle testing. Initiated additional thermal cycle testing of dewars. Began a second version of the ROIC/detector hybridization effort. Conducted another Manufacturing Readiness Assessment. Completed the ROIC fabrication. Finished the FPA build. Conducted laser susceptibility testing at Wright-Patterson Air Force Base. Conducted transitional activities in preparation for the F-35 Block 5 Upgrade decision point in FY 2015.</p>			
<p>Title: Advanced Materials Manufacturing - Advanced Body Armor</p> <p>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 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 2013 Accomplishments:</p>	1.300	-	-

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
Technology down-select completed (including composite, ceramic, adhesive, and encapsulation sub-processes). Demonstrated 10% lighter (5.5 pounds for size medium) Enhanced Small Arms Protective Insert side plate. Conducted interlayer materials bonding and assembly. Developed evaluation parameters and complete ballistic and related testing. Processed down select and integration. Enabled Low Rate Initial Production process development.			
<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 2013 Accomplishments: 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.</p> <p>FY 2014 Plans: Investigate manufacturing technology improvements in FAST to enable 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>	0.468	0.501	-
<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>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>	4.569	11.467	13.826

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

	FY 2013	FY 2014	FY 2015
<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>Organic Light Emitting Diode (OLED) Microdisplays: Many applications of microdisplays require extremely high brightness and contrast in order to see sensor imagery in challenging high brightness environments. Existing technologies are limited by low contrast, bulky and complex packaging, and high power consumption. Recently developed methods of direct patterning and Silicon On Insulator (SOI) allow color OLED displays to have large color gamuts and very long lifetimes at high luminances. Direct pattern color OLED on SOI has been successfully demonstrated; however, proliferation is limited due to high costs and manufacturing deficiencies. This project will transition this technology from MRL5 to MRL8, improving the manufacturing capability to produce an ultra-high resolution, high brightness, high contrast, full color micro-display at a low unit cost.</p> <p>Improved Focal Plane Array Production for Thermal Hyperspectral Applications Using III-IV Antimony Based Technology: This effort will mature the use of III-V material technologies in long wave infrared (LWIR) focal plane arrays (FPAs) used for hyperspectral imaging in numerous tri- service applications. Improved devices will have size, weight, and power advantages, and</p>			

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	FY 2013	FY 2014	FY 2015
<p>reduced logistics costs. Production readiness will be demonstrated by integrating with an Army owned sensor asset provided by Project Manager-Airborne Reconnaissance and Exploitation Systems (PM ARES).</p> <p>Increased Thickness for Large Sheet EFG Sapphire Production: Develop a process to grow a single crystal of EFG sapphire with dimensions to meet critical weapon needs. Demonstrate finished thickness capabilities and leverage success of bubble reduction task in the design of the thicker die.</p> <p>FY 2013 Accomplishments: SiC High Efficiency Power Switches. Focused on improvements in SiC starting materials. Continued efforts to increase SiC wafer size to 6". Reduced substrate defects, including micropipe density, to improve device yield. Began power device fabrication using 6" substrates.</p> <p>Mini SWIR Cameras and ManTech for SWIR Imagers: Developed robust 4" wafer processes to reduce breakage and increase yield. Improved backside processing costs.</p> <p>Manufacturability of VCSELs: Initiated hermetic design efforts, creating hermetic packaging for VCSEL arrays. Developed 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. Began 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.</p> <p>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.</p> <p>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.</p> <p>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</p>			

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

	FY 2013	FY 2014	FY 2015
<p>to remain consistent with wafer-scale packaging. Evaluate cooling technologies to determine the most cost-effective, manufacturable techniques.</p> <p>Organic Light Emitting Diode Microdisplays: Identify the manufacturing processes for direct patterning (alignment of precision shadow mask to 0.5 um accuracy; linear source-based OLED deposition for improved uniformity) and Silicon on Insulator (SOI) (backplane redesign for high dynamic range; optimize the SOI device structure for improved display uniformity). Identify the substrates, packaging, and OLED manufacturing materials. Design and order direct patterning manufacturing equipment. Initiate the design of the SOI backplane. Receive/install the direct pattern equipment for manufacturing. Begin a producibility assessment. Identify cost drivers.</p> <p>Improved Focal Plane Array Production for Thermal Hyperspectral Applications Using III-IV Antimony Based Technology: Produce one lot of format 256x256/30um pitch devices. Obtain contractor reports on FPA test results from the lot.</p> <p>Increased Thickness for Large Sheet EFG Sapphire Production: Design setups with bubble reducing dies of sufficient width and thickness to grow a 13.7" x 0.61" and 13.7" x 0.65" inch cross sections. The new setup shall be of sufficient volume to grow a 13.7" x 0.65" x 24.2" crystal. Design/redesign any components of the setup and hot-zone affected by the dimensions of the die and crystals to be grown.</p> <p>FY 2015 Plans:</p> <p>SiC High Efficiency Power Switches: Continue work on 150 mm diameter 4HN-SiC substrate (wafer) material demonstration task. Continue 150 mm diameter epi-layer material demonstration task, including warm-wall SiC growth reactor development and hot wall SiC growth reactor development.</p> <p>Mini SWIR Cameras and ManTech for SWIR Imagers: Continue wafer growth, wafer scale processing, backside processing, hybridization, sensor packaging, and camera calibration efforts.</p> <p>Manufacturability of VCSELs: Wafer-level package exploration using multilayer ceramics and PCB technology. Low-cost die level package using same- compatible with Pick-n-place & SMT PCB-stuffing assembly lines. Implement lower thermal impedance packaging (thinner, higher conductivity heat spreaders). Down-select lower thermal resistance, thinner, lighter heat pipes and micro-channel coolers.</p> <p>Organic Light Emitting Diode Microdisplays: Develop the manufacturing processes for direct patterning (alignment pattern of shadow mask to wafer; linear source process established; directly patterned R,G, and B process developed) and SOI Backplane</p>			

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	FY 2013	FY 2014	FY 2015
<p>(tape out completed; backplane fabricated). Demonstrate critical manufacturing processes (direct patterning: 0.5 um accuracy demonstrated, linear source process uniformity demonstrated; SOI: high dynamic range demonstrated, display uniformity demonstrated). Continue the producibility assessment and the analysis of the cost drivers. Establish a direct patterning prototype manufacturing system. Qualify the SOI process at the foundry.</p> <p>Improved Focal Plane Array Production for Thermal Hyperspectral Applications Using III-IV Antimony Based Technology: Produce four lots, format 512x512/20um pitch. Obtain contractor reports on FPA test results, initial yield capability and cost for each lot. Obtain independent verification testing on FPAs. Plan for integration of FPA to camera in preparation for field test.</p> <p>Increased Thickness for Large Sheet EFG Sapphire Production: Conduct experimental growth runs to develop a best known method to produce the EFG crystal defined above. These experiments will involve adjustments to the setup and hot zone in order to achieve the proper growth conditions for the crystal, such as temperature gradients, growth speed and control parameters.</p>			
<p>Title: Advanced Materials Manufacturing</p> <p>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.</p> <p>Advanced materials manufacturing technologies undergoing development include materials for ballistic survivability and materials for rapid fabrication of structural components.</p> <p>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.</p> <p>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</p>	5.527	7.262	2.807

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

	FY 2013	FY 2014	FY 2015
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 boot 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) 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.			
High Precision Air Vehicle Manufacturing: The most advanced air vehicles for military applications require unprecedented levels of precision structural fabrication to meet production goals and mission requirements. Precision fabrication simplifies assembly, reduces rework and enables improved weapon system cost and performance. Furthermore, they simplify aircraft sustainment and maintenance by increasing the interchangeability of components.			
Dimensions from Day One: Demonstrate a methodology that accurately predicts and accounts for the numerous geometric, tooling and material factors impacting finished composite parts; this will enable the correct upfront process and tooling decisions to yield first article parts meeting the dimensional requirements on "day one".			
Large Scale Encapsulate Ceramics for Medium and Large Caliber Threat Defeat: This project will mature a novel lighter weight solution for passive armor protection from medium and large caliber threats. Automate the hot press process to manufacture thick ceramic tiles. Improve the dimensional controls for the finished ceramics. Improve the current assembly/multi-component operations for existing target panels with more efficient processes or a single cast approach using steel instead of titanium. Develop a rapid low cost coating operation for the ceramic tiles to prevent reaction with the steel during the casting process.			
Cast Eglin Steel: This effort will 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 a single			

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

piece cast underbody protection system and bomb bodies. Developing cast-in pockets, slopes, and curves in order to meet geometric and blast requirements.

FY 2013 Accomplishments:
 Cold Spray: Worked 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. Processed validation & repair demonstration.

Net-shaped FAST: Completed high temperature bend strength with grain size analysis and melting point estimations. Down-selected for the carbide dispersoid and conducted a more detailed processing study. Fabricated a large billet in the large FAST unit for enough material to conduct a detailed thermal-mechanical behavior analysis. Developed an understanding between processing conditions and morphology, mechanical and thermal properties and Non-Destructive Evaluation results. Started fabrication of prototype and scale-up to near net shape nozzle and segmented leading edge. Fastener Fill: Developed automation plan, solicited RFP's, and selected best proposals. Modified 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: This process reduced the labor-intensive nature of boot installation procedures, which were not suitable for full-rate production and represented 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) automation of additional trimming, bonding, and application activities currently performed manually; (3) improved quality of technician skill/training; and (4) reduction of the waste incurred in cutting/darting boots.

Cast Eglin Steel: Established Eglin steel chemistry specifications to maximize strength and ductility for maximum protection, and maximum effectiveness for hard and deeply buried targets. Created a primary casting process for the single piece cast underbody protection system, and bomb bodies. Employed an integrated computational casting process model to simulate the net-shape casting process to mitigate potential processing problems. Developed blast testing models. Transitioned underbody planning from M88 to GCV. Integrated PM GCV into project team.

FY 2014 Plans:
 Cold Spray: Original equipment manufacturer demonstration and qualification of the UH-60 Sump Housing. System prove-out analysis and engineering validations are scheduled. Automated manufacturing cell to be assembled and tested for production use.

FY 2013	FY 2014	FY 2015

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603680D8Z / <i>Defense Wide Manufacturing Science and Technology Program</i>	Project (Number/Name) P680 / <i>Manufacturing Science and Technology Program</i>

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

	FY 2013	FY 2014	FY 2015
<p>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.</p> <p>Fastener Fill: Concurrent evaluation at Northrop Grumman Palmdale F-35 center fuselage manufacturing line for qualification and testing of selected application tooling to develop process procedures that includes first article acceptance. Preliminary designs for tooling support will be decided for implementation with refinement enhancements to improve ergonomic and material optimization.</p> <p>Automated and Rapid Boot Installation: Identify and implement improvements to the adhesive and physical placement applications for the various boot configurations. Contract awards to be made to supporting contractors developing the tools and methods.</p> <p>Dimensions from Day One: Develop overall methodology and necessary material database information. Review and identify materials not addressed in current predictive software. Test materials for processing properties (resin shrinkage, coefficient of thermal expansion, etc.)</p> <p>Large Scale Encapsulate Ceramics for Medium and Large Caliber Threat Defeat: Perform casting process modeling and residual stress modeling. This will include the following Analysis of Alternatives (AOA). Encapsulation of large hot pressed SiC ceramic tiles into: (1) a large cast steel metallic structure; (2) machined steel heavy metal assembly; (3) cast pocketed steel heavy metal assembly; (4) a braided preformed structure to be infused with resin; (5) a large machined Ti metallic structure. Establish affordable casting parameters for large cast encapsulated tile panels with geometries required for upgrade of current and future combat vehicles requiring protection from medium and large caliber threats.</p> <p>Field Assisted Sintering of Armor & Anti-Armor Components: Mature FAST manufacturing process for DoD components. Finish ongoing modeling and simulation (M&S) on subscale SAPI die. Redesign subscale SAPI die set from M&S results; design multi cavity die for near-net-shaped penetrators; sintering trials & optimization; sinter subscale SAPI and penetrator prototypes; complete final project documentation, report, & close out. Primary metric for armor materials will be cycle time as FAST can significantly reduce this (> 60%). Primary metric for advanced penetrators will be cost. It is anticipated that the near-net-shaped nature of FAST can reduce machining costs by 90% and hence overall item cost (> 20%).</p>			

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<p>Cast Eglin Steel: Validated 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. Conducted additional blast tests. Continued design work and preparations for casting underbody and a full vehicle hull. Began working with US Navy on Eglin steel components for testing.</p> <p>FY 2015 Plans: High Precision Air Vehicle Manufacturing: Implement development of precision manufacturing methods for current and next generation aircraft by addressing the accumulated efforts to control the impact due to materials, tooling, environment, personnel, manufacturing and assembly.</p> <p>Fastener Fill: Establish approved procedural support for production implementation. Develop First Article Acceptance delta updates based on the changes implemented.</p> <p>Automated and Rapid Boot Installation: Decisions for production implementation to be made from contractor submittals with supporting process documentation. Lockheed Martin and stakeholders to review and approve for implementation. First Article delta updates to be performed.</p> <p>Dimensions from Day One: Explore and develop predictive capability methodology training and user-friendly improvements. Evaluate Methodology prediction and comparison to “as built” hardware of simple, and average to complex configurations.</p> <p>Large Scale Encapsulate Ceramics for Medium and Large Caliber Threat Defeat: Scale up casting process, develop more automated process for the SiC tiles and conduct manufacturing trials.</p> <p>Cast Eglin Steel: Conduct additional blast tests. Cast and heat treat full scale GCV underbody and full vehicle hull. Continue working with US Navy to develop USMC ground vehicle and other applications. Continue integrating bomb casings into USAF munitions.</p>			
<p>Title: Enterprise and Emerging Manufacturing</p> <p>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 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>	1.319	2.784	3.212

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

	FY 2013	FY 2014	FY 2015
<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>MTConnect Challenge: Focuses on developing enterprise manufacturing solutions (tools) using newly developed MTConnect interoperable protocol, for use on machining platforms and manufacturing enterprise communication development. MTConnect is an open communication standard that provides the capability to pass data from enterprise components 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 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>40mm M433 Warhead Producibility: This effort will improve anti-personnel lethality at the squad level, increasing grenadier first shot effectiveness against personnel targets. Optimization of production process prior to transition to Full Rate Production will enable avoidance of significantly high cartridge unit costs. New manufacturing process/techniques will be established to embed discrete fragments into over molded warhead bodies, replacing deep drawn pre-formed manufacturing techniques. Low Velocity 40mm M433 High Explosive Dual Purpose (HEDP) Grenades do not meet lethality requirement stated in FM 23-31. The grenadier, an integral part of the squad, lacks lethality from the M433 HEDP grenade. The M433 HEDP lethality is restricted by the warhead manufacturing process and design. A new warhead design and manufacturing process is required to achieve lethality</p>			

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

	FY 2013	FY 2014	FY 2015
<p>requirements and to increase lethality overmatch of the squad. Currently the M433 HEDP warhead is a deep drawn body with pre-formed fragments. The deep drawn warhead body, although cost effective, produces inconsistent fragment sizes, weights, and patterns which reduces warhead lethality.</p> <p>Loading ALIMX-101 into 500 LB General Purpose Bombs: A promising new Insensitive Munitions, IM, explosive has been selected for implementation into the 500 LB General Purpose Bomb used by the Navy and Air Force so an efficient manufacturing process needs to be developed early in the acquisition cycle in order to avoid costly delays in fielding the new IM-compliant system.</p> <p>FY 2013 Accomplishments: MT Connect Challenge: Developed and designed requirements and all public release information concerning challenge offering and objectives. Awarded prizes for Challenge 1 that sought ambitious yet achievable ideas that harness innovation and manufacturing intelligence breakthroughs.</p> <p>Framework for Assessing Cost and Technology (FACT): Initiated development of tools that enable trade-off analysis between manufacturing processes and structural performance to minimize the cost for lower quantity lot sizes.</p> <p>FY 2014 Plans: MT Connect Challenge: Review submissions for accuracy, credibility, effectiveness, and potential savings data. Complete an evaluation and assessment of the competing offerings for Challenge 2 and determine the winning entries. The 2014 MT Conference will present finalists and attendees will vote for the 3 award winners. 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.</p> <p>40mm M433 Warhead Improvement Fabrication & Producibility: Develop optimized injection molding and discrete fragment insertion tooling and processes. Optimize mold stages to decrease time to load parts, over-mold parts & transition to follow on stages. Potential Return on Investment (ROI) = 8.5:1; cost savings \$24.5M, when calculated over identical production quantities from 2016 to 2022 (\$17.00 per round cost reduction).</p> <p>Loading ALIMX-101 into 500 LB General Purpose Bombs: Develop and optimize loading rates for each material, fill height levels and tolerances, cooling parameters for each material, and X-ray inspection criteria of loaded bomb. Using ARDEC's pilot-scale</p>			

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

	FY 2013	FY 2014	FY 2015
<p>processing facility is typical process development for many programs (155mm artillery, mortars, grenades, etc.) because it is more cost effective and efficient than evaluation at a load plant.</p> <p>FY 2015 Plans: Framework for Assessing Cost and Technology (FACT): 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>40mm M433 Warhead Improvement Fabrication & Producibility: Develop fragment insertion methods & equipment to reduce time to fill mold with fragments & settle/align fragments. Develop mold clamping system to enable mold stage transitions at reduced cycle times.</p> <p>Loading ALIMX-101 into 500 LB General Purpose Bombs: Transition processing parameters for loading to McAlester Army Ammunition plant. Load study using ARDEC-developed processes.</p>			
<p>Title: Innovation Manufacturing Institutes (IMI) (previously Advanced Manufacturing Innovation Institutes)</p> <p>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), the National Aeronautics and Space Administration (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.</p> <p>IMI for 3D printing: The focus of the 3D printing IMI is to accelerate additive manufacturing technologies to the U.S. manufacturing sector and increase domestic manufacturing competitiveness by: 1) Fostering a highly collaborative infrastructure for the open exchange of additive manufacturing information and research 2) Facilitating the development, evaluation, and deployment of efficient and flexible additive manufacturing technologies 3) Engaging with educational institutions and companies to supply education and training in additive manufacturing technologies to create an adaptive, leading workforce, 4) Serving as a national institute with regional and national impact on additive manufacturing capabilities, 5) Linking and integrating US companies</p>	-	12.000	71.250

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

	FY 2013	FY 2014	FY 2015
<p>with existing public, private or not-for-profit industrial and economic development resources, and business incubators, with an emphasis on assisting small- and medium-sized enterprises and early-stage companies (start-ups). The 3D printing IMI was established in 2012.</p> <p>IMI for digital manufacturing and design: Advanced design and manufacturing tools that are digitally integrated and networked with supply chains can lead to 'factories of the future,' forming an agile U.S. industrial base with significant speed to market advantage. A national institute focusing on the development of model-based design methodologies, virtual manufacturing tools, and sensor and robotics-based manufacturing networks will accelerate innovation in manufacturing, increasing U.S. competitiveness. The digital manufacturing and design IMI will provide the proving ground to link promising information technologies, tools, standards, models, sensors, controls, practices and skills, and then transition these capabilities to the industrial base for full-scale application. For example, proving and progressing intelligent electro-mechanical design and manufacturing capabilities from laboratory to prototype factory environments would improve production efficiencies and costs. The focus is the smart and comprehensive use of the 'digital thread' throughout design, production and support.</p> <p>IMI for lightweight metals: Advanced lightweight metals possess properties comparable to traditional materials while enabling much lighter components and products. A national institute will scale-up research to accelerate market expansion by applying integrated computational of materials and manufacturing approach. New structural alloys face tremendous barriers to application due to lack of design guides and certifications as well as cost and scale-up challenges. The goal is to develop an advanced lightweight-metal U.S. supplier base, and to enable DoD to realize significant fuel reduction, increased payloads, and greater speed and agility of manned, unmanned, and soldier systems as well as benefits for commercial applications and energy savings.</p> <p>Two additional IMIs will be established in FY 2015, focusing investments in the key technical areas of Advanced Electronics and Optics Manufacturing, Advanced Materials Manufacturing, and Enterprise and Emerging Manufacturing.</p> <p>Each Institute is projected to be financially self-sustaining within a five year period of performance.</p> <p>FY 2013 Accomplishments: All FY 2013 efforts for the first three IMIs were funded using Industrial Base Innovation Fund resources, addressed in the Congressional Add description below.</p> <p>FY 2014 Plans: IMIs for digital manufacturing and design, and for lightweight metals: Build on positive results of the first round of Research and Development projects awarded in FY 2013 by transitioning capability to the organic and commercial industrial base. Grow the</p>			

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

	FY 2013	FY 2014	FY 2015
<p>membership of each Institute to realize self-sustainment in five years. Initiate revenue streams from membership dues. Attain reputation as mature IMIs. Demonstrate the IMI network by establishing complementary relationships and developing projects in which the DoD institutes' technologies are shown to be integrative in nature with the other IMIs under the National Network of Manufacturing Institutes. Brief the Institutes at a number of venues to build the customer base for the Institutes' tools and broaden the membership networks.</p> <p>Award second and third round of project contracts in the following key core areas for each Institute: IMI for digital manufacturing and design: advanced manufacturing enterprise, intelligent machines, and advanced analysis; IMI for lightweight metals: applications of new/novel metals and alloys, primary metal manufacturing processes, secondary manufacturing processes, and development of products exploiting lightweight and modern metals. IMI for 3D printing: There are currently no resources for this IMI in FY 2014.</p> <p>FY 2015 Plans: The 3D printing IMI will continue membership growth and membership engagement. A third call for projects will be launched based on an updated technology roadmap developed from the technical strategy workshops held in 2014. The IMI will competitively review and award additional applied research projects totaling up to \$5-10 million of highest potential for industry and government shared benefit. A challenge or series of challenges/prizes will be launched surrounding additive manufacturing topics to draw in industry impact. A sustainability plan will be completed including projected revenue streams such as "fee for service" research for industry and government agencies and membership fees. The IMI will conduct further technology strategy workshops on a continuing basis to gather member input and continue to refine the Additive Manufacturing National Roadmap. Technology transitions and technology dissemination will continue to institute members and to the general public. Additional workforce development activities will take place. The online portal and knowledge base will be further developed to allow for continued membership engagement and collaboration. Small businesses will continue to be engaged with use of the Innovation Factory facility, and training activities will be developed. Institute economic development activities and institute performance metrics will be measured.</p> <p>IMIs for digital manufacturing and design, and for lightweight metals: Expand the membership of both Institutes and promote inter-institute cross-membership and collaboration across the IMI network. Develop and expand upon the commercialization and utilization of FY 2013 and FY 2014 projects. Analyze US and Global industrial base in partnership with other government agencies, to build upon the institute portfolio and address critical requirements. Award fourth round of project contracts in the key core areas for each Institute, which are: IMI for digital manufacturing and design: advanced manufacturing enterprise, intelligent machines, and advanced analysis.</p>			

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
IMI for lightweight metals: applications of new/novel metals and alloys, primary metal manufacturing processes, secondary manufacturing processes, and development of products exploiting lightweight and modern metals.			
Accomplishments/Planned Programs Subtotals	20.593	34.014	91.095

	FY 2013	FY 2014
Congressional Add: Industrial Base Innovation Fund (IBIF)	28.939	25.000
<p>FY 2013 Accomplishments: Program investments were executed in manufacturing technology that address defense industrial base shortfalls (especially those related to more urgent production requirements); diminishing defense manufacturing sources and material shortages; a sustainable defense design team base; model-based engineering and integrated computational materials engineering; or new, innovative technologies being developed through public-private partnerships such as the National Advanced Manufacturing Partnership, Connecting American Manufacturing, and the National Digital Engineering and Manufacturing Consortium. 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 project completion. The following areas of investment were executed to enable a diverse suite of advanced manufacturing production improvements</p> <p>- Innovation Manufacturing Institutes (IMI) (previously Advanced Manufacturing Innovation Institutes) (see program descriptions addressed above):</p> <p>1) IMI for 3D printing: The institute accomplished a first-year, start-up phase consisting of establishing over 80 industry, academic, and non-profit members, creating a balanced governance structure to engage industry and government stakeholders, development of performance metrics, a project call process, an operating plan, the hiring of full-time staff, and completed renovations of the headquarters, the Innovation Factory. A Call for Projects resulted in six applied research projects, engaging over 35 member organizations on project teams. The Additive Manufacturing technology roadmap was developed using results generated from a series of workshops with members. A Second Project Call was launched with anticipated awards totaling \$9 million (government share). Plans for education and workforce training and outreach were developed, and initiatives were launched in these areas. The IMI for 3D printing began the development of a new public and private (members-only) collaborative website for secure exchange of relevant information on projects, member organization capabilities, and developments in the additive manufacturing industry.</p> <p>2) IMIs for digital manufacturing and design, and for lightweight metals: Provided resources for initial staffing of each Institute, permitting timely standup of the Institutes to facilitate growth in membership and customer</p>		

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	FY 2013	FY 2014
<p>interest. Awarded initial cooperative agreements. The Technology Advisory Boards of these Institutes were established along with operating procedures on governance, intellectual property protection, and membership. Began cross-institute project teaming with the 3D printing IMI, and began engagement with organic (depot) manufacturing communities within DoD. Executed the initial Project Calls and awarded first round of projects, typically \$1M in government funds matched 1:1 or better by industry. Contracts were awarded in the following core areas for each Institute:</p> <p>IMI for digital manufacturing and design: advanced manufacturing enterprise, intelligent machines, and advanced analysis;</p> <p>IMI for lightweight metals: applications of new/novel metals and alloys, primary metal manufacturing processes, secondary manufacturing processes, and development of products exploiting lightweight and modern metals.</p> <p>Other projects executed (space limitation precludes project details below, but further descriptions are available):</p> <p>Automated Non-Destructive Evaluation (NDE) Analysis of Composite Ultrasonic Inspection Data for Manufacturing Quality Control Carbon Nanotube Cables Connecting American Manufacturing Curved Transparent Ceramics Laser Assisted Consolidation of Composites Multi-function Periscope On Tool Inspection of Automated Fiber Placement</p> <p>FY 2014 Plans: Projects to be executed (space limitation precludes project details below, but further descriptions are available): Affordable Radar Large Affordable Substrates On Tool Inspection of Automated Fiber Placement Solid Rocket Motor Digital Factory</p>		
Congressional Adds Subtotals	28.939	25.000

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

<u>Line Item</u>	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015</u> <u>Base</u>	<u>FY 2015</u> <u>OCO</u>	<u>FY 2015</u> <u>Total</u>	<u>FY 2016</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</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.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 3: Advanced Technology Development (ATD)</i>	R-1 Program Element (Number/Name) PE 0603699D8Z / <i>Emerging Capabilities Technology Development</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
Total Program Element	43.377	20.859	53.967	33.706	-	33.706	34.784	33.384	32.622	41.306	Continuing	Continuing
P795: <i>Emerging Capabilities Technology Development</i>	43.377	20.859	34.967	33.706	-	33.706	34.784	33.384	32.622	41.306	Continuing	Continuing
P369: <i>Disruptive Technology Demonstrations</i>	0.000	-	19.000	-	-	-	-	-	-	-	Continuing	Continuing

The FY 2015 OCO Request will be submitted at a later date.

Note

The Emerging Capabilities Technology Development (ECTD) Program Element (PE) reflects a shift in focus throughout the Office of the Deputy Assistant Secretary of Defense for Rapid Fielding (DASD RF) on producing risk-reducing prototypes and demonstrations coordinated through interagency and Service partnerships. The ECTD will support the Department's Countering Emerging Threats priority area through longer-term, mission-focused capability development. The office will execute projects in collaboration with government labs, academia, and industry that target specific mission capability gaps across the Combatant Commands.

In FY 2015, Disruptive Demonstrations (Project P369) funding will be transferred from PE 0603699D8Z (Emerging Capabilities Technology Development) to PE 0603289D8Z (Advanced Innovative Analysis & Concepts).

A. Mission Description and Budget Item Justification

This funding develops emerging capabilities and 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, the DASD RF, and the Rapid Reaction Technology Office 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 four year period, typically at a cost of less than \$4.000 million, and are demonstrated and fielded in spirals within the project timeline. During FY 2014, the ECTD Program enhanced its focus on rapid prototyping of high-payoff technologies. This program element has evolved from exclusive support of force transformation activities to the activities described above, which are more closely aligned with departmental goals.

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B. Program Change Summary (\$ in Millions)	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO	FY 2015 Total
Previous President's Budget	24.662	61.971	45.706	-	45.706
Current President's Budget	20.859	53.967	33.706	-	33.706
Total Adjustments	-3.803	-8.004	-12.000	-	-12.000
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-3.239	-8.000			
• Congressional Rescissions	-0.033	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.522	-			
• Efficiency Savings	-	-	-12.000	-	-12.000
• Other Program Adjustments	-0.009	-	-	-	-
• FFRDC Adjustments	-	-0.004	-	-	-

Change Summary Explanation

FY 2015: Decrease of \$12.000 million is the net of Disruptive Demonstrations (P264) funding transfer to new PE 0603289D8Z, Advanced Innovative Analysis and Concepts.

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603699D8Z / <i>Emerging Capabilities Technology Development</i>	Project (Number/Name) P795 / <i>Emerging Capabilities Technology Development</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
<i>P795: Emerging Capabilities Technology Development</i>	43.377	20.859	34.967	33.706	-	33.706	34.784	33.384	32.622	41.306	Continuing	Continuing

The FY 2015 OCO Request will be submitted at a later date.

A. Mission Description and Budget Item Justification

This funding develops emerging capabilities and 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 for Rapid Fielding, and the Rapid Reaction Technology Office 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 four year period, typically at a cost of less than \$4.000 million, and are demonstrated and fielded in spirals within the project timeline. During FY 2014, the Emerging Capabilities Technology Development Program enhanced its focus on rapid prototyping of high-payoff technologies. This program element has evolved from exclusive support of force transformation activities to the activities described above, which are more closely aligned with departmental goals.

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

	FY 2013	FY 2014	FY 2015
<p>Title: Overwatch</p> <p>Description: Overwatch is an overarching ground capability development effort which is leveraging technology and new concepts to develop prototypical capabilities 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.</p> <p>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 for application in denied areas or low-cost, small footprint operations. 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.</p> <p>FY 2013 Accomplishments: QuickNETS was assessed for continuing requirements, while NexTech, Advanced Countermeasure Prototype, Buoyant Body Armor, Spectral Management, Intelligent Small Unit Power (ISUP), and Humanitarian Assistance/Disaster Relief (HA/DR)-Test Center continued development of prototypes. Development, testing, and safety certification of the Advanced Mortar Protection</p>	4.264	6.936	3.800

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2013	FY 2014	FY 2015
<p>Systems (AMPS) was completed and initial fielding began in FY 2013 in support of Operation Enduring Freedom. New starts included Multi-modal Hostile Fire Detection System (MHFDS) and Remote Weapon System (RWS) Auto Prioritization, Targeting, and Operator Cueing (RAPTOR), a semi-autonomous crew-served weapon system.</p> <p>FY 2014 Plans: Fielding of AMPS with U.S. Forces-Afghanistan (USFOR-A) in support of Operation Enduring Freedom will be completed in FY 2014. Intelligent Small Unit Power (ISUP), Advanced Countermeasure Prototype – Helo Active Protection System (ACP-HAPS), Spectral Management and Buoyant Body Armor prototypes will be assessed for continuing requirements and/or closed/transitioned. Additionally, Buoyant Body Armor, ACP-HAPS, and Spectral Management will test and demonstrate. Walking Papers, Multi-modal Hostile Fire Detection System (MHFDS), RAPTOR, NexTech, and HA/DR-Test Center will continue project developments. New projects for FY 2014 will include: Augmented Reality Clip-On (ARCO), which provides a software implementation to interconnect with a host device to display real-time points of interest as a heads-up display (HUD) on a suite of night vision goggles (NVGs); Wide Field of View Enhanced Binocular Night Vision Device (WFOV eBNVD), which develops NVG prototypes to increase the operator’s field of view by 250 percent and provide enhanced depth perception; and the Net-Zero Engagement project, which will identify more cost effective ways of engaging in unstable and transitioning states. Other new projects for FY 2014 under consideration include: Multi-Medium Identification System (MMIDS), which will test and evaluate the effectiveness of a novel detector for threat and illicit material detection/identification in objects and conveyance in a variety of environments; and Enhanced Expeditionary Engagement Capability (E3C) which will provide warfighter input to the development of a precision-guided 81mm mortar. Additional projects will be developed and informed by Assistant Secretary of Defense (Research & Engineering), Deputy Assistant Secretary of Defense Rapid Fielding (DASD RF), Rapid Reaction Technology Office (RRTO) objectives and focus areas.</p> <p>FY 2015 Plans: HA/DR-Test Center will transition to an operational entity under United States Pacific Command (USPACOM). Multi-modal Hostile Fire Detection System, RAPTOR, NexTech, ARCO, WFOV-eBNVD, and the Net-Zero Engagement projects will continue development of prototypes. Potential new starts for FY 2015 include Shock Impact and Explosive Limits Dosimetry (SHIELD), which will develop 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 RRTO objectives and focus areas.</p>				
Title: Maritime Irregular Warfare/Stiletto		4.264	6.942	4.032
Description: The Maritime Irregular Warfare portfolio investigates gaps and develops irregular warfare capabilities in the maritime domain, with a particular focus on prototype concepts and systems. Projects explore the development of counter evolved non-state capabilities such as semi- and fully-submersible vehicles, 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				

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

designed to assist in the assessment of prototypes and the rapid transition of emerging technologies across the range of military operations to higher Technology Readiness Levels. Stiletto, an 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. 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 Accomplishments:

In FY 2013, Naval Underwater Threat Interrogation and Covert Assessment System (NAUTICAS) prototype development continued with the Navy and Joint Improvised Explosive Device Defeat Organization (JIEDDO), moving from the lab environment to a real world, controlled environment, and testing within the Continental United States. The Inflatable Catamaran project continued its development to improve the existing design and construction processes for the Special Forces' inflatable hull component of the Combatant Craft Light (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 Common Maritime Technology Working Group (CMTWG) identified the lead organizations for Stiletto Capability Demonstrations and produced an analysis of common small craft technology needs in FY 2013. CMTWG worked within its membership to bring an advanced Multi-Fuel Engine into the Navy catalog. The Maritime Irregular Warfare focus area supported three Stiletto Capability Demonstrations of emerging Intelligence, Surveillance, and Reconnaissance (ISR), Command and Control, and maritime Unmanned Vehicle Aerial Vehicle (UAV) launch and recovery capabilities on the boat in FY 2013, supporting Navy Expeditionary Combat Command (NECC), Trident Spectre 2013, and the UK Ministry of Defence. Technology Demonstration periods also occurred throughout the year to support industry partners with emerging and innovative capabilities.

FY 2014 Plans:

NAUTICAS testing will be completed in FY 2014. The Navy and JIEDDO worked toward a successful prototype system that will lead to the development of an operationally deployable prototype. 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 Tactical Sensor Mast deployable ocean sensor system and advanced unmanned surface and undersea systems focused on ASD(R&E), DASD RF, and RRTO objectives and focus areas. 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), the Intelligence Community, and other operational users. The CMTWG and Stiletto Maritime Demonstration Program will continue, and will focus

FY 2013	FY 2014	FY 2015

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
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maritime efforts on unmanned, autonomous capabilities and electronic warfare/electronic protection. Inflatable Catamaran Hull and Frame Development will complete testing towards its main objectives in FY 2014 and transition those capabilities to the Navy's Combatant Craft Light Mark 1 program. The new design will provide significantly increased speed, range, payload, and improved riding, supporting missions such as Maritime Area Denial. New Maritime Irregular Warfare projects for FY 2014 include development of the Spar Tactical Sensor Mast deployable ocean sensor system with the US Navy Director of Expeditionary Warfare and other interagency partners, which will increase situational awareness in limited access areas; and an effort to focus on maritime disablement technologies and prototypes to counter emerging threats. 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 including Trident Warrior and Trident Spectre. Stiletto's FY 2014 Capability Demonstrations will focus on demonstrating integrated situational awareness capabilities to support expeditionary, coastal and riverine operations; mobile capabilities to support USSOCOM's maritime activities; and maritime UAV launch and recovery demonstrations to support stakeholders including the UK Ministry of Defence and Naval Special Warfare. 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.

FY 2015 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, maritime disablement prototypes, and advanced unmanned surface and undersea systems focused on Assistant Secretary of Defense for Research & Engineering (ASD(R&E)), Deputy Assistant Secretary of Defense for Rapid Fielding (DASD RF), and Rapid Reaction Technology Office (RRTO) objectives and focus areas. 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), the Intelligence Community, and other operational users. 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	4.381	-	-
Description: In 2008, the Department undertook an airship project called "Pelican"; with National Aeronautics and Space Administration (NASA) Ames Research Center providing technical and contractual oversight. Pelican served as a non-deployable technology demonstrator that integrated several innovative technologies into a rigid aeroshell, variable buoyancy (RAVB) air vehicle. The project's goal was to mitigate long-term technical risks by integrating and demonstrating a suite of technologies with the potential to assist the development of future heavy-lift, airship programs. The technology may enable the development of a nascent class of air vehicle which will reduce the energy use per ton-mile of airlift operations, permit high-payload operations			

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2013	FY 2014	FY 2015
<p>directly into and out of austere regions with little infrastructure and enable long-endurance manned or unmanned air operations. The key technologies demonstrated include: a buoyancy control system called Control of Static Heaviness (COSH), a rigid, lightweight-composite internal structure, a low-speed/hover control system and ground handling capabilities that allow operations without a traditional airship's ground handling crew. This project and its inherent technical progress were also monitored by the United States Air Force Research Laboratory (AFRL) and United States Transportation Command.</p> <p>FY 2013 Accomplishments: In January 2013, Pelican met its project demonstration objectives within parameters accepted by NASA. FY 2013 funding was provided to produce technical data on Pelican's subsystems that can be shared and used to guide future design and investment. In March 2013, a report was submitted documenting project Pelican's development. In addition to a detailed analysis of the various subsystems, the report contained a theoretical scalability analysis as well as embedded lessons learned and development challenges. The analytically detailed information gained from Project Pelican's complete body of testing will help the DoD determine the best path forward with regard to airships in general and RAVB technology in particular.</p> <p>In September 2013, project Pelican officially concluded with the submission of the final report on data and analyses conducted in FY 2013. No follow-on work or funding is planned by the Department.</p>				
<p>Title: Intelligence, Surveillance, and Reconnaissance (ISR)/Thunderstorm/Space</p> <p>Description: This portfolio examines and explores emerging technologies and prototypes to complement the US Air Force (USAF), the National Reconnaissance Office (NRO), and other interagency initiatives in 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, 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, prototype, 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. Thunderstorm aims to identify new capabilities and/or new ways to employ existing capabilities that enhance our ability to "Deter, Predict, and Interdict" threats while assessing how to bridge capability gaps that cross multiple Departments and Agencies.</p> <p>FY 2013 Accomplishments:</p>		2.883	5.967	4.349

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

	FY 2013	FY 2014	FY 2015
<p>Thunderstorm Spirals 13-1 and 13-2 characterized maritime threat behavior in open water in the Gulf of Mexico through the littorals and the transition into the Texas land space. Both spirals capitalized on the lessons learned from previous spirals. In partnership with Joint Interagency Task Force South (JIATF-S), Customs and Border Protection (CPB), United States Coast Guard (USCG), United States Navy (USN), National Geo-Spatial Intelligence Agency (NGA), National Reconnaissance Office (NRO), United States Southern Command (USSOUTHCOM), United States Northern Command (USNORTHCOM) and the Texas Department of Public Safety, Spiral 13-1 technologies were utilized to detect and discriminate suspicious behavior in the open water, littoral and maritime-to-land transition space. The highlight of this Spiral was the capability to share information in near real-time among eight data nodes. Spiral 13-2 built upon lessons learned from Spiral 13-1, placed emphasis on the maritime-to-land transition activity and the ability to prosecute suspicious actors as they quickly meld themselves into urban or rural populations. This information was gathered and then shared in near real time to the data nodes. In FY 2013, Thunderstorm spirals demonstrated 28 emerging capabilities in operationally realistic environments with a broad range of potential operational users providing support.</p> <p>In the space arena, a classified project in partnership with the NRO successfully demonstrated the ability to use commercial-off-the-shelf (COTS) Satellite Communications (SATCOM) equipment for transferring large data files from theater to the U.S. The project used a COTS SATCOM High Data Rate Modem to improve the bandwidth throughput by 100 percent. This was a prototype demonstration and this concept of operations will be adapted to other satellites.</p> <p>FY 2014 Plans: Thunderstorm Spirals 14-1, 14-2 and 14-3 planning began in late FY 2013. All three FY 2014 Spirals will capitalize on the lessons learned from previous spirals with special emphasis on information sharing; barriers to information sharing and evaluating prototype technologies. Spiral 14-1 is a stand-alone threat convergence analysis designed to explore existing and nascent technology in an effort to expose threats to our national security; specifically those described as “Black Swan” events. Spiral 14-1 is intended to be a precursor to FY 2015 Spirals. Spiral 14-1 will be conducted in March 2014. Spiral 14-2 is a Distributed Tabletop effort that is directly associated with the 14-3 Field Demonstration and focuses on Countering Chemical and Biological Weapons of Mass Destruction (WMD). Spiral 14-2 Distributed Tabletop exercise will be conducted in February 2014. The Spiral 14-3 Field Demonstration will take place in the southeast United States in the Spring/Summer 2014. Key operational partners include the JIATF-S, USCG, Defense Threat Reduction Agency (DTRA), CBP, Federal Bureau of Investigation (FBI), USN Intelligence Community (IC), Office of Naval Intelligence (ONI), NRO, NGA, Homeland Security Investigations (HSI), Joint Program Executive Office (JPEO) for Chemical and Biological Defense, and Special Operations Command (SOCOM).</p> <p>In the space arena, projects focus on increasing satellite utility, prototypes, 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>			

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<p>In FY 2014, a project is underway to assess emerging technologies for managing the space environment. Specifically, the project will provide a critical overview of credible technologies, prototypes, and concepts for understanding, observing, and managing the space environment through space debris mitigation, commercial space situational awareness capabilities, and space-based orbital servicing. Other projects under consideration for FY 2014 include Flume, a software system that aims to enhance the speed of ISR data link communications for Global Hawk, and Multi-INT Activity Learning and Inferencing for Space Threat Prediction (MALISTP), a software system that produces indications and warnings of threats to space assets, attribute estimation, change detection, and proximity analysis.</p> <p>FY 2015 Plans: Planning will continue for subsequent Thunderstorm spirals building on the experience garnered from previous spirals. The details of Thunderstorm FY 2015 have yet to be determined but will likely reflect lessons learned from Thunderstorm FY 2014 as well as real world exigencies.</p> <p>Space projects will focus on new and emerging space technology with the goal of expanding capabilities to move large amounts of data quickly; and improve multi-intelligence sensing, processing, exploitation and dissemination. Efforts to manage the space environment through space debris mitigation, space situational awareness, and threat prediction will continue in FY 2015.</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 Department of Homeland Security (DHS) initiatives in the development of capabilities in the areas of Information Operations, Strategic Communication, and Public Diplomacy. Projects of particular interest include efforts 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 2013 Accomplishments: Projects funded in FY 2013 supported Information Operations and CVE needs in partnership with SO/LIC, DoS's Center for Strategic Counterterrorism Communications (CSCC), U.S. Agency for International Development (USAID), and multiple Combatant Commands. USNORTHCOM's NETp-1 project transitioned to its next phase, incorporating Commander Joint Task Force (CJTF) – Horn of Africa (HOA), United States Southern Command (USSOUTHCOM), and the Joint Information Operations Warfare Center as transition partners. DoS's CVE Messaging Impact project continued prototype development, with participation from USCENTCOM and contributions from the Countering Terrorism Technical Support Office (CTTSO). The Information Operations Assessment Foundation helped form the DoD framework for Information Operations Assessment by supporting SO/</p>	0.879	1.326	1.725

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<p>LIC and the Joint Staff to identify and adapt best practices from DoD as well as commercial marketing experience in influence assessment. The first set of mobile applications in support of USCENTCOM was delivered and began to be operationally assessed.</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 to support DoD efforts in cyber science and technology development and Building Partner Capacity. The Information Operations Assessment Foundation project will be completed in FY 2014 and transition the assessment framework to the Joint Information Operations Warfare Center. The NETp-1 project in its second phase will transition in FY 2014 to the Joint Staff-J8 for use in both influence assessment and Theater Campaign Planning. New projects in FY 2014 include an enhancement to the CVE Messaging Impact tools that will meet the needs of USSOCOM, DoS's CSCC, and USAID; a Digital Dashboard to assess the effectiveness of mobile applications deployed by USCENTCOM; and potential development of a Common Operating Picture to improve understanding of the information environment in the littorals in support of the Marine Corps Information Operations Command.</p> <p>FY 2015 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 to support DoD efforts in Cyber science and technology development and Building Partner Capacity. Priority will be placed on DoD, Joint Staff, and interagency S&T needs identified in a forthcoming Information Operations Strategy from Office of the Undersecretary of Defense (Policy).</p>			
<p>Title: Rapid Prototyping</p> <p>Description: This portfolio will focus on cost-effective, limited duration projects to design, develop and deliver prototypes of cutting-edge land, sea, air and space systems to meet the Department's goal to drive innovation in aviation, space, maritime and ground combat systems in a fiscally constrained environment through advanced rapid prototyping. These prototypes will be delivered to joint and Service users to evaluate operational capabilities under realistic conditions and against current adversaries or anticipated threats. Potential venues for prototype assessment include assets such as the Stiletto Maritime Demonstration Program, Thunderstorm integration exercises and the Joint Experimental Range Complex (JERC) in Yuma, Arizona. (The JERC experimentation venue is supported in part by the Rapid Reaction Technology Office's Rapid Reaction Fund.) 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</p>	-	13.796	19.800

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

	FY 2013	FY 2014	FY 2015
<p>strategies and tactics. Advanced rapid 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: Rapid 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 ready-to-field prototype systems in one to three years. Candidate efforts will address the Department's Science and Technology 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 and protection. New prototype efforts in FY 2014 include: Advanced Countermeasure Prototype Phase III – Forward Operating Base (FOB) and Convoy Active Protection System (ACP Phase III: F&C APS) which will provide an active protection system against rocket propelled grenades for ground assets—FOBs and vehicles; and establishment of a focus on Electromagnetic Environmental Understanding, which will allow tactical units to automatically identify and exploit electromagnetic spectrum or signals of interest. A project under consideration in this focus area is Quantum Weak Value Amplifier (QWVA), which will amplify electromagnetic signals of interest. Other potential new prototype efforts in FY 2014 include Small Fast Interceptor, a classified program addressing Anti-Access/Area Denial (A2/AD) capability gaps, and North American Arctic Next Generation Over-the-Horizon Radar (Arctic OTHR), which will demonstrate and mature advanced bi-static and multi-static OTHR concepts and techniques to support development of a persistent, scalable, wide-area Arctic surveillance capability in both the air and maritime domains. Advanced prototype efforts will leverage joint or Service partnerships and involve operational commands in the evaluation of field-ready prototypes in realistic military environments. Additional new efforts will examine and 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.</p> <p>FY 2015 Plans: Plans for FY 2015 will build on prototyping developments started in FY 2014. Efforts will span the development of a broad range of prototypes and may focus on near, mid-term, or long term strategic needs. Candidate efforts will address the Department's Science and Technology priorities and specifically address the Assistant Secretary of Defense (Research & Engineering) initiative on Agility and Innovation, 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 and protection. Five to eight advanced prototype efforts will start in FY 2015 leveraging joint or Service partnerships and involving operational commands in the evaluation of field-ready prototypes in realistic military environments. Ongoing efforts will include projects in the Electromagnetic Environmental Understanding and A2/AD capability gap areas. Additional new efforts</p>			

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
will examine and 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.			
Title: Disruptive Demonstrations Description: The Disruptive Technology Demonstrations project is a technology initiative to address pre-conflict-centric capability needs and anticipatory concerns while maintaining low cost, small footprint operations. FY 2013 Accomplishments: Completed project analysis, application investigations, remote payload delivery prototypes and study investigations.	4.188	-	-
Accomplishments/Planned Programs Subtotals	20.859	34.967	33.706

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

N/A

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

In FY 2015, 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 percent 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 FY 2013, Emerging Capabilities Technology Development had 100 percent of its completing projects successfully transition.

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603699D8Z / <i>Emerging Capabilities Technology Development</i>	Project (Number/Name) P369 / <i>Disruptive Technology Demonstrations</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
P369: <i>Disruptive Technology Demonstrations</i>	-	-	19.000	-	-	-	-	-	-	-	Continuing	Continuing

The FY 2015 OCO Request will be submitted at a later date.

Note

In FY 2015, Disruptive Demonstrations (P369) funding will be transferred from the ECTD Program Element to PE 0603289D8Z (Advanced Innovative Analysis & Concepts).

A. Mission Description and Budget Item Justification

The Disruptive Technology Demonstrations project is a technology initiative to address pre-conflict-centric capability needs and anticipatory concerns while maintaining low cost, small footprint operations. The program objectives are to develop disruptive anticipatory products, processes and services suited for quick deployment to fulfill emerging pre-conflict requirements. Disruptive technology and process demonstrations will leverage low cost, commercial, and often low-technology options to provide game-changing and innovative warfighting capabilities. Demonstrations will include protection capabilities in an era of increased theft of Defense-related Intellectual Property (IP).

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

	FY 2013	FY 2014	FY 2015
Title: Disruptive Technology Demonstrations	-	19.000	-
<p>Description: The Disruptive Technology Demonstrations project is a technology initiative to address pre-conflict-centric capability needs and anticipatory concerns while maintaining low cost, small footprint operations. Prior FY accomplishments include:</p> <ul style="list-style-type: none"> - Identified alternative, game-changing capabilities leveraging existing Department of Defense Capabilities in partnership with USPACOM. - Analyzed, demonstrated, and transitioned innovative alternative uses of existing Service programs of record. - Built threat models at an all-source level to address an urgent Combatant Command requirement. - Evaluated four near-term, game-changing options to address an urgent Combatant Command requirement. - Evaluated cost-effective forward base defense architectures. <p>Due to nature of these efforts, specific descriptions and detailed plans are available at higher classification levels.</p> <p>FY 2014 Plans: Disruptive Technology Demonstrations will focus on addressing anticipatory concerns, and small footprint, low-cost operations, among others. Utilizing low cost, commercial, existing Programs of Record, 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</p>			

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603699D8Z / <i>Emerging Capabilities Technology Development</i>	Project (Number/Name) P369 / <i>Disruptive Technology Demonstrations</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<p>suitable for rapid fielding and acquisition. Disruptive demonstrations can be stand-alone technology, new processes, services, or concept demonstrations. Projects will be selected in the execution year based on evolving iterative requirements from Joint and Service participants.</p> <p>These include demonstrations to examine and characterize DoD networks; cognitive Intelligence, Surveillance, and Reconnaissance (ISR) projects to enhance metrics of Theater Security Cooperation Plan (TSCP) activities; Command and Control (C2) tools during pre-conflict periods; and enhanced Operations Security (OPSEC) procedures to protect acquisition and operational data. Additional plans include:</p> <ul style="list-style-type: none"> - Complete high-fidelity model development of four prototype to address urgent Combatant Command needs to support land-based defense assessments. - Evaluate performance of alternative uses of Service systems in response to a Joint Chiefs of Staff tasking to support land-based defense assessments. - Evaluate undersea capability options, and develop necessary models to respond to a Combatant Command tasking to support land-based defense assessments. - Leverage previously developed hypervelocity projectile models to evaluate Powder Gun defense in partnership with the Navy and Army; inputs risks and performance drivers into Land-based Railgun and Powder Gun test plans to support land-based defense assessments. - Expand development of and end-to-end Railgun and Powdergun engagement models that can be integrated with higher-fidelity threat models, to support land-based defense assessments. 			
Accomplishments/Planned Programs Subtotals	-	19.000	-

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

FY 2015 performance Metrics for Disruptive Demonstrations will be displayed in PE 0603289D8Z (Advanced Innovative Analysis & Concepts).

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 3: Advanced Technology Development (ATD)</i>	R-1 Program Element (Number/Name) PE 0603716D8Z I <i>Strategic Environmental Research and Development Program (SERDP)</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
Total Program Element	64.220	58.621	62.324	57.796	-	57.796	68.287	72.572	77.490	83.590	Continuing	Continuing
P470: <i>Strategic Environmental Research and Development Program (SERDP)</i>	64.220	58.621	62.324	57.796	-	57.796	68.287	72.572	77.490	83.590	Continuing	Continuing

The FY 2015 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 2013</u>	<u>FY 2014</u>	<u>FY 2015 Base</u>	<u>FY 2015 OCO</u>	<u>FY 2015 Total</u>
Previous President's Budget	58.621	72.324	75.832	-	75.832
Current President's Budget	58.621	62.324	57.796	-	57.796
Total Adjustments	-	-10.000	-18.036	-	-18.036
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Congressional General Reductions	-	-10.000	-18.036	-	-18.036

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 3: Advanced Technology Development (ATD)</i>	R-1 Program Element (Number/Name) PE 0603716D8Z I <i>Strategic Environmental Research and Development Program (SERDP)</i>
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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.

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603716D8Z / <i>Strategic Environmental Research and Development Program (SERDP)</i>	Project (Number/Name) P470 / <i>Strategic Environmental Research and Development Program (SERDP)</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
<i>P470: Strategic Environmental Research and Development Program (SERDP)</i>	64.220	58.621	62.324	57.796	-	57.796	68.287	72.572	77.490	83.590	Continuing	Continuing

The FY 2015 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 2013	FY 2014	FY 2015
Title: Environmental Restoration	16.228	18.420	14.570
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 2013 Accomplishments: New research initiatives focused on in situ remediation of 1,4-dioxane-contaminated groundwater and improved remediation technologies for treatment of chlorinated solvent-contaminated groundwater. A description of all ER projects funded in FY 2013 can be found 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. Specific Statements of Need were released and proposals are being selected that will address improved remediation operation			

PE 0603716D8Z: *Strategic Environmental Research and Development*

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603716D8Z / <i>Strategic Environmental Research and Development Program (SERDP)</i>	Project (Number/Name) P470 / <i>Strategic Environmental Research and Development Program (SERDP)</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<p>through fine scale delineation of contaminated subsurface environments, in situ remediation of perfluoroalkyl contaminated groundwater, and improved understanding of the impact of ongoing, low level contaminant influx to aquatic sediment site restoration. Details are available at www.serdp-estcp.org.</p> <p>FY 2015 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.</p>			
<p>Title: Munitions Response (MR)</p> <p>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.</p> <p>FY 2013 Accomplishments: New research initiatives focused on advancements in underwater UXO detection and discrimination, advanced sensors, signal processing, supporting technologies, and protocols to support informed decisions and reduce the costs associated with detecting and remediating UXO. A description of all MR projects funded in FY 2013 can be found at www.serdp-estcp.org.</p> <p>FY 2014 Plans: New research initiatives will focus on the highest priority DoD requirements in underwater UXO detection and discrimination, including wide area and detailed surveys; cost-effective recovery and disposal; characteristics of munitions underwater and their environment; and protocols to reduce the costs associated with detecting and remediating UXO underwater. Statements of Need were released and proposals are being selected to address these issues. Details are available at www.serdp-estcp.org.</p> <p>FY 2015 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 underwater.</p>	6.903	19.580	7.650
<p>Title: Resource Conservation and Climate Change (RC)</p> <p>Description: Resource Conservation and Climate Change (RC) develops the science and technologies required to sustain training and testing ranges.</p> <p>FY 2013 Accomplishments:</p>	20.092	24.324	19.518

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603716D8Z / <i>Strategic Environmental Research and Development Program (SERDP)</i>	Project (Number/Name) P470 / <i>Strategic Environmental Research and Development Program (SERDP)</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<p>New research initiated in FY 2013 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.</p> <p>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. 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.</p> <p>FY 2015 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.</p>			
<p>Title: Weapons Systems and Platforms (WP)</p> <p>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.</p> <p>FY 2013 Accomplishments: New initiatives included the development of non-isocyanate polymers for military topcoats, ionic liquids technology, environmentally advantaged submunitions, and the application of synthetic biological techniques for energetic materials. A description of all WP projects funded in FY 2013 can be found at www.serdp-estcp.org.</p> <p>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. Specific Statements of Need were released to address the development of environmentally Sustainable Gas Generators and Mono/Bi-Propellants, development of replacements for polyimide composite materials containing methylene dianiline (MDA). Details are available at www.serdp-estcp.org.</p> <p>FY 2015 Plans:</p>	15.398	-	16.058

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603716D8Z / <i>Strategic Environmental Research and Development Program (SERDP)</i>	Project (Number/Name) P470 / <i>Strategic Environmental Research and Development Program (SERDP)</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
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.			
Accomplishments/Planned Programs Subtotals	58.621	62.324	57.796

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.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 3: Advanced Technology Development (ATD)</i>	R-1 Program Element (Number/Name) PE 0603727D8Z I <i>Joint Warfighting Program</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
Total Program Element	10.276	7.335	3.425	7.405	-	7.405	7.683	8.011	8.505	9.194	Continuing	Continuing
P727: <i>Joint Warfighting</i>	10.276	7.335	3.425	7.405	-	7.405	7.683	8.011	8.505	9.194	Continuing	Continuing

The FY 2015 OCO Request will be submitted at a later date.

A. Mission Description and Budget Item Justification

The Joint Warfighting Program (JWP) is a relatively small but pivotal resource that synchronizes two Department-wide domains, military requirements and acquisition, with shared analyses and actionable assessments. The account underwrites two related activities supporting development of the Department's joint warfighting capability. These resources are a slim residual of much larger accounts supporting unique warfare capability analyses for joint customers including major combatant commander staffs and the Joint Staff. These analyses and assessments deliver independent perspectives on ways to align Service and Agency investments and potential solutions for capability gaps created by evolving threats not aligned to single Component missions. Iterative military budget reductions to joint mission support programs significantly increased demand for JWP support from joint staffs and "units in the field" assigned to joint missions.

The JWP resources are dedicated to analytic support for joint capability analysis and joint customers. JWP provides a safety net for analytic support responding to emergent joint capability requirements and capability gaps for identifying potential material solutions. 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 support Mission Area Portfolio Assessments (MAPA), and the development of tools supporting joint analytic efforts.

The balance of JWP funds contributes resources to examination of potential remedies for joint mission capability gaps. These early assessments of potential capability gap solutions can accelerate engineering development, subsequent field experiments, and capability demonstrations in field conditions. This segment of JWP often represents the first effort to define alternative solutions across the range of Doctrine, Organization, Training, Material, Leadership and Personnel-Facilities. The resources sustain a small segment of civilian operation research analysis (currently hosted by the Institute for Defense Analysis – IDA and the Naval Postgraduate School - NPS). Administered by the Joint Operations Support (JOS) division within OSD's AT&L organization, JOS works closely and continuously with joint customers around the world. Analytic project selection is undertaken in consultation with the OSD staffs serving AT&L and Policy and with elements of the Joint Staff.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 3: Advanced Technology Development (ATD)</i>	R-1 Program Element (Number/Name) PE 0603727D8Z I <i>Joint Warfighting Program</i>
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B. Program Change Summary (\$ in Millions)	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO	FY 2015 Total
Previous President's Budget	8.403	8.431	8.643	-	8.643
Current President's Budget	7.335	3.425	7.405	-	7.405
Total Adjustments	-1.068	-5.006	-1.238	-	-1.238
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Baseline Adjustments	-1.068	-5.006	-1.238	-	-1.238

Change Summary Explanation

FY 2013 baseline adjustments due to sequestration.

FY 2014 baseline adjustments from NDAA for 2014. (Reductions not requested by DoD).

FY 2015 baseline of work is based on current level of demand from OSD Joint Staff and operational customers projected into FY15 program work. Typically JWP is capable of covering only a relatively small percentage of demand for Joint Capability Analysis.

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603727D8Z / Joint Warfighting Program	Project (Number/Name) P727 / Joint Warfighting
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
<i>P727: Joint Warfighting</i>	10.276	7.335	3.425	7.405	-	7.405	7.683	8.011	8.505	9.194	Continuing	Continuing

The FY 2015 OCO Request will be submitted at a later date.

A. Mission Description and Budget Item Justification

The OSD JWP account underwrites two related activities supporting development of the Department's joint warfighting capability. These are resources dedicated to support joint capability analysis for joint customers and undertaken by Combatant Command staffs, and resources dedicated for independent analysis of joint warfare (currently conducted by the Institute for Defense Analysis – IDA and the Naval Postgraduate School - NPS). Iterative military budgets decrements leave JWP as the primary resource dedicated to analytic assessment of joint capability gaps and potential solutions. During a period of force resetting and realignment, this resource becomes even more essential to staffs and military units dedicated to evolving joint missions.

The JWP resources are dedicated to analytic support for joint capability analysis and joint customers. JWP provides a safety net for analytic support responding to emergent joint capability requirements and capability gaps for identifying potential material solutions. 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 projects in partnership with joint commands provide 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 support Mission Area Portfolio Assessments (MAPA), and the development of tools supporting joint commander analytic efforts.

The balance of JWP funds resource the Joint Warfare Independent Analysis segment, an independent source to examine potential remedies for mission capability gaps. This segment of JWP often represents the first effort to define alternative solutions across the range of Doctrine, Organization, Training, Material, Leadership and Personnel-Facilities. The resources sustain a small segment of operation research analysis (currently hosted by the Institute for Defense Analysis – IDA). Administered by the Joint Operations Support (JOS) division within OSD/AT&L, JOS works closely and continuously with joint customers around the world. Analytic project selection is undertaken in consultation with the OSD staffs serving AT&L and Policy and with elements of the Joint Staff.

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

	FY 2013	FY 2014	FY 2015
Title: Support for Joint Capability Analysis	4.425	2.569	4.425
Description: JWP resources are dedicated to analytic support for joint capability analysis and joint customers. JWP supports joint capabilities by promoting analyses and assessments to address challenges specific to their theater or functional missions. It aims to reinvigorate joint military staff capabilities to employ rigorous analysis and experimentation methodologies in support of specific mission assignments. It support joint commander identification of capability gaps and selectively funds limited objective			

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603727D8Z / <i>Joint Warfighting Program</i>	Project (Number/Name) P727 / <i>Joint Warfighting</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<p>experiments experiment to understand a concept or technology that addresses a specific joint mission challenge. JWP also resources Mission Area Portfolio Assessments (MAPA) serving the need of joint capability clients.</p> <p>FY 2013 Accomplishments:</p> <ul style="list-style-type: none"> -Conducted joint Mission Area Assessment of portfolios and explored capability gap mitigation strategies serving both critical review of Major Defense Acquisition Programs (MDAPs) and evolving joint threats. -Supported USNORTHCOM's investigation and analysis of Over the Horizon Radar (OTHR) capability against cruise missile targets against the United States. -Initiated the Joint Innovation Field Experiment with Naval Post Graduate School to provide Combatant Commands a pre-acquisition field experiment environment to define capability requirements. -Supported USPACOM's Cyber War Center development of test and experimentation use case plans to integrate cyber operations. -Supported RDA Task Force with Kill Chain Analysis, and solutions development for scenarios. -Supported path-finding operational energy study project to analyze planning assumptions and shortfalls for critical logistics support in Combatant Command OPLANS. <p>FY 2014 Plans:</p> <ul style="list-style-type: none"> -Direct emphasis to Mission Area Portfolio Assessment (MAPA) of Service acquisition investments to support acquisition decisions addressing joint capability shortfalls projected in the future, and emphasis on joint capability development serving the needs of joint commanders and joint clients. Provide direct analytical support responding to emergent joint military staffs requests. -Develop analyses examining emergent joint capability gaps and to developmental military needs for material solutions. -Continue to support and develop the joint innovation field experimentation (JIFX) initiative hosted by Naval Post Graduate School to support joint commander development of credible, analytically sound military capability requirements including desired Key Performance Parameters (KPPs) and Key System Attributes (KSAs) for subsequent formal acquisition. -Continue to provide resources to joint military staffs to enable minimal experimentation cells to explore capability gaps, potential solutions, and understanding of new technologies and concepts. -Empower joint military staffs and OSD elements to employ rigorous analysis and experimentation methodologies in support of their specific mission assignments, to assess military needs critically and to examine viable capability gap solutions. <p>FY 2015 Plans:</p> <p>Continue emphasis on Mission Area Portfolio Assessment (MAPA) to provide insights for acquisition decisions focused on capability development serving the needs of joint commanders and joint clients. Provide direct analytical support responding to emergent joint military staffs to identify capability gaps and military needs for material solutions. Continue to support joint innovation field experimentation (JIFX) effort hosted by Naval Postgraduate School. Support joint commanders to develop and refine capability requirements. Continue to partner with joint military staffs, encouraging experimentation cells to address mission</p>			

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603727D8Z / Joint Warfighting Program	Project (Number/Name) P727 / Joint Warfighting
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014		FY 2015
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capability gaps, explore potential solutions, and improve understanding of new technologies and concepts in response to evolving missions and military threats. Empower the joint military staffs to employ rigorous analysis and experimentation methodologies.

Title: Analytic Development of Joint Military Requirements Addressing Evolving Threats / Missions 2.910 0.856 2.980

Description: This segment underwrites innovative, responsive and timely analytic support on joint capability development serving the needs of joint staffs and units in partnership with acquisition authorities. 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. Joint warfare independent analysis often represents the first effort to define alternative solutions across the range of Doctrine, Organization, Training, Material, Leadership and Personnel-Facilities. These resources leverage a small analytic framework (currently consisting of analysts at the Institute for Defense Analysis – IDA, and the Naval Postgraduate School - NPS). Administered by the Joint Operations Support cell within OSD/AT&L, this fund capability gap definition 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.

- FY 2013 Accomplishments:**
- Analyzed Combatant Command Integrated Priority Lists (IPLs) for common capability gaps where material solutions might mitigate Department risks.
 - Supported Joint Staff capability portfolio analysis of potential remedies for mission capability gaps and frameworks for accelerated acquisition and capability demonstrations (Radiant Blue ISR).
 - Developed a pictorial representation of Defense Department's interconnected modeling and simulation tools (PRIME) to enable users to examine the relationships between models and the user's area of interest. This tool was developed to categorize and link campaign level models with underlying data bases and models.
 - Assessed the sufficiency of gaming in the Department for Adaptive Planning.
 - Assessed analytic tools available for joint military examination of time-sensitive targets in conventional campaigns.

FY 2014 Plans:
Impaired by abrupt resource reduction mid-year 2014, this segment will still aim to provide an independent innovative, responsive and timely capability development pathway and recommendations for rapid acquisition, field experiments conducted by joint commands in partnership with acquisition authorities. It will provide an independent source for enabling capability development suitable for joint experimentation undertaken by the joint commanders. The findings of these investigative analyses frequently explore joint capability development via experiments and prototype demonstrations leading toward potential material solutions. It will enable experiments in field conditions that address regional capability gaps, explore potential innovative solutions, and improve understanding of the potential warfare applications of mature technologies. It will empower joint military staffs to employ

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603727D8Z / <i>Joint Warfighting Program</i>	Project (Number/Name) P727 / <i>Joint Warfighting</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<p>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 2015 Plans:</i> This segment will provide independent analysis of joint issues and capability gaps. It will provide responsive and timely capability development pathways and recommendations for rapid acquisition, field experiments conducted by joint military staffs and units. It will provide an independent source for enabling capability development suitable for joint experimentation undertaken by joint authorities. 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. As before, it will empower the joint 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>			
Accomplishments/Planned Programs Subtotals	7.335	3.425	7.405

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 CCMD 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.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 3: Advanced Technology Development (ATD)</i>	R-1 Program Element (Number/Name) PE 0603781D8Z / <i>Software Engineering Institute (SEI)</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
Total Program Element	-	28.619	19.006	15.776	-	15.776	15.778	15.799	16.292	16.792	Continuing	Continuing
P781: <i>Software Engineering Institute (SEI)</i>	-	18.605	11.658	15.776	-	15.776	15.778	15.799	16.292	16.792	Continuing	Continuing
P783: <i>Software Producibility Initiative</i>	-	10.014	7.348	-	-	-	-	-	-	-	Continuing	Continuing

The FY 2015 OCO Request will be submitted at a later date.

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. To address this, the P781 project within this PE funds research and development within the SEI Federally Funded Research and Development Center (FFRDC) and, to access particular expertise, in the Services, industry, and academia.

The SEI FFRDC is the DoD's dedicated source for software research and development. It 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, 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 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.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense	Date: March 2014
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Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 3: Advanced Technology Development (ATD)</i>	R-1 Program Element (Number/Name) PE 0603781D8Z I <i>Software Engineering Institute (SEI)</i>
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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 2013	FY 2014	FY 2015 Base	FY 2015 OCO	FY 2015 Total
Previous President's Budget	30.036	19.008	19.522	-	19.522
Current President's Budget	28.619	19.006	15.776	-	15.776
Total Adjustments	-1.417	-0.002	-3.746	-	-3.746
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-2.467	-			
• Congressional Rescissions	-0.040	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	1.892	-			
• SBIR/STTR Transfer	-0.790	-			
• FFRDC Adjustment	-	-0.002	-	-	-
• Strategic Efficiency Savings	-	-	-3.746	-	-3.746
• Other Program Adjustments	-0.012	-	-	-	-

Change Summary Explanation

The reduction is a strategic efficiency approach to reduce funding and staffing. As a result, we provide a better alignment of funding and provide support to a smaller military force.

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603781D8Z / <i>Software Engineering Institute (SEI)</i>	Project (Number/Name) P781 / <i>Software Engineering Institute (SEI)</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
<i>P781: Software Engineering Institute (SEI)</i>	-	18.605	11.658	15.776	-	15.776	15.778	15.799	16.292	16.792	Continuing	Continuing

The FY 2015 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.

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

	FY 2013	FY 2014	FY 2015
Title: SOFTWARE ENGINEERING INSTITUTE (SEI) RESEARCH	18.605	11.658	15.776
<p>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.</p> <p>FY 2013 Accomplishments:</p> <ul style="list-style-type: none"> • Completed competitive awards within the SEI for novel research. • Refined economic foundations and measurable analysis of value-driven incremental software development by focusing on the role of quality-attributes and architecture risks in architecture related costs (e.g., rework or delay) and increment planning in DoD acquisition programs. • Developed a dependency analysis model and theoretical foundations for architecture decision making that reduces integration risks in iterative and incremental development for DoD acquisition programs. • Analyzed software project data to determine the efficacy of incremental and iterative practices as related to project outcomes. 			

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603781D8Z / <i>Software Engineering Institute (SEI)</i>	Project (Number/Name) P781 / <i>Software Engineering Institute (SEI)</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<ul style="list-style-type: none"> • Integrated architecture fault model framework with confidence maps and demonstrated derivation of assurance evidence requirements for cyber-physical system behavior from architectural safety analysis. • Developed simulations and emulations to further develop and validate theory of adaptive quality-of-service for DoD distributed systems. • Applied economic cost-benefit reasoning to develop new design methods for common software platform architectures that evolve in response to new operational needs. • Developed quality-attribute analyses for high-confidence cyber-physical DoD systems for timing of multi-core software and functional correctness of real-time and distributed coordination software. • Extended software code analysis techniques to mobile environments to detect and rectify vulnerabilities in DoD mobile systems faster than our adversaries can exploit them. • Developed an improved behavior-based malware detector and analysis approach to defend DoD mobile devices. • Developed a portability strategy that allows mobile computing components to execute across a wide spectrum of computing environments. • Explored enhanced vulnerability discovery methods by coupling symbolic execution, concrete execution, and black-box fuzz testing to facilitate the discovery of software defects. • Explored ideas to reduce latent software defects using analytics based on vulnerability and software development process data. • Collected and analyzed relevant baseline data to further validate insider threat mitigation patterns and developed a rigorous composition method as an architectural foundation for evolving the mitigation pattern language toward more systematic application by system architects in next-generation DoD systems. • Identified technical and non-technical indicators of malicious insider threat activity from large data sets. • Identified exogenous factors contributing to the perception of risk to drive improvements in network security by factoring perception into implementation of controls • Investigated how to measure the contribution of resilience practices to reducing the occurrence and impact of disruptive events using incident data • Investigated tools to detect malicious network traffic. • Identified and developed algorithms to enable flexible division of labor among humans and automation for Unmanned Aircraft Systems. • Identified relevant graph analytic algorithms and implemented a selection of them targeting Graphics Processing Unit (GPU) hardware. • Identified a set of attributes extant in public software repositories relevant to Certification and Accreditation efforts for Open Source Software using analytic techniques. • Continued early lifecycle cost estimation research for pre-Milestone A evaluations. • Developed empirically grounded, quantitative relationships between Bayesian models of program change drivers and cost estimation model inputs. 			

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603781D8Z / <i>Software Engineering Institute (SEI)</i>	Project (Number/Name) P781 / <i>Software Engineering Institute (SEI)</i>

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

	FY 2013	FY 2014	FY 2015
<ul style="list-style-type: none"> • Developed a method to support rapid analysis of changes to social networks in order to provide more timely feedback to soldiers and first responders. • Developed software for a rapidly-deployable, scalable autonomous sensor network to support soldiers in activities such as recon, ambush, and search-and-rescue operations. • Developed methods for extracting class definitions and relationships from object-oriented malware using automated semantic analysis. • Developed next generation disassembly algorithms to improve the quality of automated static analysis and build confidence in the correctness of that disassembly. • Worked with standards bodies to develop and move to ballot International Organization for Standardization (ISO) and the International Electrotechnical Commission (IEC) Technical Specification (TS) 17961, an international technical specification for C Secure Coding Rules. • Demonstrated pointer ownership model, a technique to address incorrect memory management, for a subset of C programming language. • Improved the automated detection and analysis of secure coding violations in the Source Code Analysis Laboratory • Developed secure coding rules and analysis for applications on mobile platforms. • Developed a functional model for prioritizing malware threats based on execution behavior allowing for faster identification, analysis, and mitigation. • Demonstrated a proof-of-concept threat to the security of the attached host system, posed by malware that resides in the firmware of a solid-state hard drive. • Developed science, techniques, and tools to generate and use better synthetic data for test and evaluation of cyber-security technology. • Continued to formulate an investment model that can forecast capital requirements for software sustainment. • Investigated the use of machine learning, social network measurement, and analysis techniques to facilitate large-scale coordinated stakeholder engagement in architecture decisions and requirements elicitation. • 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. • Demonstrated the existence and utility of acquisition quality attributes that can be derived from a program's business goals that drive its acquisition strategy. • Finalized identification of those projects that would benefit from a complimentary applied research component under the new SEI Applied Research PE (0602751D8Z). <p>FY 2014 Plans:</p> <ul style="list-style-type: none"> • Continue competitive awards within the SEI for novel research. 			

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603781D8Z / <i>Software Engineering Institute (SEI)</i>	Project (Number/Name) P781 / <i>Software Engineering Institute (SEI)</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<ul style="list-style-type: none"> • Investigate how value-driven incremental development analysis techniques can assist with relating requirements to architecture for improved system and software integration. • Develop quality-attribute analyses for high-confidence cyber-physical systems to ensure correctness of timing, functionality, and distributed coordination of the computational and physically-related aspects of DoD systems. • Evaluate trends in the insider threat problem based on over 15 years of Computer Emergency Response Team (CERT) case data and forecast insider threat mitigation patterns needed to support sustained protection against insider threats. • 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. • Expand our work on graph analytics on heterogeneous hardware to include building a library for graph analytics on Graphics Processing Units (GPUs), and provide that to relevant stakeholders. • 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. <p>FY 2015 Plans:</p> <ul style="list-style-type: none"> • Expand the program's graph analytics library to target other hardware architectures relevant to the high performance computing (HPC) community and DoD stakeholders. • Design and develop models and frameworks of operational cybersecurity and resilience. • Apply data analytics on assessment and measurement data to identify characteristics, indicators, attributes, and patterns of resilience. • Develop model and metrics for resilient acquisition to measurably improve the DoD's acquisition process resulting in significant cost-savings and operationally resilient systems. • Architect, design, and develop prototypes of complex, enterprise-wide insider threat systems. • Investigate disruptive technologies with the potential to provide new operational cybersecurity capabilities for the DoD. • Continue to add members to the collaboration group and expand the understanding of the challenges and strategies for successfully adopting agile practices in government acquisition programs. • Explore new lines of research. 			
Accomplishments/Planned Programs Subtotals	18.605	11.658	15.776

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603781D8Z / <i>Software Engineering Institute (SEI)</i>	Project (Number/Name) P781 / <i>Software Engineering Institute (SEI)</i>

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

<u>Line Item</u>	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015</u>			<u>FY 2016</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>Cost To</u>	
			<u>Base</u>	<u>OCO</u>	<u>Total</u>					<u>Complete</u>	<u>Total Cost</u>
• BA 2, PE # 0602751D8Z, P278: <i>Software Engineering Institute Applied Research</i>	-	11.106	9.156	-	9.156	9.158	9.325	9.857	10.682	Continuing	Continuing

Remarks

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.

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603781D8Z / <i>Software Engineering Institute (SEI)</i>	Project (Number/Name) P783 / <i>Software Producibility Initiative</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
<i>P783: Software Producibility Initiative</i>	-	10.014	7.348	-	-	-	-	-	-	-	Continuing	Continuing

The FY 2015 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 2013	FY 2014	FY 2015
<p>Title: SOFTWARE PRODUCIBILITY INITIATIVE</p> <p>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), U.S. Army Aviation and Missile Research Development and Engineering Center (AMRDEC) and the Air Force Research Laboratory (AFRL), as well as academia and industry.</p> <p>FY 2013 Accomplishments:</p> <ul style="list-style-type: none"> • Evaluated responses from the open solicitation and made new awards. • Introduced, through open source software, high-level language-level support for exposing and managing node failure in high performance computing systems and commodity clusters. • Established techniques and principles for design-time and run-time tools that anticipate change and exhibit resilience • Began establishing an environment for formal verification of quasi-synchronous systems. 	10.014	7.348	-

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603781D8Z / <i>Software Engineering Institute (SEI)</i>	Project (Number/Name) P783 / <i>Software Producibility Initiative</i>

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

	FY 2013	FY 2014	FY 2015
<ul style="list-style-type: none"> • Began establishing a modeling environment for the automated synthesis of safety-critical applications. • Explored automated generation of formally verifiable requirements. • Designed model-based, hardware-agnostic work flow specifications. • Sped the transition of software research and development that increases the affordability of acquisition programs in accordance with the DoD's Better Buying Power initiative. • Transitioned the responsibility for the software engineering collaboration environment to the SEI FFRDC and the DoD's Cyber Security and Information Systems Information Analysis Center. • Completed transition of the underlying software techniques for graphical composition of scalable models developed by non-domain experts, with a focus on legacy systems integration. • Engaged an industry and academia consortium to transition techniques supporting model-based design of complex, heterogeneous, software intensive systems. • Explored model-based design for systems of systems to allow scaling-up to DoD-scales. • Investigated tools for constructing and analyzing timed models of cyber-physical systems, integrated with tools for untimed models, and evaluated the utility and expressiveness of the timing constructs. • Extended work to reduce software bloat and speed up execution time in C, C++, and other-languages. • Built a framework to objectively assess two qualitatively different techniques for providing Adaptive Quality of Service. • Continued analysis of software engineering acquisition data to determine Return on Investment. • Began development of a technology roadmap that identifies critical capability thresholds to improve software producibility. • Initiated the establishment of a tool chain supporting the design and implementation of aviation system architectures including mixed Integrated Modular Avionics and federated architectures. • Conducted a study of the use of genetic algorithms for learning polychronous timing within systems of linear time invariant systems. • Completed analysis of heuristic and meta-heuristic optimization algorithms. • Assessment of existing Engineered Resilient Systems (ERS) software products. • Expanded the capability of the existing of Framework for Assessing Cost and Technology (FACT) tool. • Completed an air vehicle and sea vehicle design demonstration for ERS that integrated physics-based analysis tools, trade-space analysis tools, and probability-based analysis. <p>FY 2014 Plans:</p> <ul style="list-style-type: none"> • Evaluate responses from the open solicitation; however, plan to initiate work with only a single performer. • Analyze open-source, high-level language-level support for exposing and managing node failure in high performance computing systems and commodity clusters. • Analyze techniques and principles for design-time and run-time tools that anticipate change and exhibit resilience. • Establish an environment for formal verification of quasi-synchronous systems. 			

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense	Date: March 2014
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Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603781D8Z / <i>Software Engineering Institute (SEI)</i>	Project (Number/Name) P783 / <i>Software Producibility Initiative</i>
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<ul style="list-style-type: none"> • Establish a modeling environment for the automated synthesis of safety-critical applications. • Automatically generate formally verifiable requirements. • Complete a model-based, hardware-agnostic work flow specification environment. • 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. • Improve the efficiency of existing Department of Defense (DoD) sustainment activities by investing in new tools and techniques to make correcting, upgrading, or adapting legacy code more efficient. • Explore model-based design for systems-of-systems to allow scaling-up to DoD-scales. • Assess the effectiveness of the software engineering collaboration environment. • 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 work to reduce software bloat and speed up execution time in C, C++, and other-languages. • Continue analysis of software engineering acquisition data to determine Return on Investment. • Complete development of a technology roadmap that identifies critical capability thresholds to improve software producibility. • Establish a tool chain supporting the design and implementation of aviation system architectures including mixed Integrated Modular Avionics (IMA) and federated architectures. • Investigate integrating strategies from probabilistic verification and temporal logic verification for risk mitigation in distributed architectures. • Analyze static-analysis methods to detect and mitigate a large class of defects that occur due to the differences between the intended semantics of design models and the actual behavior of the software. • Develop a new model for composing parallel applications in a heterogeneous multicore environment. • Develop an open source bridge from Unified Modeling Language (UML) to A Computational Logic for Applicative Common Lisp (ACL2). • Successfully conclude the Software Producibility Initiative by transitioning technologies where able and completing plans in remaining execution years. 			
Accomplishments/Planned Programs Subtotals	10.014	7.348	-

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

Remarks

D. Acquisition Strategy
N/A

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603781D8Z / <i>Software Engineering Institute (SEI)</i>	Project (Number/Name) P783 / <i>Software Producibility Initiative</i>

E. Performance Metrics

- 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 Defense Industrial Base (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.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 3: Advanced Technology Development (ATD)</i>	R-1 Program Element (Number/Name) PE 0603826D8Z / <i>Quick Reactions Special Projects (QRSP)</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
Total Program Element	63.029	69.946	68.524	69.319	-	69.319	91.825	99.714	109.800	109.848	Continuing	Continuing
P826: <i>Quick Reaction Fund</i>	15.044	18.024	22.449	21.875	-	21.875	28.603	31.356	34.178	34.194	Continuing	Continuing
P828: <i>Rapid Reaction Fund</i>	30.111	44.135	42.718	43.750	-	43.750	59.240	64.291	70.386	70.414	Continuing	Continuing
P830: <i>RDT&E Architecture and Integration</i>	16.164	4.009	-	-	-	-	-	-	-	-	Continuing	Continuing
P831: <i>Joint Rapid Acquisition Cell Support</i>	1.710	1.608	1.587	1.644	-	1.644	1.878	1.918	2.464	2.466	Continuing	Continuing
P833: <i>Strategic Multi-Layered Assessment (SMA) Support</i>	0.000	2.170	1.770	2.050	-	2.050	2.104	2.149	2.772	2.774	Continuing	Continuing

The FY 2015 OCO Request will be submitted at a later date.

Note

The Quick Reaction Special Projects (QRSP) Program Element is being recast with a focus on producing risk-reducing prototypes designed to address Combatant Command (COCOM) threats. QRSP efforts will support the Department goal to provide a Hedge Against Technical Uncertainty by leveraging insights gained through mission-focused efforts and by fostering collaboration among government laboratories, academia, and commercial research. The QRSP portfolio will develop technology that anticipates adversaries' capabilities through short-term, innovative science and engineering initiatives.

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 & Evaluation (RDT&E) Architecture and Integration (RAI) 4) Joint Rapid Acquisition Cell (JRAC) support; and 5) Strategic Multi-Layered Assessment (SMA) support. QRSP provides the flexibility to respond to emergent DoD issues and address technology surprises and needs within the years of execution outside the two year budget cycle. These efforts field new capabilities at low cost in short time-frames, inform the traditional acquisition cycle, and inject innovative technology into programs of record.

The QRF Program objectives are to develop prototypes in response 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 COCOMs. QRF projects are typically 12 months in duration and produce prototypes with new capabilities for demonstration and evaluation.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense Date: March 2014

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 3: Advanced Technology Development (ATD)</i>	R-1 Program Element (Number/Name) PE 0603826D8Z / <i>Quick Reactions Special Projects (QRSP)</i>
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The Rapid Reaction Fund (RRF) objectives are to leverage the DoD science and technology (S&T) base and those of the other federal departments, as well as academia and the commercial sector to identify emerging capabilities and counter evolving threats. 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 cost saving prototype capabilities to counter emerging threats. Additionally, RRTO works to leverage technology developed outside of the DoD in the commercial sector, academia, international arenas, and small, non-traditional businesses to address specific DoD needs areas as identified by Combatant Commanders, Military Service organizations, other Defense agencies and interagency organizations. Typical RRF programs are 6-18 months in duration and aim to mature a capability to demonstration. The RRF consistently exceeds the transition objective of 40 percent for demonstration programs (DoD Strategic Objective 3.5.2D).

The 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 Intelligence, Surveillance, and Reconnaissance (ISR) exercise series. The JERC provides a venue to evaluate a wide range of new technologies in a desert environment. RAI funding also supports Stiletto, a maritime test vessel that routinely hosts numerous new technologies for evaluation in a maritime environment. Thunderstorm, an ongoing 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. Due to the draw down in Afghanistan in FY 2014, projects in RAI are either being concluded or aligned to other QRSP programs

The Joint Rapid Acquisition Cell (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 Strategic Multi-Layered Assessment (SMA) cell program objective is to support all 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.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 3: Advanced Technology Development (ATD)</i>	R-1 Program Element (Number/Name) PE 0603826D8Z I <i>Quick Reactions Special Projects (QRSP)</i>
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B. Program Change Summary (\$ in Millions)	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO	FY 2015 Total
Previous President's Budget	107.002	78.532	80.583	-	80.583
Current President's Budget	69.946	68.524	69.319	-	69.319
Total Adjustments	-37.056	-10.008	-11.264	-	-11.264
• Congressional General Reductions	-25.000	-			
• Congressional Directed Reductions	-10.109	-10.000			
• Congressional Rescissions	-0.107	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-1.767	-			
• Efficiency Savings	-	-	-11.264	-	-11.264
• Other Program Adjustments	-0.073	-	-	-	-
• FFRDC Adjustments	-	-0.008	-	-	-

Change Summary Explanation

FY 2015: Program decreases are a result of promoting efficient spending to support agency operations.

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense										Date: March 2014		
Appropriation/Budget Activity 0400 / 3					R-1 Program Element (Number/Name) PE 0603826D8Z / <i>Quick Reactions Special Projects (QRSP)</i>				Project (Number/Name) P826 / <i>Quick Reaction Fund</i>			
COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
P826: <i>Quick Reaction Fund</i>	15.044	18.024	22.449	21.875	-	21.875	28.603	31.356	34.178	34.194	Continuing	Continuing

The FY 2015 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 developmental and operational prototypes that can have immediate impact on military operations. QRF initiatives are limited to those that will deliver a 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 serve to maintain a technical advantage over potential adversaries and reduce technical risk barriers in the following interest areas: Anti-Access and Area Denial; Base Protection; Electromagnetic Bandwidth and Spectrum Enhancement; Persistent Intelligence, Surveillance, and Reconnaissance; 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 2014 and FY 2015, the QRF Program will continue to identify and fund new projects and prototypes that respond to critical operational needs and new technology development. 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 2013	FY 2014	FY 2015
Title: Home on Global Positioning System (GPS) Jammer	0.554	-	-
Description: This effort supported the design and development of GPS Jammer homing munitions. A previous effort investigated currently inventoried weapon systems to identify those most acceptable for modification into a Home on GPS Jammer capable system. This project identified the mechanical and electrical interface integration requirements for the selected platform and assessed two demonstration prototypes.			
FY 2013 Accomplishments:			

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014		
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603826D8Z / <i>Quick Reactions Special Projects (QRSP)</i>	Project (Number/Name) P826 / <i>Quick Reaction Fund</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2013	FY 2014	FY 2015
Successful integration and test of two 3-element demonstration units with deployable mechanical packaging and analysis of a 5-element sensor. The technology transition to the weapon program offices is being led by the Air Armament Center capabilities branch.				
<p>Title: CAESAR, TREMOR, MARCY AND RAINGAUGE (CTMR)</p> <p>Description: The CTMR project detects and reports radio frequency (RF) signals from specific sensor types and demonstrates refined collection systems that detect a specific class of signals. Collection of these signals was lacking and this project provided a cost-effective, scalable solution. The data provided by the systems is structured to support DoD customers through system characterization and near real-time notification. Details are classified.</p> <p>FY 2013 Accomplishments: Successful development and demonstration of prototype systems using laboratory data and measured data in response to Concept of Operations (CONOPS) trade space studies. The data and technology will transfer to Combatant Command (COCOM) and Intelligence Community (IC) customers in FY 2014.</p>		3.181	-	-
<p>Title: Project 1319: Submarine Launched Autonomous Underwater Vehicle (AUV)</p> <p>Description: The most challenging aspect of submarine Autonomous Underwater Vehicle operations is the homing and docking recovery. Project 1319 provides the Navy with a capability to launch and recover Remote Environmental Monitoring Units (REMUS) AUVs from a submarine dry deck shelter (DDS).</p> <p>FY 2013 Accomplishments: Successful development and operational demonstration of capabilities on a guided missile nuclear submarine. The technology and techniques have fed into the submarine launched version of the Navy Large Diameter Unmanned Underwater Vehicle program. The system will deploy in 2014 to provide interim capability until the Navy Program of Record is implemented.</p>		0.991	-	-
<p>Title: Interruption of Wide Area Sensing (IWAS) Capability</p> <p>Description: The Interruption of Wide Area Sensing 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. Details are classified.</p> <p>FY 2013 Accomplishments: Successful design, development and test of functional prototype system. The program will transition to the Navy in FY 2014 for operational insertion and Concept of Operations development.</p>		2.601	-	-
<p>Title: Project 422</p>		4.212	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014		
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603826D8Z / <i>Quick Reactions Special Projects (QRSP)</i>	Project (Number/Name) P826 / <i>Quick Reaction Fund</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2013	FY 2014	FY 2015
<p>Description: Project 422 is an end-to-end collection system designed to address specific information gaps that are either not being addressed or have limited collection resources assigned due to target attributes such as complexity, location, operating characteristics or operating regime. The effort includes a self-contained Tasking, Collection, Processing, Exploitation and Dissemination capability that demonstrates a limited operational capability to support Combatant Commands (COCOMs) and Intelligence Community customers. Details are classified.</p> <p>FY 2013 Accomplishments: Hardware and software development was initiated.</p> <p>FY 2014 Plans: The program will demonstrate a new, multi-mission capability for use by deployed forces in a COCOM theater of operations to address unique signature sets not currently being addressed.</p>				
<p>Title: Advanced Counter Electronic Systems Capability</p> <p>Description: The program develops countermeasures to electronic systems to protect forces and infrastructure from attack. The target systems use electronic components, against which countermeasures were developed. Details are classified.</p> <p>FY 2013 Accomplishments: Developed and delivered two prototype systems.</p> <p>FY 2014 Plans: The program will assess the capability of the prototype systems against a threat emulator. The program will transition through the services and the Air Sea Battle office as the lead operational advocate in FY 2014.</p>		3.333	1.000	-
<p>Title: Steel Tiger</p> <p>Description: The Steel Tiger project developed algorithms that were incorporated into a commercial radar system. The resulting capability fills a Combatant Commands (COCOMs) need. Details are classified.</p> <p>FY 2013 Accomplishments: Developed a prototype system that was fielded for a utility assessment and operational evaluation that measured radar system performance relative to required performance conditions.</p> <p>FY 2014 Plans: Enhancement of the prototype system and deployment to a host site for further operational evaluation.</p>		2.747	4.031	-
<p>Title: Secret Internet Protocol Router (SIPR) Dark Fusion</p>		0.405	0.983	-

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Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603826D8Z / <i>Quick Reactions Special Projects (QRSP)</i>	Project (Number/Name) P826 / <i>Quick Reaction Fund</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2013	FY 2014	FY 2015
<p>Description: Moving data between different secure networks is challenging and time consuming. The SIPR Dark Fusion effort creates a single integrated Maritime Domain Awareness (MDA) environment to provide operational users access to MDA SIPR information previously hosted only on the Secret Compartmented Information network.</p> <p>FY 2013 Accomplishments: Funding was provided in late FY 2013; system engineering was initiated and the project continued into FY 2014.</p> <p>FY 2014 Plans: Two sets of hardware and software to support the capability will be delivered to the Office of Naval Intelligence for operations.</p>				
<p>Title: Cyber Coalition Limited Experiments (CyCLE)</p> <p>Description: The CyCLE project will provide cyber defense information to cyber analysis tools under development so the tools' effectiveness can be measured and their capabilities advanced.</p> <p>FY 2014 Plans: Demonstrate approaches to achieve a level of seamless, automated cyber operations support and share Cyber Situational Awareness.</p>		-	0.934	-
<p>Title: Dark Storm</p> <p>Description: The program will deliver three prototype camera-based surveillance systems, with associated software, to provide enhanced space situational awareness. Details are classified.</p> <p>FY 2014 Plans: Develop a multi-camera system and demonstrate the ability to deliver improved timeliness information to the user community.</p>		-	0.900	-
<p>Title: Anti-Access/Area Denial Focus Area</p> <p>Description: In FY 2014 and FY 2015, this Quick Reaction Fund (QRF) focus area will support projects that concentrate on developing capabilities and countermeasures in anticipation of emerging needs to monitor and/or gain access to geographical areas that have been strategically denied by adversarial forces and technologies. The Rapid Reaction Technology Office (RRTO) will ensure the QRF efforts are not duplicative with other work within Department of Defense (DoD) or with outside agencies and will seek to leverage such efforts.</p> <p>FY 2014 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</p>		-	1.920	4.271

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Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603826D8Z / <i>Quick Reactions Special Projects (QRSP)</i>	Project (Number/Name) P826 / <i>Quick Reaction Fund</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2013	FY 2014	FY 2015
<p>and coordination with organizations throughout DoD, Federally Funded Research and Development Centers (FFRDCs), other government agencies, industry and academia will help identify areas critical to developing future anti-access/area denial technological enhancement efforts. Anticipate funding five prototypes.</p> <p>FY 2015 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 four prototypes.</p>				
<p>Title: Counter-Electronic Warfare Technologies Focus Area</p> <p>Description: This focus area for FY 2014 and FY 2015, in anticipation of emerging needs, will include the maturation of developmental and operational prototypes that advance countermeasures against electronic components and systems to protect forces and infrastructure. In addition, projects may include techniques and methodologies that reduce adversarial electronic attack capabilities and enhance our ability to operate in denied areas. The Rapid Reaction Technology Office (RRTO) will ensure the Quick Reaction Fund efforts are not duplicative with other Counter-Electronic Warfare (EW) efforts and will seek to leverage other such efforts.</p> <p>FY 2014 Plans: Investment decisions in Counter-Electronic Warfare Technologies during the budget years will respond 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, FFRDCs, other government agencies, industry and academia will help identify areas critical to Counter-EW efforts. Anticipate the funding of three projects.</p> <p>FY 2015 Plans: As emerging requirements, threats and opportunities within the Counter-Electronic Warfare Technologies focal area surface, programmatic and investment decisions will be resourced to respond to COCOMs, Services and other government organizations. Anticipate the funding of three projects.</p>		-	1.873	4.022
<p>Title: Counter-Weapons of Mass Destruction (CWMD) Focus Area</p> <p>Description: This focus area for FY 2014 and FY 2015, in anticipation of emerging needs, will include the development and advancement of prototype technologies that focus on the detection and interdiction of chemical, biological, radiological, nuclear and high yield explosives (CBRNE) threats. Projects may include techniques and methodologies that improve detection sensitivities, persistent intelligence, surveillance and reconnaissance (ISR), data to decision tools and global situational awareness. The Rapid Reaction Technology Office (RRTO) will ensure the Quick Reaction Fund efforts are not duplicative with other CWMD efforts and will seek to leverage other such efforts.</p>		-	1.602	3.527

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Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603826D8Z / <i>Quick Reactions Special Projects (QRSP)</i>	Project (Number/Name) P826 / <i>Quick Reaction Fund</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<p><i>FY 2014 Plans:</i> Investment decisions in CWMD during the budget years will respond to Combatant Commands (COCOMs), Service and other government organizations' 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 Counter-WMD efforts. Anticipate the funding of two projects.</p> <p><i>FY 2015 Plans:</i> As emerging requirements, threats and opportunities within the Counter-Weapons of Mass Destruction focal area surface, programmatic and investment decisions will be resourced to respond to COCOMs, Services and other government organizations. Anticipate the funding of two projects.</p>			
<p><i>Title:</i> Operational Field Demonstrations Focus Area</p> <p><i>Description:</i> In anticipation of emerging needs, this focus area for FY 2014 and FY 2015 will include developmental and operational prototyping, field demonstrations of technologies, and fully integrated systems in direct response to critical operational needs and emerging threats. Emphasis will be on near term demonstration of the feasibility and military utility of integrated capability solutions that support conventional forces with transition within a period of no more than 12 months. The Rapid Reaction Technology Office (RRTO) will ensure the QRF efforts are not duplicative with other Operational Field Demonstration efforts and will seek to leverage other such efforts.</p> <p><i>FY 2014 Plans:</i> Operational Field Demonstrations 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, FFRDCs, other government agencies, industry and academia will help identify areas critical to Operational Field Demonstrations efforts. Anticipate the funding of three projects.</p> <p><i>FY 2015 Plans:</i> 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 four projects.</p>	-	1.467	3.280
<p><i>Title:</i> Persistent Intelligence, Surveillance, and Reconnaissance (ISR) Focus Area</p> <p><i>Description:</i> In anticipation of emerging needs, this focus area for FY 2014 and FY 2015, will include capabilities that improve ground, air, sea and/or space situational awareness for decision makers. Technologies may explore new or improved methods for surveillance sensors to operate within denied areas and more effective ISR architectures for rapidly processing, exploiting, and</p>	-	1.739	3.775

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Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603826D8Z / <i>Quick Reactions Special Projects (QRSP)</i>	Project (Number/Name) P826 / <i>Quick Reaction Fund</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<p>disseminating situational awareness intelligence. The Rapid Reaction Technology Office (RRTO) will ensure the Quick Reaction Fund (QRF) efforts are not duplicative with on-going persistent ISR work and will seek to leverage other such efforts.</p> <p>FY 2014 Plans: Persistent ISR 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, Federally Funded Research and Development Centers (FFRDCs), other government agencies, industry and academia will help identify areas critical to developing future capabilities. Anticipate the funding of three projects.</p> <p>FY 2015 Plans: As threats and opportunities within the Persistent ISR focal areas emerge, programmatic and investment decisions will be resourced to respond to COCOM, Services, and other government organization requirements. Anticipate the funding of four projects.</p>			
<p>Title: Hardware/Software (HW/SW) Assurance and Integrity Analysis</p> <p>Description: The Department of Defense (DoD) has developed a Trusted Systems strategy that is based upon mission assurance, comprehensive protection planning, industry standards, and advancing the state of practice and DoD capability to identify and mitigate HW/SW vulnerabilities through techniques and tools, and creation of needed new HW/SW assurance technology. This project provides research and development focus to advance capabilities that can be made available to current and future programs in acquisition, operational systems, and legacy systems and infrastructure.</p> <p>This Quick Reaction Fund effort directly supports the 2014 National Defense Authorization Act (NDAA) Section 937 and adds to current Department work implementing requirements in NDAA 2013 Section 933. It provides funding for the Department's capabilities to augment and federate existing HW/SW assurance expertise, capabilities and facilities within the Services and Agencies to address existing gaps, as well as emerging threats and vulnerabilities. The resulting federation will assess and prioritize critical mission vulnerabilities to malicious software, supply chain exploit, and related cyber vulnerabilities, prioritize the use of best practice in Hardware/Software (HW/SW) vulnerability assessment, tested tools, proven processes, then promulgate findings and know-how.</p> <p>FY 2014 Plans: This effort will leverage and augment resources in the Services and National Security Agency to develop and deploy HW/SW tools, evaluation techniques, and best practices to support HW/SW assurance throughout the lifecycle. Available tools, recommended implementation guidance, and support capabilities will be identified. Gaps will be identified and addressed with plans and development activities. This effort will define a federated approach to ensure HW/SW security and support to capability development, acquisition, and sustainment activities. Service and agency expertise and capabilities will be identified and an</p>	-	6.000	3.000

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Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603826D8Z / <i>Quick Reactions Special Projects (QRSP)</i>	Project (Number/Name) P826 / <i>Quick Reaction Fund</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2013	FY 2014	FY 2015
<p>overarching framework will be developed to enable cross DoD coordination, oversight and prioritization. The approach will include a coordinated risk-based process aimed at efficient development and deployment of assurance and mitigation facilities and capabilities.</p> <p>FY 2015 Plans: Continued development, assessment, recommendation, and promulgation of software test tools and techniques. Continued maturation of federated approach to ensuring Hardware/Software (HW/SW) tools, techniques, expertise and support to acquisition and sustainment programs.</p>				
Accomplishments/Planned Programs Subtotals		18.024	22.449	21.875
C. Other Program Funding Summary (\$ in Millions)				
N/A				
Remarks				
D. Acquisition Strategy				
N/A				
E. Performance Metrics				
<p>In FY 2015, 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, components, and equipment. For projects that were completed in FY 2013, the QRF achieved a transition rate of approximately 75 percent.</p>				

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense										Date: March 2014		
Appropriation/Budget Activity 0400 / 3					R-1 Program Element (Number/Name) PE 0603826D8Z / <i>Quick Reactions Special Projects (QRSP)</i>				Project (Number/Name) P828 / <i>Rapid Reaction Fund</i>			
COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
P828: <i>Rapid Reaction Fund</i>	30.111	44.135	42.718	43.750	-	43.750	59.240	64.291	70.386	70.414	Continuing	Continuing

The FY 2015 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 prototypical technologies to the warfighter. The QSRP Program provides the flexibility to mitigate emerging threats and address 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 accelerate the transition of high-potential science and technology (S&T) projects into operationally useful prototypes in the execution years. The RRTO leverages the Department of Defense (DoD) S&T base and those of the other Federal Departments, academia, and industry; stimulates interagency coordination and cooperation; accelerates the fielding of prototypical 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. Prototypes delivered by RRTO provide cost effective capabilities to operational users faster than the typical acquisition cycle.

In prior years, RRTO has explored methods and approaches of persistent surveillance stimulation for counter-insurgency; developed alternate power sources for sensors and systems; provided low-cost capabilities for small-footprint operations; 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 2014 and FY 2015, 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), the Assistant Secretary of Defense (Research and Engineering) and the Deputy Assistant Secretary of Defense for Rapid Fielding goals. With project selection occurring during the execution year, the RRTO's potential focus areas for FY 2014 and FY 2015 projects include: capabilities to operate in denied areas, navigation in Global Positioning System denied environments, persistent Intelligence, Surveillance, and Reconnaissance (ISR) architecture; ISR sensors; global warming's impact on operations in the Arctic, novel power sources for unmanned vehicles, interface of law enforcement and military operations; commercial product vulnerabilities and applications; biometrics and forensics S&T; autonomous operations; data processing, exploitation and dissemination; cyber security; exploitation of new and emerging cell phone technologies; counter proliferation initiatives; 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.

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<p>Title: Minor Resource Projects (Projects Less Than One Million Dollars Each)</p> <p>Description: 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 developmental and operational prototypes for evaluation or assessment to warfighters and interagency users.</p> <p>FY 2013 Accomplishments: FY 2013 minor resource projects include: Full Motion Video On Target, a capability that delivers rapid, precise, and accurate geolocation measurement and geo-registration from almost any orbiting UAV using the processing power of a Commercial Off The Shelf Software laptop without the need for reference imagery; Extended XCapture, an after action report capture and knowledge management tool; a capability to exploit wireless communications technology; Operationalizing “Just Doesn’t Look Right,” documentation of expertise and first-hand experience in identification of suicide bombers; Remote Vapor Sensing Acoustic Spectroscopy, a novel approach to detect trace chemicals of interest; Shiva, exploitation of multispectral commercial satellite imagery; Maritime Event Information Sharing System, a globally accessible system enabler for operational validation, characterization, and assessment of maritime events and potential threats through analysis of relationships between maritime interest items and blue force, environmental, infrastructure, interagency and multinational considerations; High Data Rate Satellite Communications demonstration of significantly increased data throughput; Enriching Tracks with Open Source Intelligence, a prototype software that allows an analyst to enrich a track by combining it with geo-tagged information to discover identity, patterns of life, and social networks of the subject; a capability to exploit wireless communications technology; Aluminum Combustor propulsion system for Unmanned Underwater Vehicles; Three-dimensional Exploitation of Two-dimensional Video from hand-launched Unmanned Aerial Vehicles; Enhanced Tactical High Frequency Radio Exploitation of near vertical incident sky wave radios; an Aluminum-Water Fuel Cell for unmanned vehicles; an improved Infrared Search and Track capability; a crowd-sourcing effort to extract and analyze relevant information from Non-Governmental Organization resource collections; Contingency Communications, an effort to develop low-visibility mission communication capabilities to protect clandestine operations and information; a novel approach to recognizing text in Open Source imagery; an assessment of current science and technology aspects of Financial Warfare; Intelligent Power, a lightweight, ruck-packable, multi-fuel generator; and Long Wave Infrared Wide Area Surveillance for Maritime Domain Awareness.</p> <p>FY 2014 Plans: RRTO will execute multiple minor resource projects to develop prototype capabilities in the areas of Unmanned Autonomous Vehicles, Detection of Explosives and Weapons of Mass Destruction, Exploitation of Off-the-Shelf Technology, Exploitation of Communications Technologies, Small Footprint Operations, Deterrence of Violent Extremism, and other emerging technology areas. These projects will deliver developmental and operational prototypes for evaluation or assessment to warfighters and interagency users. FY 2014 minor resource projects include: Future Infra-Red Search and Track; demonstration of a human</p>	20.881	-	-

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
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<p>powered Special Operations Forces underwater delivery vehicle; Light Detection and Ranging data analysis tools; exploitation of vehicle's tire pressure monitoring systems; novel approaches to navigate in a Global Positioning System (GPS) denied environment; Syria Social Media Analytical Tools; Technologies to Enhance Social Science Modeling and Simulation for Special Operations Mission Training; and an Anti-Jam, Anti-Spoof GPS Antenna for Unmanned Vehicles.</p> <p>FY 2015 Plans: Rapid Reaction Technology Office will execute multiple minor resource projects in focus areas that will be selected during the execution year to align with Combatant Commands needs and priorities.</p>			
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<p>Title: Tech Assessments</p> <p>Description: In FY 2014, RRTO will sponsor six two-week evaluation periods for interested industry and government representatives to test emerging capabilities in a realistic desert environment. The results of these evaluations will enable improvements to the prototype system, inform the development/procurement process for future enhanced capabilities and inform operational users of capabilities in development. Among the technology assessments planned for FY 2014 is the Rapid Innovation Fund's (RIF) Project Rodeo in which six systems developed to detect explosives and other chemicals from a stand-off distance will be measured against established objectives in a field environment. Also planned is the assessment of a linear translating repeater deployed to extend the communication range for standard military radios.</p>	0.750	1.750	1.750
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<p>FY 2013 Accomplishments: Conducted two-week evaluation periods for interested industry and government representatives to test prototypes of emerging capabilities in a realistic desert environment. Used the results of these evaluations to refine improvements to the prototype system, inform the development/procurement process for future enhanced capabilities and to apprise operational users of capabilities in development. Technologies assessed include, Pyros (small tactical munitions), Homemade Explosive Neutralization Without Detonation, Audio-Video Leave Behind Over-The-Horizon Exfiltration, Robotic Capabilities, Smart Imaging X-Ray; and Surewave (tunnel detection capability).</p> <p>FY 2014 Plans: In FY 2014, RRTO will sponsor six two-week evaluation periods for interested industry and government representatives to test emerging capabilities in a realistic desert environment. The results of these evaluations will enable improvements to the prototype system, inform the development/procurement process for future enhanced capabilities and inform operational users of capabilities in development. Among the technology assessments planned for FY 2014 is the RIF Innovation Fund's Project Rodeo, in which six systems developed to detect explosives and other chemicals from a stand-off distance will be measured against established objectives in a field environment. Also planned is the assessment of STACSAT, a linear translating repeater deployed to extend the communication range for standard military radios.</p>			
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<p>FY 2015 Plans:</p>			
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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2013	FY 2014	FY 2015
<p>In FY 2015, the Rapid Reaction Technology Office (RRTO) plans to conduct six more two-week evaluation periods for interested industry and government representatives to test emerging capabilities in a realistic desert environment. The Department of Defense (DoD) will 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.</p>				
<p>Title: Light Ranging and Detection (LiDAR) Broad Area Announcement (BAA)</p> <p>Description: LiDAR sensors flying on diverse aircraft in multiple theaters and datasets are increasing in format, number, size, area coverage, and resolution. Demand for LiDAR products with rapid exploitation towards near real-time products is increasing while the time available for Processing, Exploitation, and Dissemination (PED) teams to exploit the data is decreasing. Fully or partially automated LiDAR data exploitation tools are required to remedy the current bottleneck in operational LiDAR exploitation cells. The Rapid Reaction Technology Office (RRTO) sponsored a BAA through the Combatting Terrorism Technology Support Office to identify and mature emerging automated feature extraction capabilities.</p> <p>FY 2013 Accomplishments: In late FY 2013, the LiDAR BAA closed with 16 proposals submitted. Eight of these proposals came from small businesses. Subject matter experts evaluated submissions, and in early FY 2014 will select the most promising emerging capabilities for development of prototype tools.</p> <p>FY 2014 Plans: New LiDAR data exploitation tools will be demonstrated to operational user groups.</p> <p>FY 2015 Plans: LiDAR exploitation tools will transition to the broad user community.</p>		1.500	-	-
<p>Title: Bluegrass II</p> <p>Description: The RRTO conducted the Bluegrass data collect in FY 2007 to assemble multi-sensor data for the evaluation of persistent, wide-area surveillance concepts in a complex background. This collection provided a fundamental database for evaluating approaches for detecting and unraveling nefarious activity hidden in realistic civilian clutter. Bluegrass data has been provided to more than 150 organizations to facilitate development of new Intelligence, Surveillance, and Reconnaissance (ISR) capabilities. In FY 2013, RRTO collaborated with the intelligence community and subject matter experts to make final plans to execute the Bluegrass II data collect which will explore the applications of low cost, low-access sensing such as urban video networks and social media to augment or replace traditional ISR sensors. These efforts inform and enable development of ISR capabilities needed for future military operations in denied or austere areas. Specific Bluegrass II objectives include developing an algorithm to track an individual across a dense urban video network, developing a technique to discover threat communications in social media, and developing a methodology to discover and characterize all Red Team nodes.</p>		1.550	-	-

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<p><i>FY 2013 Accomplishments:</i> RRTO, the United States intelligence community, and international partners defined exercise objectives, selected a venue, and planned execution of the Bluegrass II data collect, which will occur in FY 2014. The demonstration will result in a data set that can be used to develop and evaluate tools to process and exploit data from low-cost, low-access sensors.</p> <p><i>FY 2014 Plans:</i> After execution of the Bluegrass II project, data from multiple sensors will be archived and made available to the larger government and commercial ISR capability development communities. Access to the data will facilitate development of new capabilities applicable to future operations in denied or austere locations.</p> <p><i>FY 2015 Plans:</i> Archived Bluegrass II data will be available to the Intelligence, Surveillance, and Reconnaissance (ISR) capability community to facilitate development of new ISR capabilities.</p>			
<p><i>Title:</i> Strategic Multi-Layered Assessment (SMA) Drivers of Conflict and Convergence in the Asia-Pacific Region in the Next 5-25 Years</p> <p><i>Description:</i> In FY 2013, the SMA group 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 Combatant Commander decision making, as well as, Joint Staff crisis planning involving India and Pakistan, or both.</p> <p><i>FY 2013 Accomplishments:</i> United States Central Command (USCENTCOM) requested a follow-on effort to an FY 2012 South Asia Assessment. This follow-on project explored issues pertaining to long-term and short-term regional and sub-regional stability. Project members utilized a synchronized series of study efforts and use case scenarios which enabled the assessment of regional stability over an extended time horizon, as well as, allowing an assessment of physical and Political, Military, Economic, Social, Infrastructure and Information based outcomes of a major regional conflict. Results of these interrelated studies enabled the proposal of a multi-generational regional engagement strategy designed to avoid major regional conflicts and maintain stability. The payoff to the warfighter was the delivery of a detailed, classified, multi-method assessment of regional conditions, risks, and vulnerabilities combined with unclassified (government, academic, Subject Matter Expert, etc.) regional assessments that are not generally found in US government work.</p> <p><i>FY 2014 Plans:</i></p>	3.000	2.430	2.100

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<p>South Asia stability effort will assess stability in the broader region to include China and other key players in East Asia. Using a variety of methodologies and disciplinary approaches, the research teams for this project will build a qualitative and quantitative framework for understanding the drivers of conflict and convergence in the Asia-Pacific. Project teams will use content analysis, historical comparison, expert elicitation, and quantitative modeling to identify key variables that influence conflict and cooperation, with particular attention to the United States-China relationship in context with other key actors. Analyses will also inform the development of a systems dynamic model and decision support tool. The overall objective of the suite of projects contained in this effort is to inform United States Pacific Command (USPACOM) and United States Central Command (USCENTCOM) decision makers in the development of intermediate and long-term strategies to manage risk and engage opportunities in the Asia-Pacific. In addition to the insights provided by each project stream, the projects will also inform a systems dynamic model and decision support tool for Combatant Command (COCOMs). These assessments will be combined with unclassified (e.g., academic, Subject Matter Expert, etc.) input not generally found in US government work.</p> <p>FY 2015 Plans: The Strategic Multi-Layered Assessment 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 COCOMs and may include areas such as: counter terrorism; transnational criminal organizations, 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</p> <p>Description: Focal area for FY 2014 and FY 2015 Biometrics and Forensics Science and Technology projects will field prototypes that 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. The 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. Projects for both portfolios are selected after coordination throughout the DoD and across other US Government Departments and Agencies to maximize collaborative investment and prevent redundant research. Deliverables are shared throughout the biometrics and forensics communities.</p> <p>FY 2013 Accomplishments: The biometric portfolio conducted research into matching fingerprints captured through contactless methods with those of legacy technologies; integrated a prototype fingerprint capture platen into a handheld biometric device; and, conducted an analysis and demonstration of the ability of commercial technologies to meet biometric collection and store/match/share requirements more affordably. The forensic portfolio developed a prototype to enable sensitive site exploitation; conducted research into sequencing</p>	6.000	5.500	5.500

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2013	FY 2014	FY 2015
<p>deoxyribonucleic acid (DNA) for kinship and familial relationships; and, developed a real-time synthetic cannabinoid detection platform.</p> <p>FY 2014 Plans: The Biometrics and Forensics Science and Technology Focus Area will engage with warfighters and commanders from across the Combatant Commands and Services to identify common technology gaps within the respective enterprises. In accordance with these requirements, the biometric portfolio will develop improved matching algorithms between two-dimensional, three-dimensional, and latent fingerprints; deliver a prototype facial recognition system for vehicle check points; and, conduct an evaluation of emerging contactless fingerprint collection systems. In addition, the forensic portfolio will develop a digital forensics prototype to allow warfighters to remotely exploit digital platforms; further explore the human genome to improve identification; and, conduct a statistical analysis of identifying firearms and toolmarks using forensic techniques.</p> <p>FY 2015 Plans: The biometric portfolio will support gaps identified by commanders and operational users in the areas of increasing standoff distance for collection, exploration of the use of emerging biometric modalities, collection of biometric data from non-cooperative subjects and improving the matching accuracy of non-ideal data. 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 for both portfolios 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: Innovation Outreach Program</p> <p>Description: The Innovation Outreach Program supports 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 from commercial research and development 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.</p> <p>FY 2013 Accomplishments: Innovation Outreach conducted technology engagements to support the Naval Explosive Ordnance Disposal Technical Division, United States Census Bureau, the 724th Special Tactics Group and the United States Marine Corps Systems Command. In</p>		1.500	1.600	2.500

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<p>support of these organizations 362 new capabilities were reviewed with 62 selected for presentation to operational users. Products identified in Innovation Outreach events have transitioned to operational demonstrations.</p> <p>FY 2014 Plans: The Rapid Reaction Fund (RRF) investment decisions are made during the execution years in response to Combatant Commands (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. Supported organizations may include the Defense Prisoner of War/Missing Personnel Office, United States Marine Corps Systems Command, the Rapid Reaction Technology Office, Department of Homeland Security, the National Reconnaissance Office, and the Defense Intelligence Agency.</p> <p>FY 2015 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.</p>			
<p>Title: Open Source Data Analysis and Applications Focus Area</p> <p>Description: 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. Technologies developed within this focus area will reduce cost and manpower requirements to provide meaningful intelligence in support of Counter-Weapons-of-Mass-Destruction and Counter-Improvised-Explosive-Device missions.</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. The 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 2015 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 capabilities and tools to exploit open source information and to reduce manpower required to analyze open source documents.</p>	-	5.296	5.146
<p>Title: Autonomous Systems and Behaviors Focus Area</p>	-	3.656	4.236

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<p>Description: Autonomous Systems and Behaviors projects include 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, operation in denied areas 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.</p> <p>FY 2014 Plans: The Rapid Reaction Fund (RRF) investment decisions are made during the execution years in response to Combatant Commands (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.</p> <p>FY 2015 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 four to five projects.</p>			
<p>Title: Urban Characterization Focus Areas</p> <p>Description: Future military operations will likely occur in a broad range of urban environments in areas where we are denied free access. Focal area for FY 2014 and FY 2015 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, electronic warfare, kinetic/non-kinetic and other capabilities needed for future military operations in a wide range of urban areas.</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. RRF will support development of analysis tools and applications. Anticipate supporting five to six projects. Deliverables will include modeling and simulations of systems to support development of capabilities for future operations.</p> <p>FY 2015 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</p>	-	3.926	3.818

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2013	FY 2014	FY 2015
open source data analysis tools and applications. Anticipate supporting three to four projects. Deliverables will include modeling and simulations systems to support planning efforts.				
<p>Title: Intelligence, Surveillance, and Reconnaissance (ISR) Focus Area</p> <p>Description: ISR sensors span a wide range of sensing modalities and generally produce very large data sets that are difficult to analyze in a cluttered environment. Efforts in this area will develop better sensors and tools to more effectively analyze or visualize ISR data. 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.</p> <p>FY 2014 Plans: The Rapid Reaction Fund (RRF) investment decisions are made during the execution years in response to Combatant Commands (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 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.</p> <p>FY 2015 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 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.</p>		-	3.960	4.734
<p>Title: Commercial Product Vulnerabilities and Applications Focus Area</p> <p>Description: Commercial Product Vulnerabilities and Applications projects explore the use of commercial-off-the-shelf products to address immediate operational needs. This focus area identifies and exploits technological advances made by industry which may have immediate military utility. These projects also explore the vulnerabilities of readily available technology used by adversaries. This focus area leverages investments made by the commercial sector to reduce cost for military equipment.</p>		-	5.616	5.433

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<p><i>FY 2014 Plans:</i> The Rapid Reaction Fund (RRF) investment decisions are made during the execution years in response to Combatant Commands (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 help identify areas critical to developing future capabilities to identify commercial product vulnerabilities and applications. RRF anticipates supporting six to eight projects exploring commercial product's vulnerabilities in FY 2014.</p> <p><i>FY 2015 Plans:</i> 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>			
<p><i>Title:</i> Interface of Military Operations with Law Enforcement and Border Patrol Focus Area</p> <p><i>Description:</i> 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 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.</p> <p><i>FY 2014 Plans:</i> The Rapid Reaction Fund (RRF) investment decisions are made during the execution years in response to Combatant Commands (COCOMs), Service and other government organizations' requirements and as new threats emerge or new opportunities are presented. Research and coordination with organizations throughout Department of Defense (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.</p> <p><i>FY 2015 Plans:</i> 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.</p>	-	4.017	4.312
<p><i>Title:</i> Red Teaming in Support of Rapid Fielding Focus Area</p>	-	4.967	4.221

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014		
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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2013	FY 2014	FY 2015
<p>Description: Red Teaming projects assess the susceptibility of rapidly fielded capabilities to be defeated by parties not intimately familiar with the technology. The Rapid Reaction Technology Office will leverage the innovative capabilities of Federally Funded Research and Development Centers, government laboratories, 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 2014 Plans: The Rapid Reaction Fund (RRF) investment decisions are made during the execution years in response to Combatant Commands (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. Projects will include Red Team efforts employing undergraduate students of Science, Technology, Engineering and Math disciplines to explore unconventional approaches to counter DoD technologies, such as the Perseus unmanned underwater vehicle demonstration and Systems Engineering Research Center projects. Anticipate supporting five to six red teaming projects in FY 2014.</p> <p>FY 2015 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: Disruptive Demonstrations</p> <p>Description: The Disruptive Technology Demonstrations project is a technology initiative to address pre-conflict-centric capability needs and anticipatory concerns while maintaining low cost, small footprint operations.</p> <p>FY 2013 Accomplishments: Completed project analysis, design, application investigations which incorporate development, testing, and evaluation of innovative technologies and techniques to enhance Cyber Situational Awareness. Provided technology integration,</p>		8.954	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603826D8Z / <i>Quick Reactions Special Projects (QRSP)</i>	Project (Number/Name) P828 / <i>Rapid Reaction Fund</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
demonstration, and Concept of Operations/Techniques, Tactics and Procedures development for a maritime domain test bed, and study investigations.			
Accomplishments/Planned Programs Subtotals	44.135	42.718	43.750

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

N/A

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

In FY 2015, 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 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, specific performance measures, fielding dates, and demonstration goals and dates. For projects completed in FY 2013, the RRF achieved a transition rate of greater than 75 percent.

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603826D8Z / <i>Quick Reactions Special Projects (QRSP)</i>	Project (Number/Name) P830 / <i>RDT&E Architecture and Integration</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
P830: <i>RDT&E Architecture and Integration</i>	16.164	4.009	-	-	-	-	-	-	-	-	Continuing	Continuing

The FY 2015 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, Stiletto maritime test platform and the Thunderstorm Intelligence, Surveillance, and Reconnaissance (ISR) exercise series. The JERC provides a venue to evaluate a wide range of new technologies in a desert environment. The funding will also support Stiletto, a maritime test vessel that routinely hosts numerous new technologies for evaluation in a maritime environment. Thunderstorm, an ongoing 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 FY 2014, 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 2013	FY 2014	FY 2015
<p>Title: Maritime Irregular Warfare/Stiletto</p> <p>Description: The Maritime Irregular Warfare portfolio investigates gaps and develops irregular warfare capabilities in the maritime domain, with a particular focus on prototype concepts and systems. Projects explore the development of counter evolved non-state capabilities such as semi- and fully-submersible vehicles, 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 assessment of prototypes and the rapid transition of emerging technologies across the range of military operations to higher Technology Readiness Levels. Stiletto, an 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. 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.</p> <p>FY 2013 Accomplishments:</p>	1.950	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603826D8Z / <i>Quick Reactions Special Projects (QRSP)</i>	Project (Number/Name) P830 / <i>RDT&E Architecture and Integration</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<p>In FY 2013, Naval Underwater Threat Interrogation and Covert Assessment System prototype development continued with the Navy and Joint Improvised Explosive Device Defeat Organization, moving from the lab environment to a real world, controlled environment, and testing within the Continental United States (CONUS). The Inflatable Catamaran project continued its development to improve the existing design and construction processes for the Special Forces' inflatable hull component of the Combatant Craft Light 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 Common Maritime Technology Working Group (CMTWG) identified the lead organizations for Stiletto Capability Demonstrations and produced an analysis of common small craft technology needs in FY 2013. CMTWG worked within its membership to bring an advanced Multi-Fuel Engine into the Navy catalog. The Maritime Irregular Warfare focus area supported three Stiletto Capability Demonstrations of emerging Intelligence, Surveillance, and Reconnaissance (ISR), Command and Control, and maritime Unmanned Vehicle Aerial Vehicle (UAV) launch and recovery capabilities on the boat in FY 2013, supporting Navy Expeditionary Combat Command (NECC), Trident Spectre 2013, and the UK Ministry of Defence. Technology Demonstration periods also occurred throughout the year to support industry partners with emerging and innovative capabilities.</p>			
<p>Title: Intelligence, Surveillance, and Reconnaissance (ISR)/Thunderstorm/Space</p> <p>Description: This portfolio examines and explores emerging technologies and prototypes to complement the US Air Force (USAF), the National Reconnaissance Office (NRO), and other interagency initiatives in 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, 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, prototype, 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. Thunderstorm aims to identify new capabilities and/or new ways to employ existing capabilities that enhance our ability to "Deter, Predict, and Interdict" threats while assessing how to bridge capability gaps that cross multiple Departments and Agencies.</p> <p>FY 2013 Accomplishments: Thunderstorm Spirals 13-1 and 13-2 characterized maritime threat behavior in open water in the Gulf of Mexico through the littorals and the transition into the Texas land space. Both spirals capitalized on the lessons learned from previous spirals. In partnership with Joint Interagency Task Force South, Customs and Border Protection, United States Coast Guard, United States</p>	1.451	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603826D8Z / <i>Quick Reactions Special Projects (QRSP)</i>	Project (Number/Name) P830 / <i>RDT&E Architecture and Integration</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<p>Navy, National Geo-Spatial Intelligence Agency, National Reconnaissance Office, United States Southern Command, United States Northern Command and the Texas Department of Public Safety, Spiral 13-1 technologies were utilized to detect and discriminate suspicious behavior in the open water, littoral and maritime-to-land transition space. The highlight of this Spiral was the capability to share information in near real-time among eight data nodes. Spiral 13-2 built upon lessons learned from Spiral 13-1, placed emphasis on the maritime-to-land transition activity and the ability to prosecute suspicious actors as they quickly meld themselves into urban or rural populations. This information was gathered and then shared in near real time to the data nodes. In FY 2013, Thunderstorm spirals demonstrated 28 emerging capabilities in operationally realistic environments with a broad range of potential operational users providing support.</p> <p>In the space arena, a classified project in partnership with the NRO successfully demonstrated the ability to use commercial-off-the-shelf (COTS) Satellite Communications (SATCOM) equipment for transferring large data files from theater to the U.S. The project used a COTS SATCOM High Data Rate Modem to improve the bandwidth throughput by 100 percent. This was a prototype demonstration and this concept of operations will be adapted to other satellites.</p>			
<p>Title: Tech Assessments</p> <p>Description: The Joint Experimental Range Complex (JERC) is a remote test site located at the Yuma Proving Grounds that is designed to rapidly evaluate prototype technologies in an operationally relevant environment. These limited proof-of-concept evaluations allow for integration and development of Intelligence, Surveillance, and Reconnaissance (ISR) training and Concept of Operation development. Since its establishment in late FY 2003, the Rapid Reaction Technology Office has sponsored evaluation of more than 280 systems at the JERC. This funding is utilized to provide assessments of technology and contribute to emergent upgrades to capabilities to the site.</p> <p>FY 2013 Accomplishments: Conducted six two-week evaluation periods for interested industry and government representatives to test prototypes of emerging capabilities in a realistic desert environment. Used the results of these evaluations to refine improvements to the prototype system, inform the development/procurement process for future enhanced capabilities and to apprise operational users of capabilities in development. Technologies assessed include, Pyros (small tactical munitions), Homemade Explosive Neutralization Without Detonation, Audio-Video Leave Behind Over-The-Horizon Exfiltration, Robotic Capabilities, Smart Imaging X-Ray); and Surewave (tunnel detection capability).</p>	0.608	-	-
Accomplishments/Planned Programs Subtotals	4.009	-	-

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

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603826D8Z / <i>Quick Reactions Special Projects (QRSP)</i>	Project (Number/Name) P830 / <i>RDT&E Architecture and Integration</i>

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

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

In FY 2015, performance metrics applicable to the RDT&E Architecture and Integration initiative included 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. 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. Technology demonstrated at the Joint Experimental Range Complex, Thunderstorm and Stiletto are typically not mature enough for operational transition. Written assessments of each technology demonstrated are used to guide further development and inform operational users of emerging capabilities.

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603826D8Z / <i>Quick Reactions Special Projects (QRSP)</i>	Project (Number/Name) P831 / <i>Joint Rapid Acquisition Cell Support</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
P831: <i>Joint Rapid Acquisition Cell Support</i>	1.710	1.608	1.587	1.644	-	1.644	1.878	1.918	2.464	2.466	Continuing	Continuing

The FY 2015 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 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 2013	FY 2014	FY 2015
Title: Joint Rapid Acquisition Cell (JRAC) Management Support	1.608	1.587	1.644
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 2013 Accomplishments: Initiated support for the JRAC to enable management and tracking of COCOM. Warfighter needs were validated by the Joint Staff.			
FY 2014 Plans: Continue support for the JRAC management and tracking of COCOM initiative. Continue validation of the warfighter needs by the Joint Staff.			
FY 2015 Plans: Continue support for the JRAC management and tracking of COCOM initiative.			

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603826D8Z / <i>Quick Reactions Special Projects (QRSP)</i>	Project (Number/Name) P831 / <i>Joint Rapid Acquisition Cell Support</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
Continue validation of the warfighter needs by the Joint Staff.			
Accomplishments/Planned Programs Subtotals	1.608	1.587	1.644

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

N/A

Remarks

D. Acquisition Strategy

NA – Capabilities acquired to fulfill Joint Urgent Operational Needs are provided by other DoD components.

E. Performance Metrics

Joint Rapid Acquisition Cell 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.

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603826D8Z / Quick Reactions Special Projects (QRSP)	Project (Number/Name) P833 / Strategic Multi-Layered Assessment (SMA) Support
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
P833: Strategic Multi-Layered Assessment (SMA) Support	-	2.170	1.770	2.050	-	2.050	2.104	2.149	2.772	2.774	Continuing	Continuing

The FY 2015 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 SMA 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 US 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. SMA is also supported by the Rapid Reaction Fund (RRF).

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

	FY 2013	FY 2014	FY 2015
Title: Strategic Multi-Layered Assessment (SMA)	2.170	1.770	2.050
<p>Description: The SMA cell develops solution options, not generally found in U.S. Government work, 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. Funding for this project within the Quick Reaction Special Projects program element was a result of a 2012 USSTRATCOM decision to reprogram approximately \$2.000 million per year from USSTRATCOM to support SMA activities.</p> <p>FY 2013 Accomplishments: At the request of United States Pacific Command (USPACOM) the SMA cell undertook a Megacities project. This project consisted of three components. The first component was 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 was a case analysis of the drivers of buffers to political, social, economic and environmental instability in the Dhaka, Bangladesh population center. The third component of the study was an assessment and testing of novel ways to present and visualize megacity stability data. This benefited COCOM planners with forecasting socio-cultural trends affecting state, regional, or community level stability. Also, this effort answered the need for quantitative</p>			

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense	Date: March 2014
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Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603826D8Z / <i>Quick Reactions Special Projects (QRSP)</i>	Project (Number/Name) P833 / <i>Strategic Multi-Layered Assessment (SMA) Support</i>
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<p>stability assessment approaches to address key national security considerations including the potential for resurgence of violent extremism; humanitarian crisis; reinforcement of outlier state behavior and consideration of partner and ally relations.</p> <p><i>FY 2014 Plans:</i> Continue Megacities effort by testing the proof of concept the countries of Lagos and Nigeria. There are three primary objectives of the project: 1) to provide actionable insight into the state-level stability and instability dynamics in Nigeria and provide an example of how similar analyses might be completed in other areas of the Area of Responsibility (AOR); 2) to develop an evaluative tool to aid in prioritization and metric development for United States Africa Command engagement activities; and 3) to prepare a deep dive assessment of the threat and likely growth of violent extremism in Nigeria. The framework will be capable of measuring progress/success and of assessing impact of investment, and it will have visualization features that assist planning process and development of Theater Campaign Plans, Country Campaign Plans, and operation plans.</p> <p><i>FY 2015 Plans:</i> The Strategic Multi-Layered Assessment cell will continue to actively work with the Combatant Commands (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; transnational criminal organizations, 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>			
Accomplishments/Planned Programs Subtotals	2.170	1.770	2.050

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's 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.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400: Research, Development, Test & Evaluation, Defense-Wide I BA 3: Advanced Technology Development (ATD)	R-1 Program Element (Number/Name) PE 0603832D8Z I DoD Modeling and Simulation Management Office
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
Total Program Element	29.860	37.881	34.338	3.000	-	3.000	3.520	3.950	4.591	5.142	Continuing	Continuing
P476: DoD Modeling and Simulation Management Office	29.860	31.728	30.338	3.000	-	3.000	3.520	3.950	4.591	5.142	Continuing	Continuing
P477: Effects Chain Analyses Cell	0.000	6.153	4.000	-	-	-	-	-	-	-	Continuing	Continuing

The FY 2015 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 and advocate 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 technology solutions including 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:

- o Executing the DoD Strategic Vision for M&S.
- o Bringing together M&S stakeholders to advise and assist on finding solutions for removing the barriers to interoperability, reuse, commonality, efficiency, and effectiveness.
- o Developing, coordinating, and advocating for, 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.
- o Managing funds to support DoD M&S Enterprise activities.

MSMO also serves as DoD's:

- o Lead Standardization Activity (LSA) for managing M&S standards and methodologies.
- o Focal point and advocate for coordinating DoD M&S information exchanges and interactions within DoD, with other U.S. Government departments and agencies, international allies, industry and academia.

This program supports the goals of the DoD Strategic Vision for M&S, which are:

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense Date: March 2014

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 3: Advanced Technology Development (ATD)</i>	R-1 Program Element (Number/Name) PE 0603832D8Z / <i>DoD Modeling and Simulation Management Office</i>
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Goal One. Standards, architectures, networks and environments that:

- o Promote the sharing of tools, data, and information across the Enterprise.
- o Foster common formats.
- o Are readily accessible and can be reliably applied by users.

Goal Two. Policies at the enterprise level that:

- o Promote interoperability and the use of common M&S capabilities.
- o Minimize duplication and encourage reuse of M&S capabilities.
- o Encourage research and development (R&D) to respond to emerging challenges.
- o Limit the use of models and data encumbered by proprietary restrictions.
- o Leverage M&S capabilities across DoD, other government agencies, International partners, industry, and academia.

Goal Three. Management processes for models, simulations, and data that:

- o Enable M&S users and developers to easily discover and share M&S capabilities and provide incentives for their use.
- o Facilitate the cost-effective and efficient development and use of M&S systems and capabilities.
- o Include practical validation, verification, and accreditation guidelines that vary by application area.

Goal Four. Tools in the form of models, simulations, and authoritative data that:

- o Support the full range of DoD interests.
- o Provide timely and credible results.
- o Make capabilities, limitations, and assumptions easily visible.
- o Are useable across communities.

Goal Five. People that:

- o Are well-trained.
- o Employ existing models, simulation, and data to support departmental objectives.
- o Advance M&S to support emerging departmental challenges.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense	Date: March 2014
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Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 3: Advanced Technology Development (ATD)</i>	R-1 Program Element (Number/Name) PE 0603832D8Z / <i>DoD Modeling and Simulation Management Office</i>
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B. Program Change Summary (\$ in Millions)	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO	FY 2015 Total
Previous President's Budget	47.433	41.370	45.890	-	45.890
Current President's Budget	37.881	34.338	3.000	-	3.000
Total Adjustments	-9.552	-7.032	-42.890	-	-42.890
• Congressional General Reductions	-3.229	-			
• Congressional Directed Reductions	-4.000	-7.000			
• Congressional Rescissions	-0.057	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-1.114	-			
• SBIR/STTR Transfer	-1.152	-			
• Strategic Efficiency Savings	-	-	-19.890	-	-19.890
• FFRDC Adjustments	-	-0.032	-	-	-
• Realignment of Funds to Support Higher DoD Priorities and Requirements	-	-	-23.000	-	-23.000

Change Summary Explanation

FY 2015: Reduction of -19.890 million is a strategic efficiency approach to reduce funding and staffing. As a result, we provide a better alignment of funding and provide support to a smaller military force.

Reduction of -12.000 million is the result of higher S & T priorities. The funds were realigned to a new PE in FY 2015, PE 0603288D8Z, Science and Technology Analytic Assessment, a new start Program in FY 2015.

Reduction of -11.000 million is realigned from Effects Chain Analyses to a new PE in FY 2015, PE0603289D8Z, Advanced Innovative Analysis and Concepts, a new start Program in FY 2015.

Total Net Reduction in FY 2015: -42,890.

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603832D8Z / DoD Modeling and Simulation Management Office	Project (Number/Name) P476 / DoD Modeling and Simulation Management Office
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
P476: DoD Modeling and Simulation Management Office	29.860	31.728	30.338	3.000	-	3.000	3.520	3.950	4.591	5.142	Continuing	Continuing

The FY 2015 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 and advocate 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 technology solutions including 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:

- o Executing the DoD Strategic Vision for M&S.
- o Bringing together M&S stakeholders to advise and assist on finding solutions for removing the barriers to interoperability, reuse, commonality, efficiency, and effectiveness.
- o Developing, coordinating, and advocating for, 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.
- o Managing funds to support DoD M&S Enterprise activities.

MSMO also serves as DoD's:

- o Lead Standardization Activity (LSA) for managing M&S standards and methodologies.
- o Focal point and advocate for coordinating DoD M&S information exchanges and interactions within DoD, with other U.S. Government departments and agencies, international allies, industry and academia.

This program supports the goals of the DoD Strategic Vision for M&S, which are:

Goal One. Standards, architectures, networks and environments that:

- o Promote the sharing of tools, data, and information across the Enterprise.
- o Foster common formats.

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense	Date: March 2014
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Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603832D8Z / DoD Modeling and Simulation Management Office	Project (Number/Name) P476 / DoD Modeling and Simulation Management Office
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- o Are readily accessible and can be reliably applied by users.

Goal Two. Policies at the enterprise level that:

- o Promote interoperability and the use of common M&S capabilities.
- o Minimize duplication and encourage reuse of M&S capabilities.
- o Encourage research and development to respond to emerging challenges.
- o Limit the use of models and data encumbered by proprietary restrictions.
- o Leverage M&S capabilities across DoD, other government agencies, International partners, industry, and academia.

Goal Three. Management processes for models, simulations, and data that:

- o Enable M&S users and developers to easily discover and share M&S capabilities and provide incentives for their use.
- o Facilitate the cost-effective and efficient development and use of M&S systems and capabilities.
- o Include practical validation, verification, and accreditation guidelines that vary by application area.

Goal Four. Tools in the form of models, simulations, and authoritative data that:

- o Support the full range of DoD interests.
- o Provide timely and credible results.
- o Make capabilities, limitations, and assumptions easily visible.
- o Are useable across communities.

Goal Five. People that:

- o Are well-trained.
- o Employ existing models, simulation, and data to support departmental objectives.
- o Advance M&S to support emerging departmental challenges.

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

	FY 2013	FY 2014	FY 2015
Title: DoD Modeling and Simulation Management Office	31.728	30.338	3.000
Description: The DoD Modeling and Simulation Management Office, as the focal point for DoD models and simulations (M&S), is responsible for maintaining and enhancing policies, standards, technology, and collaboration ensuring the efficiency and effectiveness of the M&S that support the full range and scope of Department of Defense (DoD) missions and operations.			
FY 2013 Accomplishments: Development Activities – MSMO:			

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603832D8Z / <i>DoD Modeling and Simulation Management Office</i>	Project (Number/Name) P476 / <i>DoD Modeling and Simulation Management Office</i>

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

	FY 2013	FY 2014	FY 2015
<ul style="list-style-type: none"> - Completed approval processes for two standards developed under the Live Virtual Constructive Architecture Roadmap (LVCAR) simulation events: the Institute for Electrical and Electronics Engineers (IEEE) 1730.1 Distributed Multi Architecture Overlay Standard, and Simulation Interoperability Standards Organization (SISO) Federation Agreements Template Standard. - Initiated projects in the areas of the priority objectives developed by the DoD M&S Steering Committee <ul style="list-style-type: none"> o Conceptual Modeling Research and Development. o M&S Training and Education. o M&S Policy Review including Verification, Validation, and Accreditation. o Common standards and interfaces to encourage reuse. o M&S Reuse. o M&S Metadata to support resource discovery. o Cyber M&S. - Completed M&S projects or activities for the: <ul style="list-style-type: none"> o Irregular Warfare High Level Task (HLT) including Datacard Transition and development of a Joint Irregular Warfare Analytic Baseline. o Cyber Operations Research and Network Analysis (CORONA) HLT and transitioned the product to the Test Resource Management Center. o Rapid Data Generation (RDG) High Level Task through Initial Operating Capability Phase; RDG will allow simulations to use consistent, authoritative data sources for Order of Battle information. Follow-on phases will address additional types of data and additional classification levels. o Phase one of Integrated Threat Systems M&S (ITSMS) as a part of the Integrated Threat Analysis Simulation Environment (ITASE) program, delivering initial architecture and single use case to address integrated threat representation. o Project Management Tool, a needs and solutions management tool for the DoD. - Initiated M&S Catalog platform transition to improve user access and support. - Continued M&S projects or activities for: <ul style="list-style-type: none"> o Developing Enterprise System Engineering M&S Data requirements, architecture, and standards for M&S Data. o Developing 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. o Leading the DoD M&S Enabling Cyber Workshops. o Updating the M&S Community of Interest (COI) Discovery Metadata Specification (MSC-DMS) for M&S data and published MSC-DMS v1.5 to comply with updated DoD- wide discovery metadata specification. o Coordinating the use of Environmental Data Cube Support System (EDCSS) in DoD exercises. o Supporting the development of new approaches to using M&S. 			

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603832D8Z / <i>DoD Modeling and Simulation Management Office</i>	Project (Number/Name) P476 / <i>DoD Modeling and Simulation Management Office</i>

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

	FY 2013	FY 2014	FY 2015
<p>Sustainment Activities – MSMO continued:</p> <ul style="list-style-type: none"> - Ensuring existing standards continue to meet user needs through collaborative standards review - Testing compliance to High Level Architecture (HLA) standard for simulations supporting joint warfighting. - Refining and populating the DoD Enterprise M&S catalog making authoritative tools and data more widely accessible and useable. - Transitioning the authoritative DoD M&S Glossary issuance to online status for standardization of terminology and increased collaboration across the DoD M&S Enterprise. - Maintaining the Modeling and Simulation Coordination Office website for providing global access to DoD M&S activities and tools. <p>Management/Coordination Activities:</p> <ul style="list-style-type: none"> - MSMO continued: <ul style="list-style-type: none"> o Advising and assisting the USD(AT&L) on M&S. o Managing working groups providing technical advice and assistance to the M&S Senior Steering Committee. o Serving 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. o 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. o 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), Federal Emergency management Agency (FEMA) and the National Aeronautics and Space Administration (NASA). o 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. o Serving as the DoD modeling and simulation focal point and advocate for M&S activities and for collaboration within the DoD. o Coordinating quarterly program management reviews for tasks sponsored by this PE. o Coordinating with the Simulation Interoperability Standards Organization (SISO) for governance and development / voting of M&S standards supporting interoperability. o 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. o Managing the M&S Community of Interest (COI) and subordinate Data Management Working Group (DMWG) and Architecture Management Group activities to address M&S data technical challenges. - Initiated the WHS-required update to DoDI 5000.70. - Transitioned capabilities formerly assigned to DTIC’s Modeling and Simulation Information Analysis Center (MSIAC) to DTIC’s Cyber Security and Information Systems Information Analysis Center (CSIAC). 			

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014		
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603832D8Z / <i>DoD Modeling and Simulation Management Office</i>	Project (Number/Name) P476 / <i>DoD Modeling and Simulation Management Office</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2013	FY 2014	FY 2015
<p>- Provided functional oversight and technical direction to M&S portion of CSIAC.</p> <p>FY 2014 Plans: The focus for FY 2014 is on ensuring technical expertise and support capability in the modeling and simulation disciplines for enhancing the effectiveness of our M&S expenditures through development of new common capabilities in an enterprise fashion and by enhancing reuse and interoperability of individual M&S tools.</p> <p>Development Activities – MSMO is continuing:</p> <ul style="list-style-type: none"> o Developing Enterprise System Engineering M&S Data requirements, architecture, and standards for M&S Data. o Developing 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. o Providing users with rapid discovery of classified Order of Battle data and the most advanced and enhanced terrain data developed within and by the DoD. o Leading the DoD M&S Enabling Cyber Workshops. o Updating the M&S Community of Interest (COI) Discovery Metadata Specification (MSC-DMS) metadata specification for M&S data. o Coordinating the use of the Environmental Data Cube Support System EDCSS in DoD exercises and The Technical Cooperation Program (TTCP) experiments. o Supporting the development of new approaches to using M&S. o Facilitating the identification of mission and engagement level weapon system models in Spiral Two development of the Integrated Threat Systems Modeling and Simulation (ITSMS). <p>Sustainment Activities – MSMO is continuing:</p> <ul style="list-style-type: none"> o Ensuring existing standards continue to meet user needs through collaborative standards review. o Testing HLA Run-Time Interfaces for compliance with standards. o Refining and populating the DoD Enterprise M&S catalog making authoritative tools and data more widely accessible and useable. o Maintaining the online DoD M&S Glossary for standardization of terminology and increased collaboration across the DoD M&S Enterprise. o Making M&S information publically available through the Modeling and Simulation Coordination office website. <p>Management/Coordination Activities – MSMO is continuing:</p>				

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603832D8Z / <i>DoD Modeling and Simulation Management Office</i>	Project (Number/Name) P476 / <i>DoD Modeling and Simulation Management Office</i>

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

	FY 2013	FY 2014	FY 2015
<ul style="list-style-type: none"> o Serving 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. o Serving as the DoD M&S focal point and advocate for M&S activities and for collaboration within the DoD. o Advising and assisting the USD(AT&L) on M&S. Coordinating working groups for providing technical advice and assistance to the DoD M&S Senior Steering Committee. o Performing knowledge management and dissemination of DoD modeling and simulation capabilities and best practices to enable efficient use of M&S. o 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. o Providing M&S functional oversight and M&S technical direction to DTIC's Cyber Security and Information Systems Information o Analysis Center (CSIAC). o Coordinating with the Simulation Interoperability Standards Organization (SISO) for governance and development / voting of M&S standards supporting interoperability. o Collaborating 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). o 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. o Coordinating the Modeling & Simulation Community of Interest (M&S COI) activities. o Managing the Data Management Working Group (DMWG) activities to address M&S data technical challenges. <p>FY 2015 Plans: In FY 2015, MSMO will focus on modeling and simulation technical advocacy and enterprise-level support. Traditionally, the MSMO provided direct R&D project funds, e.g. High Level Tasks (HLTs), to OSD, Military Department and Agency community organizations to respond to identified challenges. Starting in FY 2015, R&D project support to identified OSD, Military Department and Agency challenges will be funded within those community organization program elements. In FY 2015, all prior R&D projects will have been completed and transitioned to these community organizations. The requested FY 2015 budget reflects the revised budget for MSMO to (1) conduct management and technical support for the Department's current and long-term M&S needs; (2) study opportunities to leverage relevant DoD Information Technology (IT) enterprise capabilities and DoD, Industry, and Academia-developed M&S technologies; and (3) continue to advocate an enterprise approach for the future of DoD M&S, maintaining strong engagement and ties with DoD and external community stakeholders.</p> <p>MSMO will:</p> <ul style="list-style-type: none"> o Continue to develop, enhance, and advocate the M&S enterprise suite of tools for the DoD to enable reuse and efficient adoption/application of M&S, including the M&S Catalog and M&SCO Website. 			

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense	Date: March 2014
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Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603832D8Z / DoD Modeling and Simulation Management Office	Project (Number/Name) P476 / DoD Modeling and Simulation Management Office
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<ul style="list-style-type: none"> o Research and update AT&L-promulgated M&S Issuances and technical guidance – DoDD 5000.59, DoDI 5000.70, DoDI 5000.61 verification, validation, and accreditation(VV&A), DoD M&S Glossary, and VV&A Recommended Practices Guides, etc. o Serve as the focal point for DoD M&S technical collaboration: <ul style="list-style-type: none"> – Chair M&S Community of Interest (COI); oversee/advise efforts of subordinate M&S COI Working Groups (WGs): Cyber, Data, Services, Architecture, VV&A. – Exploit R&D opportunities to leverage ongoing Department- and Federal-level IT and M&S capabilities, such as Joint Information Environment (JIE) and the National Information Exchange Model (NIEM). o Serve as the Lead Standardization Activity for M&S Standards & Methodologies (LSA – MSSM). o Represent AT&L in Joint Enterprise Steering Committee (JESC) (IT & Intelligence Community standards) activities. <ul style="list-style-type: none"> – Chair M&S Technical Working Group o Represent DoD M&S Community interests in Simulation Interoperability Standards Organization (SISO) activities o Represent the U.S. interests in International M&S activities: <ul style="list-style-type: none"> – Chair TTCP Technical Panel 2 (M&S) – US Principal Voting Member for NATO M&S Group o Develop M&S technical direction and provide functional oversight to DTIC’s Cyber Security and Information Systems Information Analysis Center (CSIAC). 			
Accomplishments/Planned Programs Subtotals	31.728	30.338	3.000

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:

- Number of instances where M&S standards, technical best practices, or tools have been adopted or employed.
- 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.
- Number of users accessing and completing DoD-sponsored training venues for educating the M&S workforce.

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603832D8Z / DoD Modeling and Simulation Management Office	Project (Number/Name) P477 / Effects Chain Analyses Cell
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
<i>P477: Effects Chain Analyses Cell</i>	-	6.153	4.000	-	-	-	-	-	-	-	Continuing	Continuing

The FY 2015 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 an existing system be leveraged and/or can a group of capabilities be combined in different ways to improve the overall effectiveness of US systems? This office works closely with the Joint Staff, the Military Departments, Combatant Commands, and other Government entities.

In FY 2015, this project will be moved to PE 0603289 entitled "Advanced Innovative Analysis and Concepts."

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

	FY 2013	FY 2014	FY 2015
Title: Effects Chain Analyses Cell	6.153	4.000	-
<p>Description: The A2/AD effects chain analysis effort develops and strengthens 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 include STRATCOM, SOCOM, and CYBERCOM. Projects undertaken will be approved by the Under Secretary of Defense (AT&L).</p> <p>FY 2013 Accomplishments:</p> <ul style="list-style-type: none"> • Initiated alternative concepts focused on near-term systems employment in coordination with PACOM, developed analytical approaches to assess capability improvements. • Identified promising concepts for detailed analysis of effects. • Analyzed sensor options and cost effective architectures for land based defense. • Built threat models at all-source level for land based defense analysis. • Developed an end to end engagement model complete with high fidelity weapon system, fire control sensor, and detailed threat models • Developed and refined required adversary threat models • Developed, evaluated and refined multiple projectile configurations to determine optimal system performance for the threats of interest 			

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014		
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603832D8Z / <i>DoD Modeling and Simulation Management Office</i>	Project (Number/Name) P477 / <i>Effects Chain Analyses Cell</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2013	FY 2014	FY 2015
<ul style="list-style-type: none"> • Performed detailed trade studies on sensor types, sensor configurations, autopilot designs, guidance, midcourse and terminal guidance options • Evaluated left-of-launch options for countermeasures • Evaluated effects and impacts of structured attack scenarios versus weapon laydown options <p><i>FY 2014 Plans:</i></p> <ul style="list-style-type: none"> • Continue concept analysis of near-term systems in alternate employment scenarios. • Perform detailed performance and effects analysis of promising concepts. • Continue development of an end-to-end engagement model complete with finer tuned detailed threat models • Continue development of required adversary threat models to include a new class of threats Design, prototype and evaluate projectile configurations to determine optimal system performance for high priority threats • Continue to perform in fine detail, trade studies on sensor types, sensor configurations, autopilot designs, guidance, midcourse and terminal guidance options • Continue evaluation of left of launch options for countermeasures including modeling and integration of a new class of threats • Continue evaluation of structured attack scenarios versus weapon laydown options. • Continue efforts to increase end-game accuracy • Continue to explore and expand sensor options to provide highest probability of kill against threats 				
Accomplishments/Planned Programs Subtotals		6.153	4.000	-
C. Other Program Funding Summary (\$ in Millions)				
N/A				
Remarks				
D. Acquisition Strategy				
N/A				
E. Performance Metrics				
N/A				

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide / BA 3: Advanced Technology Development (ATD)</i>	R-1 Program Element (Number/Name) PE 0603941D8Z / <i>Test and Evaluation/Science and Technology</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
Total Program Element	96.622	84.112	83.255	81.148	-	81.148	83.117	86.327	91.156	98.832	Continuing	Continuing
1: <i>High Speed Systems Test</i>	23.016	12.615	18.953	21.690	-	21.690	27.070	20.978	14.889	16.370	Continuing	Continuing
2: <i>Spectrum Efficient Technology</i>	9.742	8.315	7.055	7.441	-	7.441	7.222	7.637	9.020	9.649	Continuing	Continuing
3: <i>Electronic Warfare Test</i>	19.127	18.827	15.569	8.172	-	8.172	9.971	12.573	15.105	16.564	Continuing	Continuing
4: <i>Advanced Instrumentation Systems Technology</i>	10.025	8.570	10.036	11.610	-	11.610	10.066	9.779	11.530	13.704	Continuing	Continuing
5: <i>Directed Energy Test</i>	11.235	11.284	7.252	5.786	-	5.786	4.844	6.430	7.713	8.002	Continuing	Continuing
6: <i>Netcentric Systems Test</i>	20.072	16.590	14.518	16.658	-	16.658	12.931	9.834	10.756	10.344	Continuing	Continuing
7: <i>Unmanned and Autonomous System Test</i>	3.159	5.273	5.918	5.024	-	5.024	4.621	9.155	10.636	11.252	Continuing	Continuing
8: <i>Cyberspace Test</i>	0.246	2.638	3.954	4.767	-	4.767	6.392	9.941	11.507	12.947	Continuing	Continuing

The FY 2015 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.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense	Date: March 2014
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Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 3: Advanced Technology Development (ATD)</i>	R-1 Program Element (Number/Name) PE 0603941D8Z / <i>Test and Evaluation/Science and Technology</i>
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B. Program Change Summary (\$ in Millions)	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO	FY 2015 Total
Previous President's Budget	92.602	92.508	94.264	-	94.264
Current President's Budget	84.112	83.255	81.148	-	81.148
Total Adjustments	-8.490	-9.253	-13.116	-	-13.116
• Congressional General Reductions	-	-0.053			
• Congressional Directed Reductions	-7.606	-9.200			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	1.164	-			
• SBIR/STTR Transfer	-2.048	-			
• FY 2015 Adjustment	-	-	-13.116	-	-13.116

Change Summary Explanation

- Strategic efficiency reductions in management headquarters funding and staffing for better alignment and to provide support to a smaller military force.

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense										Date: March 2014		
Appropriation/Budget Activity 0400 / 3					R-1 Program Element (Number/Name) PE 0603941D8Z / <i>Test and Evaluation/ Science and Technology</i>				Project (Number/Name) <i>1 / High Speed Systems Test</i>			
COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
1: <i>High Speed Systems Test</i>	23.016	12.615	18.953	21.690	-	21.690	27.070	20.978	14.889	16.370	Continuing	Continuing

The FY 2015 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 2013	FY 2014	FY 2015
Title: High Speed Systems Test	12.615	18.953	21.690
FY 2013 Accomplishments:			
The HSST project continued to advance ground and flight test technologies, techniques, instrumentation and M&S capabilities required for the development of high speed air-breathing propulsion and boost/glide weapons. Important progress was made toward addressing the two most significant technology shortfalls in current hypersonic aero propulsion ground test capabilities: clean air heat addition (i.e. non-vitiated air) and variable Mach number 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 HSST FY 2011 tests, 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 and operability in the test environment resulting in erroneous flight performance			

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603941D8Z / <i>Test and Evaluation/ Science and Technology</i>	Project (Number/Name) <i>1 / High Speed Systems Test</i>

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

	FY 2013	FY 2014	FY 2015
<p>predictions. Variable Mach number capability is required to “fly the mission” and determine the critical transient operability effects throughout the flight envelope. Incorporation of component technologies, previously developed by the T&E/S&T program, were initiated into a small-scale, clean air, true temperature, variable Mach number 5-8 aero propulsion test facility. Completion of this facility will demonstrate component technologies have reached Technology Readiness Level (TRL) 6, provide an on-going test asset to the DoD, and reduce risk for construction of a full-scale facility. Significant progress was made this year in Phase I of the facility development including the completed installation of the clean air regenerative storage heater, associated support systems, instrumentation and controls required for facility operation. Design efforts for subsequent phases progressed including the critical design of the air delivery system and preliminary design of a variable Mach number nozzle. Another FY2013 effort examined the incorporation of advanced morphing ceramic materials into the design of common facility nozzle and ducting hardware to achieve a variable Mach number capability and variable inlet distortion patterns representative of flight-like inlet systems. This capability reached critical design and promises to provide a significant advantage over current rigid, stationary facility hardware by providing a “first-ever” realistic variable Mach flight distortion simulation test capability, while reducing test cost and increasing productivity. Ground test accomplishments included continued progress in determining the capability of existing ground test facilities and methodologies to evaluate and develop large-scale hypersonic propulsion systems. Following the successful completion of the benchmark freejet test series utilizing an advanced hydrocarbon fueled missile scale scramjet in a larger facility, the semi-freejet and direct-connect test configurations were initiated in a smaller facility. The resulting analysis comparing tests between the larger and smaller facilities will allow the optimized utilization of existing facilities. In addition this effort will help define the size and type of investments needed for future large-scale scramjet vehicle development and reduction of flight test and acquisition risks. The hypersonic community’s first rigorous assessment of data uncertainty was completed on the freejet test series per the US National Standard on measurement uncertainty, which will serve as a precedent for future high-speed propulsion system development. Another task was initiated to examine the unique and extensive set of ground and flight test data collected by the X-51 program so that it can be utilized in the development of state-of-the-art techniques for high speed engine design, development and testing. The HSST project initiated an effort to address critical arc heater technologies and flow quality gaps; this development will improve the service lives of the electrodes and improve nozzle flow quality. Improved computational and numerical simulation models were completed involving magnetic field and arc column interactions with the air flow in the heater necessary to investigate advanced designs and allow for time/memory efficient parallel computing of the simulations. The autonomous flight safety technology was matured to TRL 6 and prototype units were designed and delivered for service certification onboard two Operationally Responsive Space Office flight tests. Another flight test technology effort completed the successful development and programming of advanced parameter identification maneuvers into the flight computer of the fourth X-51 flight. Subsequent analysis of these optimized test maneuvers demonstrated the ability to collect substantially more stability and control data per flight than is possible using traditional methods, thus reducing the number of flight tests and costs for future development systems. Progress was also made in advanced high speed system ground and flight test instrumentation. The initial phase was completed on a ground based, portable Light Detection and Ranging (LIDAR) system to measure atmospheric conditions (density,</p>			

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603941D8Z / <i>Test and Evaluation/ Science and Technology</i>	Project (Number/Name) <i>1 / High Speed Systems Test</i>

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

	FY 2013	FY 2014	FY 2015
<p>temperature, pressure, wind speed/direction, O2 content) along a hypersonic vehicle's flight path from altitudes of 60k to 250k feet. This initial phase demonstrated the ability to measure these conditions using the LIDAR system at the GroundWinds facility in Mauna Loa, Hawaii at altitudes representative of hypersonic vehicle flight trajectories. This capability will be a significant advancement over current technologies, improving the accuracy of determining atmospheric conditions at high altitudes needed for assessing the performance and operability of air-breathing missiles and boost-glide vehicles during development. A project was initiated to develop a force balance system with high stiffness and frequency response to make measurements in hypervelocity flows with test times of 1-2 milliseconds. This will substantially increase the accuracy of high Mach force measurements that are required to evaluate and improve models of air chemistry in design and prediction codes. An advanced system to measure gas properties in high speed flows was constructed utilizing lasers operating in the mid-infrared spectrum. This system, 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 and transitioned. Design, fabrication and demonstration of a non-intrusive laser hygrometer and a non-intrusive optical mass flow measurement system 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 M&S tools. An advanced three-dimensional boundary layer transition code and hypersonic nozzle Characteristics Based Grid Generation code have been developed and transitioned to the hypersonic community for beta testing. Recent wind tunnel and flight tests have provided data demonstrating that a fully three-dimensional flow boundary layer stability and transition prediction code is an essential engineering tool needed to evaluate and predict boundary layer instability and transition on maneuverable boost-glide vehicles currently under development by the DoD. Computed tomography methods for optical absorption measurements were completed; these create two-dimensional spatial maps of exhaust gas properties from multi-line-of-sight Tunable Diode Laser Absorption Spectroscopy (TDLAS) measurements for verifying computational fluid dynamics (CFD) code predictions and for determining combustion efficiency for turbine and scramjet engines. This capability will greatly increase the diagnostic value of measurements from miniature, robust TDLAS gas diagnostic sensor systems now routinely used for engine ground and flight testing</p> <p>FY 2014 Plans: New test technology efforts will be initiated addressing: test technologies, techniques, and methods 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 meet other needs such as gas turbine engines, and electromagnetic rail guns. The clean-air, variable Mach number demonstration facility will continue to develop and demonstrate air delivery system technologies to provide uniform flow with variable pressure and temperature from multiple air sources through a fixed nozzle up</p>			

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603941D8Z / <i>Test and Evaluation/ Science and Technology</i>	Project (Number/Name) <i>1 / High Speed Systems Test</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<p>to Mach 8 conditions. The project activities will include completion of the Phase 1 system checkouts and activation of the clean air regenerative storage heater technology.</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>Ceramic morphing components suitable for missile-scale high speed ground test facilities will be designed and fabricated to maintain well-conditioned flow while varying the flight Mach number and inlet distortion levels.</p> <p>Improved arc jet facility spin coil designs will be advanced enabling improved T&E of maneuvering reentry and boost/glide vehicles.</p> <p>The ground based LIDAR atmospheric sensing system will begin conversion into a mobile platform to support various flight test programs at multiple flight ranges.</p> <p>Verification and improvement of CFD 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><i>FY 2015 Plans:</i></p> <p>FY 2015 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 CFD codes.</p> <p>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 4.5M-7.5M.</p> <p>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	12.615	18.953	21.690

C. Other Program Funding Summary (\$ in Millions) N/A
Remarks
D. Acquisition Strategy N/A

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603941D8Z / <i>Test and Evaluation/ Science and Technology</i>	Project (Number/Name) 1 / <i>High Speed Systems Test</i>

E. Performance Metrics

Percentage of T&E/S&T projects progressing satisfactorily toward technical, financial, schedule, and risk mitigation goals.

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense										Date: March 2014		
Appropriation/Budget Activity 0400 / 3					R-1 Program Element (Number/Name) PE 0603941D8Z / <i>Test and Evaluation/ Science and Technology</i>				Project (Number/Name) <i>2 / Spectrum Efficient Technology</i>			
COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
2: <i>Spectrum Efficient Technology</i>	9.742	8.315	7.055	7.441	-	7.441	7.222	7.637	9.020	9.649	Continuing	Continuing

The FY 2015 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 2013	FY 2014	FY 2015
Title: Spectrum Efficient Technology	8.315	7.055	7.441
FY 2013 Accomplishments:			
The SET project developed technologies to meet networked telemetry requirements and performed risk reduction for CTEIP telemetry improvement projects including a networked data recorder to provide risk reduction in support of the CTEIP iNET development. Technology enabling the dynamic reconfiguration of transmitted test data over a telemetry network was further matured. Technology to improve the efficiency of a telemetry network utilizing the advanced Shaped Offset Quadrature Phase			

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603941D8Z / <i>Test and Evaluation/ Science and Technology</i>	Project (Number/Name) <i>2 / Spectrum Efficient Technology</i>

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

	FY 2013	FY 2014	FY 2015
<p>Shift Keying (SOQPSK) modulation scheme continued. Development of a multi-band transceiver operating in the L/S/C-Band spectrum employing multiple advanced waveforms continued.</p> <p>The SET project investigated techniques to expand telemetry operations into non-traditional spectrum bands by characterizing multipath effects in multiple range environments, specifically regarding missile test missions. Additionally, the SET project continued efforts to develop the required hardware components (antenna, transmitter) required to conduct a missile test mission. Testing of this hardware began to characterize the telemetry link performance of the C-Band spectrum versus the legacy S-Band spectrum. SET continued efforts to develop airborne phased array antenna technology to 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 will 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>The SET project completed the development of a three dimensional channel model tool for modeling and simulation of telemetry channels in various environments. This tool provides higher fidelity simulations for use in researching the effects of terrain, environmental, and various other factors on telemetry channels. This tool was transitioned to the Edwards Air Force Flight Test Center to support pretest analysis of mission flight profiles. The SET project completed the development of a scheme to improve the efficiency of a networked telemetry system. This software scheme was transitioned to the CTEIP iNET program for incorporation into the iNET network link manager to address end-to-end system quality of service requirements. The SET project completed the development of an advanced RF spectrum management system to more efficiently manage spectrum resources at test ranges. This management system was tested at and transitioned to Naval Air Warfare Center – Aircraft Division, Patuxent River to aid in test planning and the assignment of RF spectrum resources.</p> <p>The SET project initiated an effort to develop a non-blocking Ethernet switch capable of operation on an airborne platform. This technology will serve as the network backbone which will tie all onboard instrumentation together with the onboard transmitter. SET initiated an effort to autonomously analyze collected telemetry data and based on priority, select which data to transmit over the telemetry network. Additionally, SET initiated several efforts to improve the performance of telemetry data links. SET initiated an effort to improve the performance of a serial streaming telemetry link in a multipath environment by developing a sync marker for the telemetry data. This technology will enable analysis of the data in the event of a data dropout and permit filling in of holes in transmitted data. SET initiated an effort to develop a telemetry transceiver capable of dynamically reconfiguring the data modulation scheme based on telemetry link conditions.</p> <p>FY 2014 Plans:</p> <p>The SET project will further advance development of technologies required for network telemetry. Efforts to develop a multiband L/S/C-Band transceiver will continue. Technologies to develop advanced waveforms designed to increase bandwidth efficiency will be matured. 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. Technology to improve efficiency of a telemetry network utilizing</p>			

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603941D8Z / <i>Test and Evaluation/ Science and Technology</i>	Project (Number/Name) <i>2 / Spectrum Efficient Technology</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<p>the SOQPSK modulation scheme will be matured. Development of a non-blocking Ethernet switch for airborne platforms will be completed, demonstrated, and transitioned to support the deployment of a networked telemetry system.</p> <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>The effort investigating the telemetry link performance of the C-Band versus S-Band spectrum for a missile test mission will be completed and the results transitioned to the test ranges. The resulting telemetry antenna technology will be transitioned to Naval Air Warfare Center – Weapons Division, China Lake, but is designed to be extensible, enabling its widespread use across the Major Range and Test Facility Base.</p> <p>SET will initiate efforts to develop 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. Additionally, SET will initiate efforts to develop schemes to manage and provide access to telemetry links that are comprised of both contiguous and non-contiguous blocks of spectrum in the upper C-band. This portion of spectrum allocated for T&E is highly non-contiguous due to sharing with satellite and television uplinks in the spectrum band.</p> <p><i>FY 2015 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. Additionally, the SET project will complete work to mature technologies in optimization and management of the telemetry networks through spectrum management tools.</p>			
Accomplishments/Planned Programs Subtotals	8.315	7.055	7.441

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.

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense										Date: March 2014		
Appropriation/Budget Activity 0400 / 3					R-1 Program Element (Number/Name) PE 0603941D8Z / <i>Test and Evaluation/ Science and Technology</i>				Project (Number/Name) 3 / <i>Electronic Warfare Test</i>			
COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
3: <i>Electronic Warfare Test</i>	19.127	18.827	15.569	8.172	-	8.172	9.971	12.573	15.105	16.564	Continuing	Continuing

The FY 2015 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 2013	FY 2014	FY 2015
	18.827	15.569	8.172
FY 2013 Accomplishments:			
The EWT risk reduction effort for the Central Test and Evaluation Investment Program (CTEIP) Joint Distributed IRCM Ground-Test System (JDIGS) completed development and testing of a new superlattice light-emitting diode source. This technology provides two-color, high-temperature scenes with a frame rate fast enough to test new IRCM and MWS and is critical to improving DoD test capabilities for directional IR countermeasure (DIRCM) systems. EWT continued to develop a high temperature scene projector using resistive elements, including a method for tiling smaller arrays into a large array up to 2K x 2K pixels. The EWT Project completed development of a fiber optics technology for transmitting a scene to a gimbaled projector. EWT also completed testing of a laser radar scene projection technology. These provide the technology to transfer high power laser countermeasure emissions to instrumentation and target boards.			

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense	Date: March 2014
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Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603941D8Z / <i>Test and Evaluation/ Science and Technology</i>	Project (Number/Name) <i>3 / Electronic Warfare Test</i>
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<p>The EWT project continued development of a hyperspectral imaging projector, which will allow characterization and testing of hyperspectral imaging cameras used for intelligence, surveillance and reconnaissance.</p> <p>The EWT project continued 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 addresses a need, which is identified by the Navy-led, CTEIP-sponsored Tri-Service Electronic Warfare Test Capabilities Study. The technology will improve testing against modern surface-to-air missile threats. Moreover, EWT continued efforts to develop a surrogate missile technology for testing of missile warning sensors. The EWT Project initiated a new effort for tracking of multiple projectiles for testing of hostile fire indicator sensors and systems. EWT also initiated a new effort to develop an adaptable Digital RF Memory (DRFM) system capable of producing 100 virtual targets.</p> <p><i>FY 2014 Plans:</i></p> <p>Risk reduction activities for CTEIP in testing MWS in integrated ISTF and HWIL facilities 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. Efforts using DRFMs 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 comprehensive testing of mid-wave IR sensor and 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><i>FY 2015 Plans:</i></p> <p>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, the Tri-Service Electronic Warfare Test Capabilities Study, and the Sensors and Seekers Test Requirements Study.</p>			
Accomplishments/Planned Programs Subtotals	18.827	15.569	8.172

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

Remarks

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603941D8Z / <i>Test and Evaluation/ Science and Technology</i>	Project (Number/Name) 3 / <i>Electronic Warfare Test</i>

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.

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603941D8Z / <i>Test and Evaluation/ Science and Technology</i>	Project (Number/Name) <i>4 / Advanced Instrumentation Systems Technology</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
<i>4: Advanced Instrumentation Systems Technology</i>	10.025	8.570	10.036	11.610	-	11.610	10.066	9.779	11.530	13.704	Continuing	Continuing

The FY 2015 OCO Request will be submitted at a later date.

A. Mission Description and Budget Item Justification

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.

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.

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

	FY 2013	FY 2014	FY 2015
Title: Advanced Instrumentation Systems Technology	8.570	10.036	11.610
FY 2013 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 2013 included the development of test technologies to support collection of TSPI for warfighter systems (manned or unmanned), particularly in GPS-denied or degraded environments, such as in urban canyons and tunnels. Efforts to test systems that operate in a GPS-denied environment included technology that employs a layered system of sensors leveraging collaborative navigation, existing radio frequency (RF) ranging technology, and a Doppler velocimeter to achieve more precise TSPI under GPS-impaired conditions. Preliminary testing in a realistic environment			

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
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B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2013	FY 2014	FY 2015
<p>was successfully conducted in both open-air and RF-challenged environments achieving sub-meter tracking accuracies. An inertial tracking system for dismounted warfighters continued in development; the system employs boot-mounted sensors to provide sub-meter geolocation over GPS-denied durations of greater than 2 hours. System integration and performance testing were conducted; design improvements are ongoing.</p> <p>To support testing of high-speed, high-acceleration systems, an ultra-high dynamics GPS receiver was developed. The receiver performs significantly better than existing test instrumentation. The AIST project gathered requirements for future test and evaluation GPS dependent TSPI activities, conducted analyses and mapped a way forward with respect to the development of application-specific integrated circuit (ASIC) design architectures for next generation solutions.</p> <p>In support of other instrumentation solutions, an electro-releasable attachment technology development effort continued. This included investigation of new adhesive formulations that employ an electrically releasing foil patch to allow attachment of sensors to non-conductive, painted exterior surfaces of aircraft and other combat vehicles. The goal is to provide immediate attachment for a test and significantly reduce the time to restore the system under test to its operational configuration.</p> <p>To support Electromagnetic Rail Gun (EMRG) developments, AIST continued development of a fiber-optic instrumentation suite to integrate into test projectiles to measure magnetic field strength in the harsh environment of an EMRG test firing. Powered air gun testing was successfully conducted at 50,000G levels at the Army Research Lab's Adelphi site. Preparations are underway to support full-up testing of an EMRG shot at the Naval Surface Warfare Center-Dahlgren Division.</p> <p>The AIST project developed algorithms and methods for automated detection and classification of marine mammal vocalizations from ocean floor range sensors (e.g., hydrophones) to improve testing at DoD undersea range complexes. Testing has been successfully conducted at undersea ranges and a baseline classifier for 6 marine mammal species is currently running real-time, range-wide at the Atlantic Undersea Test and Evaluation Center, Pacific Range Missile Facility, and the Southern California Offshore Range. This test technology allows the Navy to conduct critical test and evaluation (T&E) events without adversely impacting marine mammal populations, and to support the Navy's Integrated Comprehensive Monitoring Program (ICMP) ensuring adherence to the Endangered Species Act (ESA) and the Marine Mammal Protection Act (MMPA).</p> <p>Several efforts were initiated to develop technologies to: (1) measure position and attitude (six degrees of freedom) of high-velocity, spinning projectiles at accuracies that significantly exceed the system under test guidance system; (2) measure soldier/soldier system indoor location (GPS-denied environment) at sub-meter accuracies using ambient AM radio broadcast signals; (3) provide seamless transition between outdoor and indoor environments to accurately track systems under test using modified GPS receivers, relayed GPS signals, and multi-lateration and multipath mitigation techniques; (4) use passive imaging to characterize munitions/warhead fragment size, velocity, and distribution, and significantly reduce set-up times and data analysis costs of current warhead arena test techniques; (5) accurately provide dynamic measurements and display the warfighter body posture, head and weapon orientation using fiber optic shape sensing of fibers integrated into uniforms and equipment; and (6) assess warfighter cognitive states using algorithms and measurements of brain electrical activity and brain blood oxygen levels.</p> <p>An effort was initiated to investigate mitigation of the impacts of wind energy system interference on test range radars.</p>			

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
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B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2013	FY 2014	FY 2015
<p>Efforts continued to assess and leverage microsystems technology under development at universities, the Defense Advanced Research Projects Agency (DARPA), and government laboratories. These efforts will provide significant advances to T&E of modern war fighting systems.</p> <p>FY 2014 Plans: 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 2014 include continuing ongoing efforts in advanced sensors, TSPI instrumentation, warfighter cognition assessment under various workloads, and test range encroachment mitigation. Additionally, AIST will continue to pursue test technologies for non-intrusive, advanced data acquisition and transformation that operate on reduced power along with the development of advanced power sources for test instrumentation. 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., various dolphins and whales species) found at undersea ranges; the development and testing of magnetic field sensors for the harsh environment of electromagnetic rail gun test firings; an attachment technology that does not require any solvents to restore test articles to operational condition; and several efforts for collecting TSPI on dismounted warfighters and related systems in GPS-denied or degraded environments such as those found in urban and subterranean operations.</p> <p>FY 2015 Plans: 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, 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, air launched stores separation, angle of incidence measurement, and non-destructive radiographic defect evaluation for warheads and other weapons structures.</p> <p>Advanced data transformation initiatives will develop technologies for adaptive computing, virtual/synthetic instrumentation, data compression, wireless on-board data transport and improved data storage density. Other areas of investigation will include advanced data management techniques; decreased size, weight, and power; and micro-miniaturization of electronic components for non-intrusive applications. AIST will continue to investigate technologies for reducing or eliminating range environmental</p>			

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense	Date: March 2014
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Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603941D8Z / <i>Test and Evaluation/ Science and Technology</i>	Project (Number/Name) 4 / <i>Advanced Instrumentation Systems Technology</i>
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
encroachment issues. Additional efforts will include human performance measurement and assessment; specifically human interaction with unmanned systems.			
Accomplishments/Planned Programs Subtotals	8.570	10.036	11.610

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.

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense										Date: March 2014		
Appropriation/Budget Activity 0400 / 3					R-1 Program Element (Number/Name) PE 0603941D8Z / <i>Test and Evaluation/ Science and Technology</i>				Project (Number/Name) 5 / <i>Directed Energy Test</i>			
COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
5: <i>Directed Energy Test</i>	11.235	11.284	7.252	5.786	-	5.786	4.844	6.430	7.713	8.002	Continuing	Continuing

The FY 2015 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 2013	FY 2014	FY 2015
Title: Directed Energy Test	11.284	7.252	5.786
FY 2013 Accomplishments:			
The DET project completed development of target board sensors to assess HEL energy on large targets. A new effort for measuring HEL energy on target for a small mortar was initiated.			
Fabrication continued on a prototype adaptive optics system designed to be readily adaptable to telescopes at various test facilities. The test technology will allow improved imaging of an HEL spot on a remote target. 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 continued. This technology simultaneously measured profiles for three parameters: optical turbulence, water vapor content, and aerosol attenuation. Measuring these profiles will enable understanding of how atmospheric effects distort HEL beam propagation. A maritime version of this technology was initiated.			
Testing of electric field sensors continued in support of electromagnetic rail gun T&E and identified a prime source for indicating rail wear, a key issue for rail gun systems. To better support HPM C-IED testing, DET completed a test technology development			

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603941D8Z / <i>Test and Evaluation/ Science and Technology</i>	Project (Number/Name) <i>5 / Directed Energy Test</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<p>to measure soil electrical properties using a brass board sensor with three interchangeable heads to cover the required frequencies.</p> <p>A demonstration of HEL sensor technologies on an unmanned aerial vehicle was completed; the demonstration verified the ability of the sensors to measure HEL energy on target while the HEL illuminated the aircraft to disable its intelligence, surveillance and reconnaissance systems.</p> <p>FY 2014 Plans: Within the HEL area, efforts will focus on continuing technology developments for measuring energy on target and characterizing effects on small targets using onboard sensing. Efforts will continue 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 accomplished safely without risk to observers and sensors. Furthermore, efforts to characterize beam propagation through the atmosphere will continue in the maritime environment to support emerging needs of the Navy. 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 continued.</p> <p>A HPM test risk reduction effort will be continued 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 HPM threats. An effort to develop an HPM source for use in a chamber to address survivability of munitions in an HPM environment will be continued. A new study investigating technologically-viable, more cost effective alternatives to provide the neutron radiation required for nuclear survivability testing will be continued.</p> <p>FY 2015 Plans: 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. 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.</p>			
Accomplishments/Planned Programs Subtotals	11.284	7.252	5.786

C. Other Program Funding Summary (\$ in Millions) N/A
Remarks

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603941D8Z / <i>Test and Evaluation/ Science and Technology</i>	Project (Number/Name) 5 / <i>Directed Energy Test</i>

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.

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Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603941D8Z / <i>Test and Evaluation/ Science and Technology</i>	Project (Number/Name) 6 / <i>Netcentric Systems Test</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
6: <i>Netcentric Systems Test</i>	20.072	16.590	14.518	16.658	-	16.658	12.931	9.834	10.756	10.344	Continuing	Continuing

The FY 2015 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)

Title: Netcentric Systems Test	FY 2013	FY 2014	FY 2015
FY 2013 Accomplishments: The NST project began technology development to analyze and process large amounts of heterogeneous data in real-time to facilitate decision making by test analysts. Technology development to automate the processes that analyze and evaluate multiple SoS in a joint cross-Service mission context were also initiated. Other 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. 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 technologies were transitioned and integrated into the Central Test and Evaluation Investment Program (CTEIP) Test and Training	16.590	14.518	16.658

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

	FY 2013	FY 2014	FY 2015
<p>Enabling Architecture (TENA) that was used by the Joint Mission Environment Test Capability (JMETC) Program and at test facilities and training ranges.</p> <p>The NST project developed predictive smart dead-reckoning technology to address the challenge to adequately synchronize the distributed test environment. This effort provided 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 built 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 is built on top of the policy-enabled agent, it will be able to provide fast response under complex test event conditions. The CTEIP Joint Distributed Infrared Countermeasures Ground-Testing System (JDIGS) project tested and validated this NST project to further improve the error performance for JDIGS testing over the JMETC network.</p> <p>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. Global Positioning System and accelerometer test data were successfully transmitted over commercial cellular carriers using an encrypted virtual private network. The NST project transitioned technology to the Edwards Air Force Base Instrumentation Group by successfully demonstrating TENA connectivity through wireless networks providing a live or file replay of flight line instrumentation data on wireless tablet devices with real-time synchronization.</p> <p>FY 2014 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 including technologies that support enterprise level test execution assessment and control.</p> <p>The NST project will also develop technologies that apply automated analysis of large net-centric systems data sets using cloud computing technologies to reduce the time from data to decision. This project will investigate technologies that automate decision making by intelligently combining past actions on historical data in order to intuitively present a distributed test analyst with highly relevant actions based on real-time net-centric events.</p> <p>FY 2015 Plans:</p> <p>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</p>			

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
networks for conducting T&E along with simulation fidelity assessments in the T&E context will also be investigated. Technology development that enables the rapid analysis of large unstructured data sets will also continue.			
Accomplishments/Planned Programs Subtotals	16.590	14.518	16.658

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.

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603941D8Z / <i>Test and Evaluation/ Science and Technology</i>	Project (Number/Name) <i>7 / Unmanned and Autonomous System Test</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
<i>7: Unmanned and Autonomous System Test</i>	3.159	5.273	5.918	5.024	-	5.024	4.621	9.155	10.636	11.252	Continuing	Continuing

The FY 2015 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 2013	FY 2014	FY 2015
Title: Unmanned and Autonomous System Test	5.273	5.918	5.024
FY 2013 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 Large Displacement – Unmanned Underwater Vehicle, this test technology was extended to improve the ability to predict fault conditions and focus test strategies for other types of unmanned vehicles. The UAST project effort initiated work to enhance safety of autonomous system testing to prevent unsafe UAS operations/actions. Additionally, work began to develop methods to measure autonomous system reliability and performance			

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

by providing complex and interactive live, virtual, constructive (LVC) test environments to stimulate UASs so their response and performance can be observed, recorded, and compared to pre-test simulations. In the area of autonomous system performance assessment, test technology development continued to enable automated autonomy architecture stress testing, with a focus on UAS software and 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 previously 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 proving ground 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 operationally representative environments at Savannah River Test Site and Aberdeen Test Center and allowed for safe operations at “edge of the envelope” performance parameters.

FY 2014 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.

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 UAST project will deliver a roadmap of potential test technology needs for testing autonomous systems at DoD ranges. The effort investigating the stress testing of autonomy architectures will be completed and the results transitioned to the test ranges. The resulting autonomy architecture stressing technology will be transitioned initially to Army Test and Evaluation Command, Aberdeen Test Center, but is designed to be extensible, enabling widespread use across the Major Range and Test Facility Base. Additionally, a virtual prototyping technology will be transitioned to test ranges to characterize UAS performance, reducing cost and time associated with open air range testing.

FY 2015 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-

FY 2013	FY 2014	FY 2015

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
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 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	5.273	5.918	5.024

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.

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense										Date: March 2014		
Appropriation/Budget Activity 0400 / 3					R-1 Program Element (Number/Name) PE 0603941D8Z / <i>Test and Evaluation/ Science and Technology</i>				Project (Number/Name) 8 / <i>Cyberspace Test</i>			
COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
8: <i>Cyberspace Test</i>	0.246	2.638	3.954	4.767	-	4.767	6.392	9.941	11.507	12.947	Continuing	Continuing

The FY 2015 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)

Title: Cyberspace Test	FY 2013	FY 2014	FY 2015
	2.638	3.954	4.767
FY 2013 Accomplishments:			
The CTT project performed threat intelligence gathering, analysis, and design to develop prototypes for threat traffic generation and automated attack vectors. The project also began development of the initial framework for automated and verified sanitization processes on commodity information technology assets such as random access memory. The technology will eliminate traces of contaminating cyber attacks between tests, an important step in the cyberspace test execution process. Development on the CTT roadmap began mapping technologies to needs that synchronize with overall Department cyberspace plans.			
FY 2014 Plans:			
The work that began in FY 2013 will continue. The CTT project will focus on test technologies to address automated CTT planning and configuration. The CTT project will investigate the use of integrated cross-domain solutions and gateways to create realistic cyberspace tests at multiple levels of security classifications. Areas of research and development will include developing a reliable, fast, and cost-effective sanitization approach allowing the rapid repurposing of equipment between different tests to meet the expanding requirements for cyber testing. The CTT project will focus on threat cyberspace attack technologies required to assess information assurance vulnerabilities and to improve the agility of cyberspace test capabilities.			
FY 2015 Plans:			

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603941D8Z / <i>Test and Evaluation/ Science and Technology</i>	Project (Number/Name) 8 / <i>Cyberspace Test</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
The CTT project will continue to focus on technologies addressing the need to provide automated cyberspace T&E planning and configuration, improved threat representation and test execution and analysis, particularly in support of defensive cyberspace operations testing.			
Accomplishments/Planned Programs Subtotals	2.638	3.954	4.767

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.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 3: Advanced Technology Development (ATD)</i>	R-1 Program Element (Number/Name) PE 0604055D8Z I <i>Operational Energy Capability Improvement</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
Total Program Element	23.909	27.966	47.001	31.800	-	31.800	37.584	38.870	38.870	41.771	Continuing	Continuing
P455: <i>Operational Energy Capability Improvement</i>	20.659	27.966	32.088	31.800	-	31.800	37.584	38.870	38.870	41.771	Continuing	Continuing
P456: <i>Hybrid Energy Storage Module (HESM)</i>	3.250	-	14.913	-	-	-	-	-	-	-	Continuing	Continuing

The FY 2015 OCO Request will be submitted at a later date.

A. Mission Description and Budget Item Justification

The basic mission of this program element is to fund innovation that will improve the Department's operational effectiveness via targeted operational energy science and technology investments. It contains two projects.

P455, the Operational Energy Capability Improvement Fund (OECIF), incentivizes science and technology to promote long term change in the Department's capabilities to be better aligned with the Operational Energy Strategy. It generally fosters innovation to improve operational energy performance. This mission has two key aspects. First, to develop and/or demonstrate, and rapidly transition into, use 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 capacity to continue to research, develop and adopt operational energy innovations. OECIF funds serve as "seed money" to consolidate or start promising operational energy programs, directions or changes 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, co-sponsored by ASD(R&E) and ASD(OEPP), develops advanced technology in energy storage to maximize performance and reliability, and enable future high power weapons and sensor systems on legacy and next generation vehicles, aircraft and ships. The goals of this program are to (1) demonstrate energy storage systems with high power and energy densities, scalable to all power levels, that reduce total logistics demand, increase platform ability to sustain operations during engagement, and (2) reduce maintenance. Once demonstration is complete, this technology will be 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.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense	Date: March 2014
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Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 3: Advanced Technology Development (ATD)</i>	R-1 Program Element (Number/Name) PE 0604055D8Z I <i>Operational Energy Capability Improvement</i>
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B. Program Change Summary (\$ in Millions)	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO	FY 2015 Total
Previous President's Budget	23.909	52.001	37.120	-	37.120
Current President's Budget	27.966	47.001	31.800	-	31.800
Total Adjustments	4.057	-5.000	-5.320	-	-5.320
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• FY 2014/ 2015 Program Adjustments	4.057	-5.000	-5.320	-	-5.320

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0604055D8Z / <i>Operational Energy Capability Improvement</i>	Project (Number/Name) P455 / <i>Operational Energy Capability Improvement</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
<i>P455: Operational Energy Capability Improvement</i>	20.659	27.966	32.088	31.800	-	31.800	37.584	38.870	38.870	41.771	Continuing	Continuing

The FY 2015 OCO Request will be submitted at a later date.

A. Mission Description and Budget Item Justification

Operational Energy Capability Improvement Fund (OECIF)

The basic mission of the Operational Energy Capability Improvement Fund (OECIF) is to fund innovation that will improve the Department's operational effectiveness via targeted science and technology investments. As Defense-Wide funding, it incentivizes science and technology to promote long term change in the Department's capabilities to be better aligned with the Department's Operational Energy Strategy. Generally, it fosters innovation to improve operational energy performance. This mission has two key aspects. First, to develop and/or demonstrate, and transition into use operational energy technologies or practices that will improve the Department's military capabilities and reduce its costs. Second, to establish within the military Services sustainable, institutional capacity to continue to research, develop and adopt operational energy innovations. OECIF funds serve as "seed money" to consolidate or start promising operational energy programs, directions or changes to be sustained by the Services; accordingly, OECIF generally emphasizes supporting or establishing programs, rather than one-off projects.

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

	FY 2013	FY 2014	FY 2015
Title: Operational Energy Capability Improvement	27.966	32.088	31.800
<p>Description: The basic mission of the Operational Energy Capability Improvement Fund (OECIF) is to fund innovation that will improve the Department's operational effectiveness via targeted science and technology investments. As Defense-Wide funding, it incentivizes long term change in the science and technology portfolio of the Department to be better aligned with the Department's Operational Energy Strategy. Generally, it 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 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, it is the intention that OECIF emphasize supporting or establishing programs, rather than one-off projects.</p> <p>FY 2013 Accomplishments: The expeditionary outpost energy load reduction and waste-to-energy programs begun in FY 2012 were continued and four operational energy consortia programs were started.</p>			

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0604055D8Z / <i>Operational Energy Capability Improvement</i>	Project (Number/Name) P455 / <i>Operational Energy Capability Improvement</i>

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

	FY 2013	FY 2014	FY 2015
<p>The Army/ Navy cooling technology program awarded contracts for pursuing mid and long-term ECU technologies, and evaluated commercial cooling units and components for comparison. The Navy/ARPA-E cooling technology program completed feasibility studies of two competing prototypes to efficiently remove humidity from the air before cooling. It also began three other projects based on innovative cooling technologies. The Army/Air Force soft shelters/tent program completed design of selected shelter configurations; conducted field demos of shelter systems in Kuwait which showed a 50 percent energy savings; and worked on advanced component technologies to be used in future designs. The super energy efficient Containerized Living Unit (SuperCLU) program built a Phase 1 prototype SuperCLU and continued improving the design. They completed testing improved CLUs and the prototype SuperCLUs at 29 Palms, CA, and existing CLU ECUs and coatings in Camp Lemonnier, Africa. The PACOM/DOE program that tests load reduction technologies in tropical environments participated in operations in Thailand and Philippines, gathering energy usage data. They also developed and promoted their I-Net technology assessment capability and completed 2-dozen technology assessments. The Waste-to-Energy program completed syngas-cleaning prototype fabrication which is now being tested. The program also completed rotary kiln hardware assembly and fabrication of the first prototype Shredded Waste Gasifier.</p> <p>The new programs, started in FY 2013, are broad, comprehensive efforts to improve DoD's operational energy performance, particularly by involving non-traditional innovators and small businesses in meeting DoD's operational energy challenges through mechanisms such as consortia. These four new programs focus on: developing DoD standards for tactical microgrids; tools and training for more efficient planning and control of the energy resources at expeditionary outposts; technologies and systems engineering techniques to better manage soldier and small unit power and reduce their battery burden; and reducing aircraft fuel consumption by reducing drag through engineered surfaces and materials.</p> <p>FY 2014 Plans: .The programs started in FY 2012 and FY 2013 will be continued, provided the individual programs are proceeding properly. The Army/Navy cooling technology program will complete ECU system design; construct, test and demo a prototype for Technology Enabled Capability Demonstration (TeCD); continue research on integrated power and environmental control technologies. The Navy/ARPA-E cooling technologies program will complete developments for a transition demo at TRL 6 in FY 2015. The Army/ Air Force soft shelter tent program will complete initial demonstrations and validate mathematical models and simulations. The Navy Containerized Living Unit program will complete testing both advanced and upgraded CLUs. The PACOM/DOE program will continue lab and field assessment of promising technologies, probably in Guam, and continue to seek fee for service partners for long term sustainment of the program, while nurturing relationships with existing partners. For the Waste-to-Energy program, detailed designs for new devices will be prepared and operational tests will be performed.</p> <p>Regarding the consortia programs begun in FY 2013: The Army led program in tactical microgrid standards will focus on identifying gaps in standards, policy, and practices that pose obstacles for system implementation. These gaps will be categorized</p>			

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0604055D8Z / <i>Operational Energy Capability Improvement</i>	Project (Number/Name) P455 / <i>Operational Energy Capability Improvement</i>

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

into a development agenda for the project. The need for standards for small, medium, and large forward operating bases will be documented and the similarities and differences identified. The Navy led program for energy efficient expeditionary outposts will begin verifying models and defining dashboard requirements. The Army led soldier/small unit program will establish a consortium that will formulate a next-generation Soldier/Small Combat Unit Power and Energy architecture for the future. The program will also develop a return on investment tool to enable traditional defense contractors, non-traditionals, and small businesses to evaluate the ROI for their innovative soldier power and energy concepts. The Air Force drag reduction program will form a consortium; issue RFPs, and award studies for drag reduction technologies.

FY 2014 new starts will focus on filling operational energy technology gaps identified in a technology gap assessment effort completed by ASD(R&E) in FY 2012. For FY 2014, the planned focus is methods and tools, including modeling and simulation, to embed energy considerations throughout DoD's planning processes, before engineering particular systems or platforms. This will facilitate making operational energy a consideration during such processes as war-games, force planning, requirements development and acquisition planning. With better methods and tools for understanding the burdens and vulnerabilities imposed by operational energy needs and how those needs affect our military effectiveness, planners and decision makers will be able to make choices that are better informed by operational energy considerations.

FY 2015 Plans:

In FY 2015, the programs for expeditionary outpost load reduction technologies will largely be reaching conclusion. The Navy/ ARPA-E program for cooling technologies will complete testing and optimization of the Absorption Heat Pump, Genset Heat Recovery Adsorption Chiller, and Stirling Air Conditioner prototypes, and hold TRL 6 transition demonstrations. The PACOM/DOE testbed plans to complete the transition to a fee-for-service model for long-term viability.

Regarding the consortia programs: The Army-led program in tactical microgrid standards will prepare draft standards for tactical microgrids that will include (a) interconnection and islanding, (b) communication and controls, and (c) safety, protection and human factors. The Navy led program for planning and operating energy efficient expeditionary outposts will refine power models based on testing and feedback and will implement an alpha version of the dashboard for testing and feedback for extended development. The Army-led soldier/small unit program will use the Architecture developed in FY 2014 to develop technologies to demonstrate electrical load reduction, improved energy supply, and power management and distribution techniques. These will reduce the operational, fiscal, and human burdens imposed by batteries/energy technologies. The Air Force drag reduction program will hold a second workshop to review progress and to choose awardees for a second round of research awards. Lab, wind tunnel, and flight testing of surfaces and coating technologies will occur throughout the year as needed. In addition, the FY2014 new starts will be ramping up. These programs will be aimed at developing methods and tools, including modeling and simulation, to embed operational energy considerations throughout DoD's planning processes.

FY 2013	FY 2014	FY 2015

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Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0604055D8Z / <i>Operational Energy Capability Improvement</i>	Project (Number/Name) P455 / <i>Operational Energy Capability Improvement</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
Generally, FY 2015 new starts will be focused on filling one or more of the operational energy technology gaps identified in a technology gap assessment completed by ASD(R&E) or other significant gaps OEPP identifies in Service S&T funding. Consistent with the mission of this funding, these programs will aim to fill some of the gaps by funding the startup of sustainable S&T programs within the Services. The five top priority gaps are: High Efficiency Energy Conversion and Harvesting; Energy Integrated Design and Simulation; High Efficiency Propulsion and Platform Design; Environmental Control Systems; Flexible and Adaptive Power Distribution.			
Accomplishments/Planned Programs Subtotals	27.966	32.088	31.800

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

N/A

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

None

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0604055D8Z / <i>Operational Energy Capability Improvement</i>	Project (Number/Name) P456 / <i>Hybrid Energy Storage Module (HESM)</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
P456: <i>Hybrid Energy Storage Module (HESM)</i>	3.250	-	14.913	-	-	-	-	-	-	-	Continuing	Continuing

The FY 2015 OCO Request will be submitted at a later date.

A. Mission Description and Budget Item Justification

P456, the Hybrid Energy Storage Module (HESM), co-sponsored by ASD(R&E) and ASD(OEPP), develops advanced technology in energy storage to maximize performance and reliability, and enable future high power weapons and sensor systems on legacy and next generation vehicles, aircraft and ships. The goals of this program are to (1) demonstrate energy storage systems with high power and energy densities, scalable to all power levels, that reduce total logistics demand, increase platform ability to sustain operations during engagement, and (2) reduce maintenance. Once demonstration is complete, this technology will be 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 2013	FY 2014	FY 2015
<p>Title: Hybrid Energy Storage Module (HESM)</p> <p>FY 2013 Accomplishments: The hybrid energy storage module efforts begun in FY2012 were continued including 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 effort 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 were continued. Key new initiatives in FY 2013 were initiated for 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 was 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. These efforts are executed by the Services.</p> <p>FY 2014 Plans: For FY 2014, the hybrid energy storage module (HESM) efforts established in FY 2012 and 2013 will be continued including Air Force and Navy aircraft, Navy ships HESM, and safe energy storage demonstrator development. Efforts including 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</p>	-	14.913	-

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense	Date: March 2014
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Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0604055D8Z / <i>Operational Energy Capability Improvement</i>	Project (Number/Name) P456 / <i>Hybrid Energy Storage Module (HESM)</i>
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
safety metrics, and validation & verification of advanced complex controls will be completed. 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, define standards and assess the operational impact for varieties of energy storage devices and HESM modules for insertion into current and future military platforms.			
Accomplishments/Planned Programs Subtotals	-	14.913	-

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

N/A

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

None

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 3: Advanced Technology Development (ATD)</i>	R-1 Program Element (Number/Name) PE 0303310D8Z / <i>Countering Weapons of Mass Destruction (CWMD) Systems</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
Total Program Element	4.117	35.017	49.221	46.066	-	46.066	42.774	45.764	43.190	46.686	Continuing	Continuing
P*004: <i>Countering Weapons of Mass Destruction Systems</i>	4.117	35.017	49.221	46.066	-	46.066	42.774	45.764	43.190	46.686	Continuing	Continuing

The FY 2015 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.

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.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 3: Advanced Technology Development (ATD)</i>	R-1 Program Element (Number/Name) PE 0303310D8Z / <i>Countering Weapons of Mass Destruction (CWMD) Systems</i>
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B. Program Change Summary (\$ in Millions)	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO	FY 2015 Total
Previous President's Budget	53.946	52.053	53.760	-	53.760
Current President's Budget	35.017	49.221	46.066	-	46.066
Total Adjustments	-18.929	-2.832	-7.694	-	-7.694
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-15.000	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-3.929	-			
• Strategic Efficiency Reduction	-	-2.832	-7.694	-	-7.694

Change Summary Explanation

Requirements reduced in response to headquarters management initiatives to better align program with smaller military force.

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0303310D8Z / <i>Countering Weapons of Mass Destruction (CWMD) Systems</i>	Project (Number/Name) P*004 / <i>Countering Weapons of Mass Destruction Systems</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
<i>P*004: Countering Weapons of Mass Destruction Systems</i>	4.117	35.017	49.221	46.066	-	46.066	42.774	45.764	43.190	46.686	Continuing	Continuing

The FY 2015 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.

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 2013	FY 2014	FY 2015
Title: Countering Weapons of Mass Destruction (CWMD) Systems	35.017	49.221	46.066

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0303310D8Z / <i>Countering Weapons of Mass Destruction (CWMD) Systems</i>	Project (Number/Name) P*004 / <i>Countering Weapons of Mass Destruction Systems</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<p>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.</p> <ul style="list-style-type: none"> • 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. <p>FY 2013 Accomplishments: The program developed a capability that will address all WMD threats – nuclear, chemical, and biological – from both state and non-state sources. It involved information on a range of drivers of proliferation, including key actors, networks, sensitive materials, and extensive contextual information. It assisted DoD in both preventing the loss of sensitive materials and technologies (and the deliberate or natural spread of disease), and responded to attacks and outbreaks when they occurred. It integrated with information systems that the combatant commands and Services already used in their day-to-day operations.</p> <p>GCAS OPERATIONAL SUPPORT</p> <ul style="list-style-type: none"> • Completed the GCAS Concept of Operations (CONOPS). • Completed 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. • Continued the structured assessment of DoD organizational capabilities to accomplish the integrated global CWMD mission set. FY13 efforts included Security Cooperation and Partner Activities, Threat Reduction Cooperation, and Passive Defense. <p>GCAS PROGRAM, SYSTEMS ENGINEERING and SYSTEMS INTEGRATION</p> <ul style="list-style-type: none"> • Began information model and information architecture development. Complete system functional and performance requirements, and specifications. • Completed technical and operational assessments for data integration and information processing, including data management and visualization alternatives. Analysis included demonstrated commercial and government available and applicable towards the system requirements for GCAS. • Conducted limited evaluation and downselection of integration and information processing tools based on the candidates evaluated in FY12. Completed technology readiness evaluations as required. 			

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

	FY 2013	FY 2014	FY 2015
<ul style="list-style-type: none"> Continued and expanded the methodology for determining what Situational Awareness information should be generated to fulfill information needs to describe steady state and event tracking/crisis monitoring. Determined the need for additional data streams to support and their availability. Transitioned GCAS demonstration capability to an operational prototype in FY13 with the intention for fielding an initial operating capability in FY14. Developed GCAS prototype. Identify, leverage and integrate appropriate existing technologies, data and fusion methodologies to produce a GCAS capability with minimal new development efforts. Extended 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. Developed and implement interfaces to acquire biosurveillance and chemical data from national, international programs and sources. Developed and implement interfaces to acquire nuclear threat data from nuclear security, nuclear treaty verification, nuclear monitoring, and radiation detection sources and programs. Initiated experimentation of Warfighter prioritized real-world Use Cases using the operational prototyping. <p>CWMD PORTFOLIO MANAGEMENT</p> <ul style="list-style-type: none"> Refined the development of a CWMD systems architecture to enable comprehensive and systematic evaluation of needed capabilities as well as their relationship to each other. Refined qualitative metrics and assessment criteria and begin development of quantitative metrics for evaluation, where applicable. <p>MAJOR DEFENSE ACQUISITION PROGRAM ENHANCEMENTS</p> <ul style="list-style-type: none"> Integrated capability into lead COCOM's existing common operating picture and processes to improve and enhance CWMD situational awareness. <p>FY 2014 Plans:</p> <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 			

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<p>be added. Where appropriate, allow integrated GCAS services and its associated updated CONOPS available to Combatant Commands (COCOMs) and military users.</p> <ul style="list-style-type: none"> • 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. <p>FY 2015 Plans:</p> <ul style="list-style-type: none"> • Continue with 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	35.017	49.221	46.066

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

N/A

Remarks

D. Acquisition Strategy

Utilize a knowledge based approach to achieve an operational prototype in FY14 with capability packages that provided upgraded CWMD situational awareness and capabilities with deliveries every 12-18 months utilizing agile software development processes.

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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.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0603161D8Z I <i>Nuclear and Conventional Physical Security/Equipment RDT&E ADC&P</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
Total Program Element	63.401	29.919	48.302	41.072	-	41.072	41.762	42.296	46.238	49.979	Continuing	Continuing
P162: <i>Nuclear and Conventional Physical Security</i>	63.401	29.919	24.243	28.586	-	28.586	29.506	30.798	33.805	34.985	Continuing	Continuing
P041: <i>CNT Rad/Nuc Passive Defense ADC&P</i>	0.000	-	1.985	-	-	-	-	-	-	-	Continuing	Continuing
P040: <i>National Technical Nuclear Forensics Systems</i>	0.000	-	22.074	12.486	-	12.486	12.256	11.498	12.433	14.994	Continuing	Continuing

The FY 2015 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),

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0603161D8Z / <i>Nuclear and Conventional Physical Security/Equipment RDT&E ADC&P</i>
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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 2013	FY 2014	FY 2015 Base	FY 2015 OCO	FY 2015 Total
Previous President's Budget	33.234	63.641	47.932	-	47.932
Current President's Budget	29.919	48.302	41.072	-	41.072
Total Adjustments	-3.315	-15.339	-6.860	-	-6.860
• Congressional General Reductions	-	-15.000			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.504	-			
• FY13 Adjustment	-2.811	-	-	-	-
• FFRDC Reduction	-	-0.339	-	-	-
• Strategic Efficiency Savings	-	-	-6.860	-	-6.860

Change Summary Explanation

For FY15 the reduction is a strategic efficiency approach to reduce funding and staffing. As a result, we provide a better alignment of funding and provide support to a smaller military force.

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603161D8Z / Nuclear and Conventional Physical Security/Equipment RDT&E ADC&P	Project (Number/Name) P162 / Nuclear and Conventional Physical Security
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
P162: Nuclear and Conventional Physical Security	63.401	29.919	24.243	28.586	-	28.586	29.506	30.798	33.805	34.985	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

The FY 2015 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.

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

	FY 2013	FY 2014	FY 2015
Title: Detection and Assessment	4.817	3.903	8.566

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<p>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.</p> <p>FY 2013 Accomplishments:</p> <ul style="list-style-type: none"> • Conducted Explosive Detection Equipment testing (Sensor Fusion: Raman and Infrared and Comparative Test & Evaluation of X-ray technology) • Developed wide-area, long-range, foliage, seismic and radiological detection capability (both fixed & mobile) • Developed waterside detection & tracking capability (underwater & land-water interface) • Conducted fence sensors & cold weather testing <p>FY 2014 Plans:</p> <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 <p>FY 2015 Plans:</p> <ul style="list-style-type: none"> • Conduct Explosive Detection Equipment testing • Develop wide-area, long-range, foliage, seismic and radiological detection capability (both fixed & mobile) • Develop waterside detection & tracking capability (underwater & land-water interface) • Develop standoff detection, assessment and defeat capability 			
<p>Title: Access Controls</p> <p>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.</p> <p>FY 2013 Accomplishments:</p> <ul style="list-style-type: none"> • Advanced technology and procedures 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. 	2.543	2.060	-

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<ul style="list-style-type: none"> Transitioned Defense Installation Access Control to system development and demonstration activities. <p>FY 2014 Plans:</p> <ul style="list-style-type: none"> Conduct Defense Installation Access control Joint Capability Technology Demonstration--determine if technology meets requirements. Advance technology and procedures to minimize an insider threat to intentionally exceed or misuse an authorized level of access to nuclear materials or weapons. 			
<p>Title: Installation and Transport Security</p> <p>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.</p> <p>FY 2013 Accomplishments:</p> <ul style="list-style-type: none"> Determined 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. Assessed the ability of electronic warfare sensor to perform off-axis defeats against standoff direct-fired threats. Established a semi-permanent installation or relocatable short-term and rapidly installed perimeter security system. Developed 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. Developed 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. Designed a software baseline that brings all of the Tactical Automated Security System software versions back under Government configuration management and control. Developed 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 an Integrated Waterside Security capability and conduct a concept demonstration. Develop a near-shore unified tactical response capability. <p>FY 2015 Plans:</p> <ul style="list-style-type: none"> Address technology gaps after Integrated Waterside Security concept demonstration. 	5.026	4.073	4.577

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2013	FY 2014	FY 2015
<ul style="list-style-type: none"> Continue to develop a near-shore unified tactical response capability. <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 2013 Accomplishments:</p> <ul style="list-style-type: none"> Advanced material accounting, inventory, and tracking methods using modern technologies to strengthen nuclear material safeguards and controls. Evaluated options for intercontinental ballistic missile launcher closure door/lock mechanism upgrades to improve delay features. Identified solutions for gaps in intercontinental ballistic missile security system to include access delay features, intrusion detection systems, and response forces. Tested 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. Design a RFID Tagging for Items in Extreme Cold Storage (CONUS). <p>FY 2015 Plans:</p> <ul style="list-style-type: none"> Finalize design of a Semi-Hardened Prime Nuclear Air Force Secure Transport Container. Design an internal delay capability for the Secure Transportable Maintenance System. Design a RFID Tagging for Items in Extreme Cold Storage (OCONUS). 		1.945	1.576	4.297
<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 2013 Accomplishments:</p> <ul style="list-style-type: none"> Supported bi-lateral engagements for the successful DoD participation in Exercise Opal Tiger. 		6.792	5.503	1.277

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

	FY 2013	FY 2014	FY 2015
<ul style="list-style-type: none"> Established a Global Initiative to Combat Nuclear Terrorism Strategic Engagement Plan to ensure an effective and efficient DoD participation in radiation detection and forensics activities. Developed Inventory Management curriculum in conjunction with National Nuclear Security Administration Improved test and standard reference materials for National Technical Nuclear Forensics simulation and exercise support. Supported Physical Security Modeling and simulation support for curriculum development and support in conjunction with Global Nuclear Lockdown efforts at Internationals Centers of Excellence. Investigated 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. 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. Qualified for procurement an array of commercial off-the-shelf 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. <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. <p>FY 2015 Plans:</p> <ul style="list-style-type: none"> Expand engagement opportunities with international partners in Nuclear Security. 			
<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 2013 Accomplishments:</p> <ul style="list-style-type: none"> Advanced 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. 	4.996	4.049	5.261

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

	FY 2013	FY 2014	FY 2015
<ul style="list-style-type: none"> • 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. • Trained and demonstrated the ability for marine mammal to perform a 24/7 autonomous swimmer/diver detection and localization mission. <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. • Provide a backbone extending command and control and situational awareness within, between, and out to the edges of the missile launch facility complex. • Develop a risk analysis tool to help commanders' in the field make sound security decisions. • Develop a shared and automated content across the security domains and functional areas, enabling more efficient and accurate personnel vetting, access controls, insider threat prevention and enhanced security operating environments. <p>FY 2015 Plans:</p> <ul style="list-style-type: none"> • Defense Security Enterprise Architecture (DSEA) • Continue to develop a backbone extending command and control and situational awareness within, between, and out to the edges of the missile launch facility complex. • Continue to 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. • Finalize the development of a risk analysis tool to help commanders' in the field make sound security decisions. • Continue to develop a shared and automated content across the security domains and functional areas, enabling more efficient and accurate personnel vetting, access controls, insider threat prevention and enhanced security operating environments. 			
<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 Equipment/Countering Nuclear Threats RDT&E Program.</p> <p>FY 2013 Accomplishments:</p> <ul style="list-style-type: none"> • Continued to conduct test and evaluation efforts for physical security equipment (PSE) • Continued to conduct live-fire and modeling tests of selected weapons, perform analysis, and develop policy requirements based on findings. 	3.800	3.079	4.608

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<ul style="list-style-type: none"> Continued 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 development of physical security standards and interface control devices. 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. <p>FY 2015 Plans:</p> <ul style="list-style-type: none"> Provide DOD and industry the means to achieve PSE interoperability through the development of physical security standards and interface control devices. 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	29.919	24.243	28.586

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.

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603161D8Z / Nuclear and Conventional Physical Security/Equipment RDT&E ADC&P	Project (Number/Name) P041 / CNT Rad/Nuc Passive Defense ADC&P
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
P041: CNT Rad/Nuc Passive Defense ADC&P	-	-	1.985	-	-	-	-	-	-	-	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

The FY 2015 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 2013	FY 2014	FY 2015
Title: CNT Rad/Nuc Passive Defense	-	1.985	-
Description: Advanced Development of Joint Radiological and Nuclear passive defense systems (i.e. Radiological Detection System and the Joint Personal Dosimeter).			
The Radiological Detection System will provide a ruggedized Radiation Detection, Indication, and Computation for real time gamma radiation monitoring and low energy x-ray, beta, alpha, and neutron detection.			
The Joint Personal Dosimeter will provide a joint solution to increase capability and reduce life-cycle costs.			
Both systems will address Operation TOMODACHI lessons learned for common, interoperable equipment with adequate sensitivity and common units of measure.			
FY 2014 Plans: Development of Joint Radiological and Nuclear passive defense systems (i.e. Radiological Detection System and the Joint Personal Dosimeter)			
Accomplishments/Planned Programs Subtotals	-	1.985	-

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

N/A

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603161D8Z / <i>Nuclear and Conventional Physical Security/Equipment RDT&E ADC&P</i>	Project (Number/Name) P041 / <i>CNT Rad/Nuc Passive Defense ADC&P</i>

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

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.

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603161D8Z / Nuclear and Conventional Physical Security/Equipment RDT&E ADC&P	Project (Number/Name) P040 / National Technical Nuclear Forensics Systems
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
P040: National Technical Nuclear Forensics Systems	-	-	22.074	12.486	-	12.486	12.256	11.498	12.433	14.994	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

The FY 2015 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 2013	FY 2014	FY 2015
Title: National Technical Nuclear Forensics Systems	-	22.074	12.486
Description: Advanced development of ground based diagnostic and collection systems. This next generation technology will provide new information that increases accuracy and provides an improved timeline in support of senior leadership decision making.			
FY 2014 Plans:			

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense	Date: March 2014
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Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603161D8Z / <i>Nuclear and Conventional Physical Security/Equipment RDT&E ADC&P</i>	Project (Number/Name) P040 / <i>National Technical Nuclear Forensics Systems</i>
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
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.			
Development of a Gaseous Airborne Collection System that provides the Department of Defense with mobile nuclear air sampling capability to support collection requirements for treaty verification and National Technical Nuclear Forensics.			
<i>FY 2015 Plans:</i> Finish development of 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.			
Continue to develop a Gaseous Airborne Collection System that provides the Department of Defense with mobile nuclear air sampling capability to support collection requirements for treaty verification and National Technical Nuclear Forensics.			
Accomplishments/Planned Programs Subtotals	-	22.074	12.486

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.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0603527D8Z / <i>Retract Larch</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
Total Program Element	20.431	18.889	19.139	-	-	-	-	-	-	-	Continuing	Continuing
P527: <i>Retract Larch</i>	20.431	18.889	19.139	-	-	-	-	-	-	-	Continuing	Continuing
Quantity of RDT&E Articles	0.000	-	-	-	-	-	-	-	-	-		

The FY 2015 OCO Request will be submitted at a later date.

Note

Starting in FY2015 and beyond, program content and funding from Program Element 0603527D8Z were moved to Program Element 0604942D8Z to effect efficiencies and streamlined oversight of programmatic content.

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 2013</u>	<u>FY 2014</u>	<u>FY 2015 Base</u>	<u>FY 2015 OCO</u>	<u>FY 2015 Total</u>
Previous President's Budget	21.023	19.152	21.536	-	21.536
Current President's Budget	18.889	19.139	-	-	-
Total Adjustments	-2.134	-0.013	-21.536	-	-21.536
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-2.134	-0.013			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Consolidation of Program Elements	-	-	-21.536	-	-21.536

Change Summary Explanation

Starting in FY2015 and beyond, program content and funding from Program Element 0603257D8Z is moved to Program Element 0604942D8Z to effect efficiencies and streamlined oversight of programmatic content.

C. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2013	FY 2014	FY 2015
Title: Retarct Larch	18.889	19.139	-

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense	Date: March 2014
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Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0603527D8Z / <i>Retract Larch</i>
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C. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2013	FY 2014	FY 2015
<p align="right"><i>Articles:</i></p> <p>Description: Not applicable. Information Classified</p> <p>FY 2013 Accomplishments: Not applicable. Information Classified</p> <p>FY 2014 Plans: Not applicable. Information Classified</p>	-	-	-
Accomplishments/Planned Programs Subtotals	18.889	19.139	-

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

N/A

Remarks

E. Acquisition Strategy

Not Applicable. Classified

F. Performance Metrics

Not Applicable. Classified

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide / BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0603600D8Z / WALKOFF
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
Total Program Element	176.344	84.174	63.763	90.558	-	90.558	88.324	84.751	89.483	95.082	Continuing	Continuing
600: WALKOFF	176.344	84.174	63.763	90.558	-	90.558	88.324	84.751	89.483	95.082	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

The FY 2015 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)

	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015 Base</u>	<u>FY 2015 OCO</u>	<u>FY 2015 Total</u>
Previous President's Budget	94.624	70.763	103.084	-	103.084
Current President's Budget	84.174	63.763	90.558	-	90.558
Total Adjustments	-10.450	-7.000	-12.526	-	-12.526
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-8.280	-7.000			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-2.133	-			
• Departmental Adjustments	-0.037	-	-12.526	-	-12.526

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

	FY 2013	FY 2014	FY 2015
Title: WALKOFF	84.174	63.763	90.558
FY 2013 Accomplishments: Classified, Special Access Program.			
FY 2014 Plans: Classified, Special Access Program.			
FY 2015 Plans: Classified, Special Access Program.			
Accomplishments/Planned Programs Subtotals	84.174	63.763	90.558

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense Date: March 2014

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide / BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0603600D8Z / WALKOFF
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D. Other Program Funding Summary (\$ in Millions)

N/A

Remarks

E. Acquisition Strategy

Classified, Special Access Program.

F. Performance Metrics

Classified, Special Access Program.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0603714D8Z I <i>Advanced Sensor Applications Program</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
Total Program Element	36.298	17.407	19.190	15.518	-	15.518	15.941	16.586	17.511	18.607	Continuing	Continuing
714: <i>Advanced Sensor Applications Program</i>	36.298	17.407	19.190	15.518	-	15.518	15.941	16.586	17.511	18.607	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

The FY 2015 OCO Request will be submitted at a later date.

A. Mission Description and Budget Item Justification

This 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)

	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015 Base</u>	<u>FY 2015 OCO</u>	<u>FY 2015 Total</u>
Previous President's Budget	16.958	17.230	17.664	-	17.664
Current President's Budget	17.407	19.190	15.518	-	15.518
Total Adjustments	0.449	1.960	-2.146	-	-2.146
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-1.544	-0.040			
• Congressional Rescissions	-	-			
• Congressional Adds	2.000	2.000			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Departmental Adjustments	-0.007	-	-2.146	-	-2.146

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

Title: Advanced Sensor Applications Program	FY 2013	FY 2014	FY 2015
FY 2013 Accomplishments: Mission Support (Details provided in Defense-Wide classified book)	17.407	19.190	15.518
FY 2014 Plans:			

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense	Date: March 2014
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Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0603714D8Z / <i>Advanced Sensor Applications Program</i>
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
Mission Support (Details provided in Defense-Wide classified book)			
<i>FY 2015 Plans:</i> Mission Support (Details provided in Defense-Wide classified book)			
Accomplishments/Planned Programs Subtotals	17.407	19.190	15.518

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.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0603851D8Z / <i>Environmental Security Technology Certification Program</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
Total Program Element	61.838	67.998	66.453	51.462	-	51.462	52.190	54.130	57.549	62.143	Continuing	Continuing
P514: <i>Environmental Security Technology Certification Program</i>	61.838	67.998	66.453	51.462	-	51.462	52.190	54.130	57.549	62.143	Continuing	Continuing

The FY 2015 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 2013</u>	<u>FY 2014</u>	<u>FY 2015 Base</u>	<u>FY 2015 OCO</u>	<u>FY 2015 Total</u>
Previous President's Budget	75.941	71.453	60.414	-	60.414
Current President's Budget	67.998	66.453	51.462	-	51.462
Total Adjustments	-7.943	-5.000	-8.952	-	-8.952
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• FY 13 Program Adjustment	-7.943	-	-	-	-
• FY 14 Program Reduction	-	-5.000	-	-	-
• FY 15 Strategic Efficiency Reduction	-	-	-8.952	-	-8.952

Change Summary Explanation

FY 13 and 14 program decreases are a result of General Congressional reductions.
FY 2015 Funding decreased to match the department's mission priorities.

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense										Date: March 2014		
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0603851D8Z / <i>Environmental Security Technology Certification Program</i>				Project (Number/Name) P514 / <i>Environmental Security Technology Certification Program</i>			
COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
P514: <i>Environmental Security Technology Certification Program</i>	61.838	67.998	66.453	51.462	-	51.462	52.190	54.130	57.549	62.143	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

The FY 2015 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)

Title: Environmental Technology Demonstration/Validation	FY 2013	FY 2014	FY 2015
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.	39.444	34.453	28.415
FY 2013 Accomplishments: In FY 2013 projects were funded to address priority DoD environmental requirements. Focused new investment topics for FY 2013 included: 1) Remediation of Contaminated Groundwater; 2) In Situ Management of Contaminated Sediments; 3) Characterization, Control, and Treatment of Range Contamination; 4) Watershed Management Tools for DoD Installations; 4) Alternatives to Cadmium Plating in Manufacturing and Maintenance of Weapons Systems; and 5) Military Munitions Detection, Discrimination, and Remediation. Details are provided at www.serdp-estcp.org			
FY 2014 Plans: Funds are planned for continued investment in projects that address priority DoD environmental requirements. Focused new investment topics for FY 2014 include: 1) Remediation of Contaminated Groundwater; 2) In Situ Management of Contaminated Sediments; 3) Airfield Natural Resources Management to Reduce Bird Air-Strike Hazard (BASH) Threats; 4) Wastewater Treatment at DoD Facilities; and 5) Military Munitions Detection, Discrimination, and Remediation. Funding in FY 2014 also			

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014		
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603851D8Z / <i>Environmental Security Technology Certification Program</i>	Project (Number/Name) P514 / <i>Environmental Security Technology Certification Program</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2013	FY 2014	FY 2015
<p>supports 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.</p> <p>FY 2015 Plans: Funds are planned for continued investment in projects that address priority DoD environmental requirements. New investment topics for FY 2015 include: 1) Remediation of Contaminated Groundwater; 2) In Situ Management of Contaminated Sediments; 3) Characterization, Control, and Treatment of Range Contamination; and 4) Military Munitions Detection, Discrimination, and Remediation.</p>				
<p>Title: Energy Technology Demonstration/Validation</p> <p>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.</p> <p>FY 2013 Accomplishments: In FY 2013 funds were invested in energy projects that constitute the Installation Energy Test Bed Initiative. 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.</p> <p>FY 2014 Plans: Funds are planned to continue investments in energy projects that constitute the Installation Energy Test Bed Initiative. The test bed program will validate and test 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 Fy 2014 ESTCP solicited proposals in two areas: 1) Smart and Secure Military Installation Energy Management</p>		28.554	32.000	23.047

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014		
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603851D8Z / <i>Environmental Security Technology Certification Program</i>	Project (Number/Name) P514 / <i>Environmental Security Technology Certification Program</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2013	FY 2014	FY 2015
<p>and 2) Advanced Building Energy Management and Control. 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.</p> <p>FY 2015 Plans: Funds are planned to continue investments in energy projects that constitute the Installation Energy Test Bed Initiative.</p>				
Accomplishments/Planned Programs Subtotals		67.998	66.453	51.462
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.				

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0603920D8Z I <i>Humanitarian De-mining</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
Total Program Element	14.540	11.741	11.688	10.194	-	10.194	9.192	9.548	10.080	10.712	Continuing	Continuing
920: <i>Humanitarian De-mining</i>	14.540	11.741	11.688	10.194	-	10.194	9.192	9.548	10.080	10.712	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

The FY 2015 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 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.

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 countermining 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 163 evaluations in 36 countries, including Iraq and Afghanistan. The program's technologies have cleared 21+ million sq meters of the world's toughest minefields; found or destroyed 101,000+ mines and UXO; and provided 306,000 mine/UXO disposal charges with 36 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 COCOMS and the Humanitarian Demining Training Center (HDTTC) 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.

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.

The program element's work is consistent with the Department of Defense's strategic guidance to address instability and reduce the demand for significant US force commitments to stability operations; with DODI 3000.05 to foster security, economic security and development, and build indigenous capacity; and with § 407 and CJCSI 3207.01C to reduce the social, economic and environmental impact of landmines, unexploded ordnance and small arms ammunition.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0603920D8Z I <i>Humanitarian De-mining</i>
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B. Program Change Summary (\$ in Millions)	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO	FY 2015 Total
Previous President's Budget	13.231	11.704	11.607	-	11.607
Current President's Budget	11.741	11.688	10.194	-	10.194
Total Adjustments	-1.490	-0.016	-1.413	-	-1.413
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-1.490	-0.016			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Strategic Efficiency Reduction	-	-	-1.413	-	-1.413

Change Summary Explanation

The FY 2015 budget was reduced due to fiscal constraints and higher priorities within the Department .

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<p>Title: 0603920D8Z - SO/LIC Humanitarian De-mining</p> <p>Description: 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, and post-clearance quality assurance (QA).</p> <p>FY 2013 Accomplishments: In FY13 the HD R&D Program's technologies cleared 3.3 million square meters of the world's toughest minefields, removing or destroying 7,529 mines and 13,764 UXO. The HD R&D Program completed ongoing equipment developments/modifications and continued operational evaluations from FY2012. The HD R&D program also continued to support 50 on-going operational field evaluations in 12 countries. New evaluations included the Mini MineWolf technical survey system Thailand; HSTAMIDS mine detection system in Mozambique and Sri Lanka; the Minehound mine detection system in Afghanistan, Angola and Cambodia; Scout mine/UXO detection system in Cambodia; and excavator mine sifting attachments in Iraq; and the Mine Stalker vehicle-mounted AT mine detection system in Angola. The HD R&D Program supported the combatant commands and Embassy staffs by conducting site surveys and country assessments. The program continued development, test and evaluation of prototype technologies in the following areas: individual mine/UXO and minefield detection, mechanical mine/UXO and vegetation clearance, mine neutralization, and post-clearance quality assurance (QA).</p> <p>FY 2014 Plans:</p>	11.741	11.688	10.194

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense	Date: March 2014
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Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0603920D8Z I <i>Humanitarian De-mining</i>
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<p>The HD R&D Program will deploy new technology to several countries, including the Raptor II and Rotary Mine Comb to Afghanistan, the Loader to Chile, the Rebel Crusher to Iraq, and the Piranha and Bearcat to Cambodia. The program element will continue to support ongoing FY2013 operational field evaluations in 12 countries and will support the combatant commands and Embassy staffs by conducting site surveys or country assessments. The program will develop, test and evaluate new prototype technologies in the following areas: individual mine/UXO and minefield detection, mechanical mine/UXO and vegetation clearance, mine neutralization, and post-clearance quality assurance (QA).</p> <p>FY 2015 Plans: The HD R&D Program will complete ongoing equipment developments/modifications, and continue operational evaluations from FY2014. The HD R&D will support the combatant commands and Embassy staffs by conducting new site surveys or country assessments. The program will develop, test and evaluate new prototype technologies based on feedback from the field in the following areas: individual mine/UXO and minefield detection, mechanical mine/UXO and vegetation clearance, mine neutralization, and post-clearance quality assurance (QA).</p>			
Accomplishments/Planned Programs Subtotals	11.741	11.688	10.194

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 2013 Target:

90% of currently funded research technologies are completed on time and within budget

Complete scheduled R&D project tasks

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Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0603920D8Z I <i>Humanitarian De-mining</i>	
Transition field-ready technologies to host nation demining partners		
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		
Basis of FY 2013 to Date Performance Rating: Currently the number of funded research technologies is on track to be completed per the target.		
Verification: The Humanitarian Demining Program performs program reviews with other USG agencies (DOS PM WRA, DTRA SA/LW, DSCA, HDTTC, CENTCOM, PACOM, SOUTHCOM, AFRICOM, EUCOM) and has oversight from OSD SO/LIC.		
Validation: Completed R&D products increase the capabilities of the DoD to effectively perform demining missions.		

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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
Total Program Element	11.389	10.559	9.827	10.139	-	10.139	10.420	10.531	11.013	11.310	Continuing	Continuing
P923: <i>Coalition Warfare</i>	11.389	10.559	9.827	10.139	-	10.139	10.420	10.531	11.013	11.310	Continuing	Continuing

The FY 2015 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 by supporting DoD organizations that: 1) work with foreign partners to collaboratively address strategic technology gaps for current and future missions; 2) develop interoperability solutions for coalition operations; and 3) develop and strengthen defense relationships. CWP is the only Office of the Secretary of Defense (OSD) program with this mission. CWP supplements a U.S. Government proponent's funding for cooperative efforts, ensuring U.S. funds are sufficient to complete the engagement with the foreign partner(s). When CWP funds are used to help fund a cooperative project, that project leverages technical and financial contributions of the foreign partner(s) and speeds up the development and delivery of technical solutions to the warfighter. In its thirteen-year history, CWP has leveraged \$4 of foreign partner funding for every \$1 of U.S. Government investment, and \$3 of other U.S. Government funding for every \$1 CWP has invested in cooperative projects.

CWP funding enables DoD project teams to move a technology into the next stage of development or to complete and transition a technology to operational forces. These projects may also form the basis for future cooperation with international partners.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense	Date: March 2014
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Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0603923D8Z I <i>Coalition Warfare</i>
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B. Program Change Summary (\$ in Millions)	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO	FY 2015 Total
Previous President's Budget	11.398	9.842	12.438	-	12.438
Current President's Budget	10.559	9.827	10.139	-	10.139
Total Adjustments	-0.839	-0.015	-2.299	-	-2.299
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-0.594	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.245	-			
• Efficiency Savings	-	-	-0.860	-	-0.860
• Strategic Efficiency Reductions	-	-	-1.439	-	-1.439
• FFRDC	-	-0.015	-	-	-

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Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0603923D8Z / <i>Coalition Warfare</i>				Project (Number/Name) P923 / <i>Coalition Warfare</i>			
COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
P923: <i>Coalition Warfare</i>	11.389	10.559	9.827	10.139	-	10.139	10.420	10.531	11.013	11.310	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

The FY 2015 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 by supporting DoD organizations that: 1) work with foreign partners to collaboratively address strategic technology gaps for current and future missions; 2) develop interoperability solutions for coalition operations; and 3) develop and strengthen defense relationships. CWP is the only Office of the Secretary of Defense (OSD) program with this mission. CWP supplements a U.S. Government proponent's funding for cooperative efforts, ensuring U.S. funds are sufficient to complete the engagement with the foreign partner(s). When CWP funds are used to help fund a cooperative project, that project leverages technical and financial contributions of the foreign partner(s) and speeds up the development and delivery of technical solutions to the warfighter. In its thirteen-year history, CWP has leveraged \$4 of foreign partner funding for every \$1 of U.S. Government investment, and \$3 of other U.S. Government funding for every \$1 CWP has invested in cooperative projects.

CWP funding enables DoD project teams to move a technology into the next stage of development or to complete and transition a technology to operational forces. These projects may also form the basis for future cooperation with international partners.

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

	FY 2013	FY 2014	FY 2015
Title: Previous Year Continuing Projects	8.805	3.105	-
Description: Program provided additional funding to projects that began in earlier selection cycles.			
FY 2013 Accomplishments: Completion 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.			
FY 2014 Plans:			

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
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Continuation of efforts that will result in delivery of: a new fast running model for blast propagation through failing blast doors in tunnels; a micro-scale vibrational energy harvester capable of operating at low frequency; new body armor design with enhanced protection; and a GPS anti-jam antenna system for submarines.			
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<p>Title: Project Selections</p> <p>Description: Program will conduct competitive nomination process to identify new projects.</p> <p>FY 2014 Plans: Projects selected based on COCOM, Service, Joint Staff, OSD, and DoD Agency priorities and requirements.</p> <p>FY 2015 Plans: Projects selected based on COCOM, Service, Joint Staff, OSD, and DoD Agency priorities and requirements.</p>	-	0.650	3.599
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<p>Title: Advanced Refractive Effects Prediction System Radar Modeling Enhancement/Validation</p> <p>Description: A project to improve radar modeling as affected by current meteorological and oceanographic conditions, enabling improved situational awareness of the actual detection capability of current radars.</p> <p>FY 2013 Accomplishments: Collaboration with foreign partners and project initiation.</p> <p>FY 2014 Plans: Laboratory analyses and software development.</p> <p>FY 2015 Plans: Continued software development, afloat demonstration/assessment preparation, execution, and analysis.</p>	0.040	0.230	0.525
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<p>Title: Broadband Infrared - Active Standoff Detection System</p> <p>Description: A project to develop a rugged all fiber-optic, high power, broadly tunable long wavelength infrared prototype for standoff detection of explosives, chemical warfare agents, and non-traditional agents, on environmental surfaces.</p> <p>FY 2013 Accomplishments: Initial program planning; preliminary design and fabrication of hardware.</p> <p>FY 2014 Plans: Continued hardware development and initial testing of components.</p> <p>FY 2015 Plans:</p>	0.260	0.490	0.750
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
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Final development and testing of system to include testing for stand-off detection of chemical warfare agents/chemical warfare agent simulants and explosives.			
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<p>Title: Cipher-Text Coalition Agility in Protected Environment</p> <p>Description: A project to enable network interoperability between submarine forces by developing secure coalition interoperability between Cipher-Text networks.</p> <p>FY 2014 Plans: Project management, engineering labor, design planning, development and testing.</p> <p>FY 2015 Plans: Project management, information assurance accreditation, operational demonstration, engineering labor, system integration, documentation and reports.</p>	-	0.675	0.675
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<p>Title: Enhanced Urban Propagation Modeling</p> <p>Description: A project to develop a software tool that improves how the Brigade level Spectrum Manager obtains accurate, real-time communications connectivity information in dense urban settings.</p> <p>FY 2013 Accomplishments: Begin to enhance the current urban propagation model and to define the coalition deployment scenario.</p> <p>FY 2014 Plans: Continue enhancements to enable models to run on small devices at ground level. Complete the definition of the coalition deployment scenario.</p> <p>FY 2015 Plans: Define laptop devices requirements for communications capabilities via advanced spectrum management capabilities. Consolidate the results of spectrum management studies and provide recommendations.</p>	0.054	0.125	0.071
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<p>Title: H-1 Navigation Warfare for GPS Anti-jam</p> <p>Description: A project to develop a small GPS anti-jam solution for the H-1 Cobra helicopter that protects GPS in a fast helicopter rotor blade environment.</p> <p>FY 2013 Accomplishments: Project management and initial coordination.</p> <p>FY 2014 Plans:</p>	0.035	0.265	0.180
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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2013	FY 2014	FY 2015
<p>Prototype testing of multiple small GPS anti-jam systems. Evaluation of GPS anti-jam algorithms.</p> <p>FY 2015 Plans: Development of GPS anti-jam algorithms for operation in a fast rotor environment. Refinement of H-1 antenna location model based upon previous year test results.</p>				
<p>Title: High Speed Multi Hull Vessel Optimization</p> <p>Description: A project to conduct parametric experiments to systematically assess impacts on operability, and to provide validation data for optimization algorithms and numerical tools used for design and performance assessment of multi-hull naval ships.</p> <p>FY 2013 Accomplishments: Begin test planning, detailed scaled-model design for construction, and instrumentation selection.</p> <p>FY 2014 Plans: Test planning, model construction, test preparation and execution of scaled-physical model experiments, to obtain parametric data of hydrodynamic performance (maneuvering).</p> <p>FY 2015 Plans: Analysis of scaled-physical model experiment test data, correlation to numerical simulations, and delivery of a technical report of the results.</p>		0.150	0.600	0.750
<p>Title: Integrated Autonomous Undersea Warfare Surveillance</p> <p>Description: A project to research the synergistic effects of multi-phenomenological sensors by developing a system that integrates a miniature magnetic sensor with an acoustic line array deployable on an unmanned underwater vehicle.</p> <p>FY 2013 Accomplishments: Initial hardware and software checkout and updating.</p> <p>FY 2014 Plans: Build and test resource interface. Research, develop and implement algorithms.</p> <p>FY 2015 Plans: Pretest testing and checkout. Conduct exercise and post test retrieve data,</p>		0.075	0.075	0.150
<p>Title: Laser Dazzle</p>		-	0.500	0.500

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
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<p>Description: A project to quantify atmospheric effects on laser propagation; characterize human behavioral response to laser dazzle in land and maritime scenarios; provide a human systems integration (HSI) model to predict human behavioral response to laser dazzle.</p> <p>FY 2014 Plans: Experimental design, protocol preparation, optical and HSI engineering, data collection and analysis, and integration/interpretation to develop and commence validation of the laser model.</p> <p>FY 2015 Plans: Conduct field experiments to validate the laser dazzle model. Develop a computational visual obscuration calculator. Complete reports documenting all results.</p>			
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<p>Title: Next-Gen Nuclear Flash Blindness Optical Protection Technology</p> <p>Description: A project to develop and demonstrate battery-operated optical protection technologies on curved substrates (sand-wind-dust (SWD) goggle, spectacle) that meet existing protection requirements.</p> <p>FY 2013 Accomplishments: Research and development fast-switching twisted nematic optical elements.</p> <p>FY 2014 Plans: Research and development of design consideration of twisted nematic optical elements on curved substrates.</p> <p>FY 2015 Plans: Manufacture prototype spectacles and SWD goggles. Laboratory and field testing.</p>	0.120	0.380	0.500
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<p>Title: North America Arctic Next Generation Over-the-Horizon Radar</p> <p>Description: A project to develop a scalable solution for persistent wide-area, low-altitude air and maritime surveillance in the northern latitudes of North America.</p> <p>FY 2013 Accomplishments: Negotiate land-lease agreements for suitable real estate for multi-static receive site.</p> <p>FY 2014 Plans: Design and assemble monostatic transmit/receive system; develop program test plan and conduct monostatic clutter measurement test in border region; construct receive site; and development of advance signal processing algorithms.</p> <p>FY 2015 Plans:</p>	0.075	0.465	0.423
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
Plan and conduct bi-static test and analyze data; plan and conduct multi-static test, as well as conduct additional seasonal mono-static and bi-static data collection and analysis; refine and evaluate advanced signal processing algorithms; US assessment of clutter reduction on detection capability and write, coordinate, and publish final report, and develop recommendations for further work.			
<p>Title: Radar Obstructions Evaluation Model/Simulator (ROEMS)</p> <p>Description: A project to further develop and test the prototype 3D radar modeling tool designed to predict the impact of proposed wind farms on radar system performance and air defense mission capability.</p> <p>FY 2014 Plans: Develop an APG-68 radar model compatible with the ROEMS environment. Develop a 3D airborne modeling capability to integrate the APG-68 into an analysis scenario.</p>	-	0.150	-
<p>Title: Raman Agent Monitoring System (RAMS) for Coalition Force Protection</p> <p>Description: A project to further develop, dismantle and modularize components of the current Joint Contaminated Surface Detector system to provide advanced capabilities, reduce size and weight, and allow use on multiple platforms.</p> <p>FY 2014 Plans: Refurbish Joint Contaminated Surface Detector system as U.S. test bed for modularization and laser evaluation. Develop modularization plans, designs, and performance testing.</p> <p>FY 2015 Plans: Collect library spectra of an additional 50 chemical threats as well as background materials to expand the UV Raman detection library. Refine existing algorithms to address additional chemical threats materials.</p>	-	0.400	0.400
<p>Title: Surface Persistent Ocean Target TrackER) Project - Automatic Target Detection and Tracking using Maritime Surveillance Video</p> <p>Description: A Navy project with Singapore to develop an improved video processing capability to both detect and track small targets at stand-off distances, and then use those results to help build an improved MDA picture</p> <p>FY 2014 Plans: Optimize and test RAPIER full motion video for a small target set. Integrate and Experiment with live sequential processing.</p> <p>FY 2015 Plans: Final analysis and report.</p>	-	0.213	0.037
<p>Title: Tactical Infrastructure Enterprise Services</p>	-	0.500	0.500

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
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<p>Description: A Joint Staff, J7 and Army project with France to develop a federated identity management to verify the identity of an individual, organization or device, and an automated element level metadata tagging solution that is interoperable between US and NATO</p> <p>FY 2014 Plans: Develop data transformation software and CONOPS. Conduct technical tests and demonstrations.</p> <p>FY 2015 Plans: Analyze test data. Develop identity management and access control software. Conduct final test and draft documentation.</p>			
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<p>Title: Coalition Warfare Program (CWP) Support</p> <p>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.</p> <p>FY 2013 Accomplishments: Contractor provided 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.</p> <p>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.</p> <p>FY 2015 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.</p>	0.511	0.521	0.531
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<p>Title: Interoperability and Collaboration Initiatives</p> <p>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</p>	0.434	0.483	0.548
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<p>foreign partners, 3) improving management of collaborative efforts. Funds support workshops, risk reduction efforts, standards development, architecture analysis, and information management initiatives.</p> <p><i>FY 2013 Accomplishments:</i> Program funded efforts aimed at improving U.S. interoperability with foreign partners and improving collaborative project processes.</p> <p><i>FY 2014 Plans:</i> Program will fund efforts aimed at improving U.S. interoperability with foreign partners and improving collaborative project processes.</p> <p><i>FY 2015 Plans:</i> Program will fund efforts aimed at improving U.S. interoperability with foreign partners and improving collaborative project processes.</p>			
Accomplishments/Planned Programs Subtotals	10.559	9.827	10.139

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.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0604016D8Z I <i>Department of Defense Corrosion Program</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
Total Program Element	34.249	30.221	20.312	2.907	-	2.907	3.055	3.133	3.326	3.596	Continuing	Continuing
P015: <i>Corrosion Protection Projects</i>	34.249	30.221	20.312	2.907	-	2.907	3.055	3.133	3.326	3.596	Continuing	Continuing

The FY 2015 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 addition, the University Corrosion Collaboration (now the Technical Corrosion Collaboration (TCC)) was formed as a collaboration between universities, academies and research laboratories, focused on corrosion technology research and development to provide solutions to long-term, complex corrosion prevention and control problems, including metallic-non-metallic interactions, advanced surface coatings and treatments for non-traditional use of materials. This advanced corrosion research has been funded since FY 2008 and performed by teams from TCC participating organizations.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense Date: March 2014

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0604016D8Z / <i>Department of Defense Corrosion Program</i>
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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.

(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 technology development, demonstration, and transition 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. Likewise, members of the TCC are notified of advanced research requirements and provided instructions for submitting white papers and subsequent project proposals to the Science and Technology Working Integrated Product Team (WIPT) for evaluation, selection and funding.

(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. The FY 2014 budget request will provide a critically needed resource to trigger even larger investment and cost avoidance.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0604016D8Z I <i>Department of Defense Corrosion Program</i>
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B. Program Change Summary (\$ in Millions)	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO	FY 2015 Total
Previous President's Budget	3.283	3.312	3.392	-	3.392
Current President's Budget	30.221	20.312	2.907	-	2.907
Total Adjustments	26.938	17.000	-0.485	-	-0.485
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-3.018	-			
• Congressional Rescissions	-0.044	-			
• Congressional Adds	30.000	17.000			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Strategic Efficiency Savings	-	-	-0.485	-	-0.485

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 2013	FY 2014
Congressional Add Subtotals for Project: P015	26.193	17.000
Congressional Add Totals for all Projects	26.193	17.000

Change Summary Explanation

The reduction is a strategic efficiency approach to reduce funding and staffing. As a result, we provide a better alignment of funding and provide support to a smaller military force.

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense										Date: March 2014		
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0604016D8Z / Department of Defense Corrosion Program				Project (Number/Name) P015 / Corrosion Protection Projects			
COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
P015: Corrosion Protection Projects	34.249	30.221	20.312	2.907	-	2.907	3.055	3.133	3.326	3.596	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

The FY 2015 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.

(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

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense	Date: March 2014
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Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604016D8Z / <i>Department of Defense Corrosion Program</i>	Project (Number/Name) P015 / <i>Corrosion Protection Projects</i>
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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. The FY 2014 budget request will provide a critically needed resource to trigger even larger investment and cost avoidance.

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

	FY 2013	FY 2014	FY 2015
<p>Title: Corrosion Prevention and Control Projects and Activities</p> <p>FY 2013 Accomplishments: 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</p> <p>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</p> <p>FY 2015 Plans:</p>	4.028	3.312	2.907

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604016D8Z / <i>Department of Defense Corrosion Program</i>	Project (Number/Name) P015 / <i>Corrosion Protection Projects</i>
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
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	4.028	3.312	2.907

	FY 2013	FY 2014
Congressional Add: Corrosion Control, Prevention and Prediction through Coatings, Materials and Maintenance R&D	26.193	17.000
<p>FY 2013 Accomplishments: 1. Completed the Facilities and Infrastructure Corrosion Evaluation Study. Developed plan to address findings and initiated execution in areas of expanded guidance for Facilities and Infrastructure personnel and rapid transition of new technologies into Unified Facilities Guide Specifications.</p> <p>2. Funded additional corrosion prevention and control (CPC) technology insertion projects:</p> <ul style="list-style-type: none"> a) Concrete Substrate Moisture Influence on Interfacial Bond Strength b) Silane-Based Penetrating Concrete Sealers c) Spot Treatment Protocol and Index for Life Extension of POL d) Solid State Rectifiers for Impressed Current Cathodic Protection e) Single-Component Polysiloxane Topside Coating f) Durable Green Concrete <p>3. Continued performance of the Technology Corrosion Collaboration focusing on technologies to reduce the impact of corrosion on DoD equipment and infrastructure.</p> <ul style="list-style-type: none"> a) Expanded role of Services' subject matter experts in focusing research b) Funded USMA Cadet Individual Academic Leadership Development project c) Held open call for research proposals and received 56 submissions. Added North Dakota State University and Pennsylvania State University for FY 2013. d) Researchers completed development of "SCC Crack" code and manual for modeling stress corrosion cracking, and delivered to NAVAIR and other DoD entities. Worked in conjunction with STTR. e) Twenty scientific journal articles or technical reports published; over sixteen conference presentations given, including 1st and 3rd place winners in the 2013 NACE Conference Marcel Pourbaix Category student presentation competition. 		

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense	Date: March 2014
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Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604016D8Z / <i>Department of Defense Corrosion Program</i>	Project (Number/Name) P015 / <i>Corrosion Protection Projects</i>
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	FY 2013	FY 2014
<p>4. Developed corrosion and coatings short courses for maintenance and management personnel.</p> <p>FY 2014 Plans: 1. Completed the Facilities and Infrastructure Corrosion Evaluation Study. Developed plan to address findings and initiated execution in areas of expanded guidance for Facilities and Infrastructure personnel and rapid transition of new technologies into Unified Facilities Guide Specifications.</p> <p>2. Funded additional corrosion prevention and control (CPC) technology insertion projects:</p> <p>a) Concrete Substrate Moisture Influence on Interfacial Bond Strength</p> <p>b) Silane-Based Penetrating Concrete Sealers</p> <p>c) Spot Treatment Protocol and Index for Life Extension of POL</p> <p>d) Solid State Rectifiers for Impressed Current Cathodic Protection</p> <p>e) Single-Component Polysiloxane Topside Coating</p> <p>f) Durable Green Concrete</p> <p>3. Continued performance of the Technology Corrosion Collaboration focusing on technologies to reduce the impact of corrosion on DoD equipment and infrastructure.</p> <p>a) Expanded role of Services' subject matter experts in focusing research</p> <p>b) Funded USMA Cadet Individual Academic Leadership Development project</p> <p>c) Held open call for research proposals and received 56 submissions. Added North Dakota State University and Pennsylvania State University for FY 2013.</p> <p>d) Researchers completed development of "SCC Crack" code and manual for modeling stress corrosion cracking, and delivered to NAVAIR and other DoD entities. Worked in conjunction with STTR.</p> <p>e) Twenty scientific journal articles or technical reports published; over sixteen conference presentations given, including 1st and 3rd place winners in the 2013 NACE Conference Marcel Pourbaix Category student presentation competition.</p> <p>4. Developed corrosion and coatings short courses for maintenance and management personnel.</p>		
Congressional Adds Subtotals	26.193	17.000

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

N/A

Remarks

D. Acquisition Strategy

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:

1. Problem statement: Description of the problem or situation, including background, history, issues, operational problems and support costs.

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604016D8Z / <i>Department of Defense Corrosion Program</i>	Project (Number/Name) P015 / <i>Corrosion Protection Projects</i>
<p>2. Impact statement: Details regarding why project is important including description of the operational and/or logistic impact if no action is taken.</p> <p>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.</p> <p>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.</p> <p>5. Proposed phases: If project is complex and will be performed in phases, description of each phase objective.</p> <p>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.</p> <p>7. Program management: Description of the overall approach and tasks to be taken to accomplish the project, including organization, coordination and acquisition approach.</p> <p>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.</p> <p>9. Schedule: Milestone chart showing all significant events through project completion.</p> <p>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> <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> <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>		

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604016D8Z / <i>Department of Defense Corrosion Program</i>	Project (Number/Name) P015 / <i>Corrosion Protection Projects</i>
<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>In addition to the project plans described above, advanced research white papers and subsequent proposals are solicited from universities, academies and research laboratories that constitute the TCC. The proposed efforts must include collaboration between two or more members of the TCC and address significant corrosion problems that call for ground-breaking science and technology and/or complex research and development in the five areas corrosion program areas cited above. Not only does the TCC produce technologies, advanced components, and products that reduce the impact of corrosion on DoD weapons systems and infrastructure and increase their sustainability; but it also provides participants with advanced education and skills to form the core of the future corrosion prevention and control technical community, its support network, and its suppliers.</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. 		

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604016D8Z / <i>Department of Defense Corrosion Program</i>	Project (Number/Name) P015 / <i>Corrosion Protection Projects</i>
<p>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).</p> <p>18. Interact with industry, technical societies, trade associations, government personnel, and foreign allies to identify promising corrosion control technologies and assist in technology transition and insertion</p> <p>E. Performance Metrics Not applicable.</p>		

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0604250D8Z I <i>Advanced Innovative Technologies</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
Total Program Element	0.000	-	129.883	190.000	-	190.000	76.000	48.000	30.000	-	Continuing	Continuing
P250: <i>Advanced Innovative Technologies</i>	0.000	-	129.883	190.000	-	190.000	76.000	48.000	30.000	-	Continuing	Continuing

The FY 2015 OCO Request will be submitted at a later date.

A. Mission Description and Budget Item Justification

The Strategic Capabilities Office (SCO) identifies, analyzes, demonstrates, and transitions game-changing applications of existing and near-term technology--and other U.S. Government capabilities--to shape and counter emerging threats. Currently focused on the Asia-Pacific Rebalance, SCO combines capability innovation with concepts of operation and information management to develop novel concepts often crossing Service, Defense-Intelligence, and multi-classification divides--to solve critical national security challenges in partnership with the Services, Combatant Commands, Joint Chiefs of Staff, Intelligence Community, and the Office of the Secretary of Defense. SCO analyzes, demonstrates, and red-teams these concepts on an accelerated time frame to enable subsequent programmatic decisions on alternative capabilities that have greater mission impact and lower cost.

The Advanced Innovative Technologies Program Element contains projects that include in-depth analysis to determine technical and operational performance and risk, component- and subsystem-level prototyping and testing to reduce risk, and operational demonstrations to prove concept viability prior to subsequent programmatic decisions. Due to nature of these projects, specific applications and detailed plans are available at higher classification levels.

<u>B. Program Change Summary (\$ in Millions)</u>	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015 Base</u>	<u>FY 2015 OCO</u>	<u>FY 2015 Total</u>
Previous President's Budget	-	130.000	102.000	-	102.000
Current President's Budget	-	129.883	190.000	-	190.000
Total Adjustments	-	-0.117	88.000	-	88.000
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• FFRDC Adjustments	-	-0.117	-	-	-
• DoD Priorities and Requirements	-	-	88.000	-	88.000

Change Summary Explanation

FY 2015: Program increase is to support the higher priorities of agency operations.

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604250D8Z / <i>Advanced Innovative Technologies</i>	Project (Number/Name) P250 / <i>Advanced Innovative Technologies</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
P250: <i>Advanced Innovative Technologies</i>	-	-	129.883	190.000	-	190.000	76.000	48.000	30.000	-	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

The FY 2015 OCO Request will be submitted at a later date.

A. Mission Description and Budget Item Justification

The Strategic Capabilities Office (SCO) identifies, analyzes, demonstrates, and transitions game-changing applications of existing and near-term technology--and other U.S. Government capabilities--to shape and counter emerging threats. Currently focused on the Asia-Pacific Rebalance, SCO combines capability innovation with concepts of operation and information management to develop novel concepts--often crossing Service, Defense-Intelligence, and multi-classification divides--to solve critical national security challenges in partnership with the Services, Combatant Commands, Joint Chiefs of Staff, Intelligence Community, and the Office of the Secretary of Defense. SCO analyzes, demonstrates, and red-teams these concepts on an accelerated time frame to enable subsequent programmatic decisions on alternative capabilities that have greater mission impact and lower cost.

The Advanced Innovative Technologies Program Element contains projects that include in-depth analysis to determine technical and operational performance and risk, component- and subsystem-level prototyping and testing to reduce risk, and operational demonstrations to prove concept viability prior to subsequent programmatic decisions. Due to nature of these projects, specific applications and detailed plans are available at higher classification levels.

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

	FY 2013	FY 2014	FY 2015
<p>Title: Land-Based Rail Gun (LBRG)</p> <p>Description: Existing Navy Science and Technology (S&T) Railgun program will be leveraged into Land-based Railgun (LBRG) analysis, prototyping, and experimentation. Cost-effective land-based defense will be demonstrated by closing the fire control loop between existing sensors and prototype ground-launched Railgun projectiles. To facilitate this, LBRG will integrate the Railgun launcher, power, projectile, and sensor so that projectiles may be command guided during a series of flight tests. These tests will verify performance and lethality results from modeling and simulation. Testing will conclude by demonstrating projectile fly-out and control, sensor tracking of projectiles, communication from sensor to projectile, integrated guidance, navigation and control, culminating in an FY2015 live-fire, closed-loop, command-guided launch from a 20 mega-joule Railgun.</p> <p>This is a new PE for FY 2014 that contains OSD land-based Railgun investments to accelerate fire control loop closure. In FY 2011 and FY 2012, ramp investments were provided from alternate RDT&E PEs to enable the following accomplishments:</p> <ul style="list-style-type: none"> • Initiated development of high fidelity models and simulations for gun launched guided projectile engagements. • Anchored projectile models with wind tunnel and flight test data in collaboration with the Navy's Office of Naval Research (ONR). • Analyzed several effective sensor architectures using existing sensors to support gun launched guided projectile engagements. 	-	129.883	102.000

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604250D8Z / <i>Advanced Innovative Technologies</i>	Project (Number/Name) P250 / <i>Advanced Innovative Technologies</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<ul style="list-style-type: none"> Selected sensors to support FY 2014 flight tests of prototype projectile airframes. Conducted several projectile airframe flight tests in the first quarter—a quarter ahead of schedule—in collaboration with ONR. Installed tracker hardware and successfully tracked a projectile flight with tactically relevant measurement accuracies in the first quarter in collaboration with ONR and the Army’s Armament Research Development and Engineering Center. <p>FY 2014 Plans:</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 systems engineering for Railgun System (power, gun, projectile and sensor). <p>FY 2015 Plans:</p> <ul style="list-style-type: none"> Continue development of prototype projectiles. Continue development of closed loop control for testing of prototype projectiles. Continue launcher testing of prototype projectiles. Continue design and fabrication of high power prototype gun mount system. Continue integration of Railgun System (power, gun projectile, and sensor). Investigate alternative lethality methods. 			
<p>Title: Assured Tactical C2</p> <p>Description: Leverage existing technologies to analyze and demonstrate an alternative Command and Control solution for contested environments. Due to nature of this project, specific descriptions and detailed plans are available at higher classification levels.</p> <p>FY 2015 Plans: Project will apply existing Department of Defense investments in novel way to increase command and control reliability in contested environments. FY2015 efforts will include design and prototyping for subsequent proof-of-principle demonstrations.</p>	-	-	35.000
<p>Title: Advanced Navigation</p> <p>Description: Leverage existing technologies to analyze and demonstrate a prototype advanced navigation technique for contested environments. Due to nature of this project, specific descriptions and detailed plans are available at higher classification levels.</p>	-	-	21.300

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604250D8Z / <i>Advanced Innovative Technologies</i>	Project (Number/Name) P250 / <i>Advanced Innovative Technologies</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<p><i>FY 2015 Plans:</i> Projects will apply existing technologies to demonstrate advanced navigation techniques. FY2015 efforts will include design, prototyping, data collections, and tests. Test results will be used to anchor modeling and simulation performance results and develop operationally-relevant proof-of-principle demonstrations.</p>			
<p><i>Title:</i> Intelligence, Surveillance, and Reconnaissance (ISR) Denial</p> <p><i>Description:</i> Leverage existing technologies to analyze and demonstrate a prototype solution to disrupt enemy targeting of critical U.S. assets. Due to nature of this project, specific descriptions and detailed plans are available at higher classification levels.</p> <p><i>FY 2015 Plans:</i> Project will apply existing technologies to demonstrate ISR denial techniques. FY2015 efforts will include design, prototyping, and field testing. Results will be used to anchor modeling and simulation performance results and develop and execute operationally-relevant proof-of-principle demonstrations.</p>	-	-	20.000
<p><i>Title:</i> Enhanced Munitions</p> <p><i>Description:</i> Leverage existing technologies to analyze and prototype enhancements to current and future munitions. Due to nature of this project, specific descriptions and detailed plans are available at higher classification levels.</p> <p><i>FY 2015 Plans:</i> Projects will apply existing technology to enhance the effectiveness of current and future munitions. FY2015 efforts will include analysis, prototyping, and subsystem testing to develop operationally-relevant proof-of-principle demonstrations.</p>	-	-	11.700
Accomplishments/Planned Programs Subtotals	-	129.883	190.000

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

N/A

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

Performance metrics are specific to each aspect of the Land-Based Rail Gun (LBRG), Assured Tactical C2, Advanced Navigation, ISR Denial and Enhanced Munitions efforts, funded under the Advanced Innovative Technologies Program Element. All of which include measures identified in the management approach, Statement of

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604250D8Z / <i>Advanced Innovative Technologies</i>	Project (Number/Name) P250 / <i>Advanced Innovative Technologies</i>

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. Specific applications and plans are available at a higher classification level, upon request.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0604400D8Z I <i>Unmanned Aircraft Systems Common Development</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
Total Program Element	24.161	11.233	8.263	3.702	-	3.702	3.150	3.519	4.030	3.884	Continuing	Continuing
P440: <i>UAS Airspace Integration</i>	13.591	7.347	4.703	2.600	-	2.600	2.230	2.390	2.690	2.627	Continuing	Continuing
P442: <i>Interoperability</i>	10.282	3.455	3.060	0.898	-	0.898	0.700	0.900	1.100	1.000	Continuing	Continuing
P443: <i>Unmanned Systems Road Maps</i>	0.288	0.431	0.500	0.204	-	0.204	0.220	0.229	0.240	0.257	Continuing	Continuing

The FY 2015 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 transferred \$83.169M (FYDP) to the above UAS programs' PEs.

A. Mission Description and Budget Item Justification

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.

B. Program Change Summary (\$ in Millions)

	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015 Base</u>	<u>FY 2015 OCO</u>	<u>FY 2015 Total</u>
Previous President's Budget	12.368	8.300	4.321	-	4.321
Current President's Budget	11.233	8.263	3.702	-	3.702
Total Adjustments	-1.135	-0.037	-0.619	-	-0.619
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Strategic efficiency Reduction	-1.135	-	-0.619	-	-0.619
• FY 2014 Baseline Adjustment	-	-0.037	-	-	-

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity
0400: *Research, Development, Test & Evaluation, Defense-Wide I BA 4:
Advanced Component Development & Prototypes (ACD&P)*

R-1 Program Element (Number/Name)
PE 0604400D8Z / *Unmanned Aircraft Systems Common Development*

Change Summary Explanation

The FY2014 President's Budget transferred \$83.169M (FYDP) to the above UAS programs' PEs.

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604400D8Z / <i>Unmanned Aircraft Systems Common Development</i>	Project (Number/Name) P440 / <i>UAS Airspace Integration</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
<i>P440: UAS Airspace Integration</i>	13.591	7.347	4.703	2.600	-	2.600	2.230	2.390	2.690	2.627	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

The FY 2015 OCO Request will be submitted at a later date.

Note
ABSAA and GBSAA technology development transitioned 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 Air Force is leading the effort to develop an Airborne Sense and Avoid (ABSAA) system that is suitable to support operations within US and foreign national airspace. The RQ-4 Global Hawk, MQ-4C Triton, MQ-1B Predator, MQ-1C Gray Eagle, and MQ-9 Reaper all have a requirement for SAA capability and will leverage the technology being developed by the Air Force. The Army is leading the development of a Ground Based Sense-and-Avoid (GBSAA) system using existing technology to provide a near-term solution for improved airspace access, both for terminal operations 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 common operating concepts, standards, modeling and simulation, and technology to enable DoD UAS to routinely access the national and international airspace systems.

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

	FY 2013	FY 2014	FY 2015
Title: Unmanned Aircraft System Airspace Integration Initiatives	7.347	4.703	2.600
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 supports the modeling, simulation, and operational analysis needed to validate the systems and standards. In FY2013 ABSAA and GBSAA efforts transitioned to the Services.			
FY 2013 Accomplishments: ABSAA - Development transitioned to Service Programs of Record funding with a re-planned acquisition strategy.			
Standards Development - Completed update of MIL-HDBK-516 for airworthiness criteria, standards, and methods of compliance for both fixed and rotary wing UAS, and began finalizing all Proof of Concurrence Reports for Tri-Service Technical Airworthiness Authority (TAA) signatures. Kicked off SAA systems airworthiness criteria, standards, and methods of compliance development.			

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604400D8Z / <i>Unmanned Aircraft Systems Common Development</i>	Project (Number/Name) P440 / <i>UAS Airspace Integration</i>

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

	FY 2013	FY 2014	FY 2015
<p>Conducted a detailed study of the certification of commercial-off-the-shelf (COTS) components in safety critical applications to satisfy a high priority safety gap identified by the Sense and Avoid Science Research Panel (SARP). Leveraged Probabilistic Risk Assessment (PRA) methodologies to support the development of a safety case for integrating UAS in the NAS. Developed a potential methodology for evaluating the effectiveness of SAA system algorithms. Started updating the current UAS Airspace Integration Concept of Operations (CONOPS) and conducted operational analysis to assist DoD in overcoming UAS AI challenges.</p> <p>Modeling & Simulation (M&S) - Supported analysis of modeling and simulation requirements to address high priority research gaps, as identified by the SARP.</p> <p>GBSAA – The GBSAA SIPT continued efforts to develop a common GBSAA system applicable across all Services. The efforts included Common Display work, development of top-level requirements, and participation in the SARP workshops - leading the development of SAA concepts, definitions and requirements. The display work included Display Usability Tests conducted with UAS operators in Huntsville, AL and at Ft Huachuca, AZ to refine the Alert & Traffic Display subsystem. In addition to the usability tests, a Common Display Quick Study utilizing 15 Army participants – including manned pilots, unmanned operators and air traffic control personnel - was conducted with a focus on intruder prioritization schemes for a common display. Army's top level GBSAA requirements and a high-level description of its approval process were submitted to the Federal Aviation Administration (FAA) to provide a framework for a written agreement between DoD/Army and the FAA on full integrated GBSAA operations, starting with Ft Hood, TX. Army GBSAA is considered a “pathfinder” for SAA system certification by the FAA. Army GBSAA Block 0 system requirements are base-lined and the development of software certification is underway with integration testing scheduled to begin in July 2014. Cherry Point MCAS began flying segregated transit GBSAA operations under a Certificate of Authorization (COA) in June 2013. Cherry Point’s COA approval provides a path for the Services to follow for self-certification and safety risk management.</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. Leverage Probabilistic Risk Assessment (PRA) and Markov Decision Process (MDP) methodologies to better understand SAA system conflict mitigation strategies to support the development of a safety case for integrating UAS in the NAS. Complete and publish an update to the UAS Airspace Integration CONOPS. Research and facilitate a DoD-wide exemption to 14 CFR 91.113 to enable specified DoD UAS operations in the NAS. Conduct operational analysis to assist DoD in overcoming UAS AI challenges.</p>			

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604400D8Z / <i>Unmanned Aircraft Systems Common Development</i>	Project (Number/Name) P440 / <i>UAS Airspace Integration</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
Modeling & Simulation (M&S) - Support analysis of modeling and simulation requirements to address high priority research gaps, as identified by the SARP.			
<i>FY 2015 Plans:</i> 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 ongoing analysis of UAS Airspace Integration safety case development issues in order to facilitate expanded UAS access to the NAS. Conduct analysis to address high priority safety gaps as identified by the SARP. Coordinate system requirements and safety guidelines within appropriate standards development organizations. Conduct operational analysis to assist DoD in overcoming UAS AI challenges.			
Modeling & Simulation (M&S) - Support analysis of modeling and simulation requirements to address high priority research gaps, as identified by the SARP.			
Accomplishments/Planned Programs Subtotals	7.347	4.703	2.600

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

N/A

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604400D8Z / <i>Unmanned Aircraft Systems Common Development</i>	Project (Number/Name) P442 / <i>Interoperability</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
P442: <i>Interoperability</i>	10.282	3.455	3.060	0.898	-	0.898	0.700	0.900	1.100	1.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

The FY 2015 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 2013	FY 2014	FY 2015
Title: UAS Common Ground Station Demonstration	3.455	3.060	0.898
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 2013 Accomplishments: Released UAS Control Segment (UCS) V3.0 and v3.1, and completed development of the Open Business Model (OBM) which incorporates (tri-Service approved) common contracting language for UAS ground control stations. OSD completed development and deployment of the UCS Repository. The UCS Repository allows the rapid re-use of UAS "apps" across tri-Services. UCS was demonstrated in a live Army Bi-Directional Remote Video Terminal (BDRVTV) Shadow Flight Test; this provided risk reduction and expedited Army BDRVTV/ One System Remote Video Terminal (OSRVTV) program of record delivery. UCS was expanded/adopted beyond UAS into the maritime domain.			
FY 2014 Plans: Release UCS V3.2 and v3.3, integrate Army/Navy flight safety critical and information assurance requirements; complete alignment with the Joint Common Unmanned System Architecture (JCUA), Universal Systems Interoperability Profile (USIP), and Future Airborne Capability Environment (FACE) standard; and demonstrate UCS in hardware-in-the-loop Unmanned Maritime System (UMS) maritime simulations.			
FY 2015 Plans: Release UCS V3.4 and v3.5 and demonstrate UCS in a live UMS maritime operational test.			
Accomplishments/Planned Programs Subtotals	3.455	3.060	0.898

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604400D8Z / <i>Unmanned Aircraft Systems Common Development</i>	Project (Number/Name) P442 / <i>Interoperability</i>

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

N/A

Remarks

D. Acquisition Strategy

n/a

E. Performance Metrics

n/a

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604400D8Z / <i>Unmanned Aircraft Systems Common Development</i>	Project (Number/Name) P443 / <i>Unmanned Systems Road Maps</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
<i>P443: Unmanned Systems Road Maps</i>	0.288	0.431	0.500	0.204	-	0.204	0.220	0.229	0.240	0.257	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

The FY 2015 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.

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

Title: Unmanned Systems Roadmap	FY 2013	FY 2014	FY 2015
Description: Develops and updates the Department's Unmanned Systems Roadmap.	0.431	0.500	0.204
FY 2013 Accomplishments: Updated the Department's Unmanned Systems Roadmap and performed 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.			
FY 2015 Plans: Update the Department's Unmanned Systems Roadmap and perform related studies supporting the Department's vision for unmanned systems.			
Accomplishments/Planned Programs Subtotals	0.431	0.500	0.204

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

N/A

Remarks

D. Acquisition Strategy

N/A

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604400D8Z / <i>Unmanned Aircraft Systems Common Development</i>	Project (Number/Name) P443 / <i>Unmanned Systems Road Maps</i>

E. Performance Metrics

Provide up-to-date Unmanned Systems Roadmap providing a DoD vision for the continuing development, fielding and employment of unmanned systems technologies.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400: Research, Development, Test & Evaluation, Defense-Wide I BA 4: Advanced Component Development & Prototypes (ACD&P)	R-1 Program Element (Number/Name) PE 0604670D8Z I Human Social Culture Behavior (HSCB) Modeling Research and Engineering
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
Total Program Element	-	4.492	2.000	-	-	-	-	-	-	-	Continuing	Continuing
P670: Human Social Culture Behavior (HSCB) Modeling Research and Engineering	-	4.492	2.000	-	-	-	-	-	-	-	Continuing	Continuing

The FY 2015 OCO Request will be submitted at a later date.

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.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0604670D8Z I <i>Human Social Culture Behavior (HSCB) Modeling Research and Engineering</i>
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B. Program Change Summary (\$ in Millions)	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO	FY 2015 Total
Previous President's Budget	5.131	-	-	-	-
Current President's Budget	4.492	2.000	-	-	-
Total Adjustments	-0.639	2.000	-	-	-
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-0.435	-			
• Congressional Rescissions	-0.007	-			
• Congressional Adds	-	2.000			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-0.059	-			
• SBIR/STTR Transfer	-0.136	-			
• Other Program Adjustments	-0.002	-	-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604670D8Z / <i>Human Social Culture Behavior (HSCB) Modeling Research and Engineering</i>	Project (Number/Name) P670 / <i>Human Social Culture Behavior (HSCB) Modeling Research and Engineering</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
<i>P670: Human Social Culture Behavior (HSCB) Modeling Research and Engineering</i>	-	4.492	2.000	-	-	-	-	-	-	-	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

The FY 2015 OCO Request will be submitted at a later date.

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 2013	FY 2014	FY 2015
Title: Modeling Capabilities	3.091	1.000	-
Description: Mature and deliver sociocultural modeling capabilities for integration into existing DoD systems. Conduct validation testing of HSCB model based applications. 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.			
FY 2013 Accomplishments: Integrated the iSENT tool into the Worldwide Integrated Crisis Early Warning System (W-ICEWS) in U.S. Strategic Command program of record. Achieved high accuracy for English and Spanish, and a new Chinese sentiment model in development.			

PE 0604670D8Z: *Human Social Culture Behavior (HSCB) Modeling Rese...*

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604670D8Z / <i>Human Social Culture Behavior (HSCB) Modeling Research and Engineering</i>	Project (Number/Name) P670 / <i>Human Social Culture Behavior (HSCB) Modeling Research and Engineering</i>

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

	FY 2013	FY 2014	FY 2015
<p>Implemented and transitioned technology to gather and process news and social media data. Supported a variety of operational challenges using HSCB technology with high reported user utility. Integrated social radar prototypes into the Ozone Widget Framework (OWF), which is compatible with the Army's Distributed Common Ground System (DCGS-A). Applied social radar prototypes as proof of concept to support the Military Information Support Operations (MISO) mission to counter violent extremism. Tested the prototypes to support knowledge management and situational awareness for countering weapons of mass destruction. The social radar components will transition to Integrated Strategic Planning and Analysis Network (ISPAN) programs of record.</p> <p>FY 2014 Plans: Further develop W-ICEWS capabilities by improving sentiment accuracies of English and Spanish language models to meet 80% target accuracy goal. Add Arabic model to include complex Arabic dialect feature analysis.</p>			
<p>Title: Data Collection</p> <p>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. 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 and demonstration of transition-ready automated data collection, management, translation, and extraction tools to service HSCB models.</p> <p>FY 2013 Accomplishments: W-ICEWS and iSENT programs ingest news, blogs, and social media data either weekly (W-ICEWS) or in near real-time (iSENT). W-ICEWS ingested over 30 million news articles covering the last 13 years. iSENT ingested 25 million documents per month, including social media data. The ingest pipelines supported fusion and further analysis of the data, including sentiment analysis, instability monitoring, forecasting of events of interest, an event browser, and other analysis tools supporting both short-term and long-term analytics. The programs are in operational use by a variety of government organizations and hosted at U.S. Southern Command and will be transitioned to the Global Adaptive Planning Collaborative Information Environment (GAP CIE) ISPAN program of record. Validated social radar tools and methods for collecting sociocultural behavior data from open sources, including social media. Applied tools for extraction, integrated analysis, and fusion of data at scale from denied areas. Demonstrated the social radar tools in near real-time to support short-term and long-term instability monitoring.</p> <p>FY 2014 Plans:</p>	1.051	0.700	-

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604670D8Z / <i>Human Social Culture Behavior (HSCB) Modeling Research and Engineering</i>	Project (Number/Name) P670 / <i>Human Social Culture Behavior (HSCB) Modeling Research and Engineering</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
Extend iSENT capability to automatically identify potential disinformation and quantify the spread and/or influence of that disinformation based on content and degree of social networking reach. Develop dashboard capability that allows the user to configure a custom dashboard that includes automated alerts, social momentum gauges and graphs, real-time streaming of social and regular media, and television feeds.			
<p>Title: Risk Reduction</p> <p>Description: Conduct the risk reduction activities necessary to ensure that HSCB technologies are validated, accurate, and address user/program of record requirements. 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.</p> <p>FY 2013 Accomplishments: W-ICEWS and iSENT programs both periodically report rigorous statistical measures of precision and recall; both experienced a rapid increase in the user base due to high demand from multiple Combatant Commands, the State Department, and intelligence community users. Both programs participated in numerous operational scenarios, including the U.S. Special Operations Command MISO experiment. Validated social radar technologies to ensure accuracy and to ensure that they addressed user requirements. Used social radar technologies during repeated demonstrations to gather data necessary to populate program-level measures of effectiveness. As evidence of the readiness to meet U.S. government challenges, transition of these technologies is planned for use by government and private organizations.</p> <p>FY 2014 Plans: Conduct risk reduction activities necessary to ensure that HSCB technologies are validated, accurate, and address user/program of record requirements. Continue to apply existing processes for evaluating research projects.</p>	0.350	0.300	-
Accomplishments/Planned Programs Subtotals	4.492	2.000	-

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
• PE 0602670D8Z BA 2: <i>HSCB Applied Research</i>	5.049	2.000	-	-	-	-	-	-	-	-	Continuing
• PE 0603670D8Z BA 3: <i>HSCB Advanced Development</i>	6.994	2.000	-	-	-	-	-	-	-	-	Continuing

PE 0604670D8Z: *Human Social Culture Behavior (HSCB) Modeling Rese...*
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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604670D8Z / <i>Human Social Culture Behavior (HSCB) Modeling Research and Engineering</i>	Project (Number/Name) P670 / <i>Human Social Culture Behavior (HSCB) Modeling Research and Engineering</i>

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

<u>Line Item</u>	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015</u> <u>Base</u>	<u>FY 2015</u> <u>OCO</u>	<u>FY 2015</u> <u>Total</u>	<u>FY 2016</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
Remarks											

D. Acquisition Strategy

The Program produces software prototypes configured for use in programs such as the DCGS-A. 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.

E. Performance Metrics

N/A

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0604775D8Z I <i>Defense Rapid Innovation Program</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
Total Program Element	199.233	218.775	175.000	-	-	-	-	-	-	-	Continuing	Continuing
<i>P775: Defense Rapid Innovation Program</i>	199.233	218.775	175.000	-	-	-	-	-	-	-	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

The FY 2015 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)

	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015 Base</u>	<u>FY 2015 OCO</u>	<u>FY 2015 Total</u>
Previous President's Budget	225.735	175.000	-	-	-
Current President's Budget	218.775	175.000	-	-	-
Total Adjustments	-6.960	-	-	-	-
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-6.960	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			

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

Project: P775: *Defense Rapid Innovation Program*

Congressional Add: *Defense Rapid Innovation Fund*

	FY 2013	FY 2014
	218.775	175.000
Congressional Add Subtotals for Project: P775	218.775	175.000
Congressional Add Totals for all Projects	218.775	175.000

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0604775D8Z I <i>Defense Rapid Innovation Program</i>
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014
Congressional Add: Defense Rapid Innovation Fund FY 2013 Accomplishments: Provided, that of the funds made available in this paragraph, \$250,000,000 for the Defense Rapid Innovation Program shall only be available for expenses, not otherwise provided for, to include program management and oversight, to conduct research, development, test and evaluation to include proof of concept demonstration; engineering, testing, and validation; and transition to full-scale production; Provided further, that the Secretary of Defense may transfer funds provided herein for the Defense Rapid Innovation Program to appropriations for research, development, test and evaluation to accomplish the purpose provided herein; provided further, that this transfer authority is in addition to any other transfer authority available to the Department of Defense: provided further that the Secretary of Defense shall, not fewer than 30 days prior to making transfers from this appropriation, notify the congressional defense committees in writing of the details of any such transfer. FY 2014 Plans: Provided, that the Defense Rapid Innovation Program shall only be available for expenses, to include program management and oversight, to conduct research, development, test and evaluation to include proof of concept demonstration; engineering, testing, and validation; and transition to full-scale production;	218.775	175.000
Congressional Adds Subtotals	218.775	175.000

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.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide / BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0605170D8Z / <i>Support to Networks and Information Integration</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
Total Program Element	0.000	-	-	12.500	-	12.500	-	-	-	-	Continuing	Continuing
001: <i>Maritime Capability</i>	0.000	-	-	12.500	-	12.500	-	-	-	-	Continuing	Continuing

MDAP/MAIS Code:
Other MDAP/MAIS Code(s): 0000

The FY 2015 OCO Request will be submitted at a later date.

A. Mission Description and Budget Item Justification

This program element supports studies in the areas of networks, information integration, defense-wide command and control (C2), and communications. This program is funded under Budget Activity 4, Demonstration and Validation.

B. Program Change Summary (\$ in Millions)

	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015 Base</u>	<u>FY 2015 OCO</u>	<u>FY 2015 Total</u>
Previous President's Budget	-	-	-	-	-
Current President's Budget	-	-	12.500	-	12.500
Total Adjustments	-	-	12.500	-	12.500
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Program Increase	-	-	12.500	-	12.500

Change Summary Explanation

FY 2015: Department increase – Maritime Capabilities classified program 12.500 million. This demonstrated one piece of the total Department increase for Maritime Capabilities other associated funding can be found under PE 0605170D8Z, BA 6, 22.5 million, and PE 0305199D8Z, BA 7, 5 million.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0605170D8Z / <i>Support to Networks and Information Integration</i>	Project (Number/Name) 001 / <i>Maritime Capability</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
001: <i>Maritime Capability</i>	-	-	-	12.500	-	12.500	-	-	-	-	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

MDAP/MAIS Code: 0000

The FY 2015 OCO Request will be submitted at a later date.

A. Mission Description and Budget Item Justification
 This program element supports studies in the areas of networks, information integration, defense-wide command and control (C2), and communications. This program is funded under Budget Activity 4, Demonstration and Validation.

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
Title: Maritime Capabilities Accomplishments and Plans	-	-	12.500
FY 2013 Accomplishments: N/A			
FY 2014 Plans: N/A			
FY 2015 Plans: Maritime Capabilities. Classified Program details provided at a higher classification under separate cover. This is one piece of the total Department increase for Maritime Capabilities. Other associated funding can be found under PE 0605170D8Z, BA6 22.5 million, and PE 0305199D8Z, BA 7, 5 million.			
Accomplishments/Planned Programs Subtotals	-	-	12.500

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

Remarks

D. Acquisition Strategy
N/A

E. Performance Metrics
Classified Program details provided at a higher classification under separate cover.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400: Research, Development, Test & Evaluation, Defense-Wide I BA 4: Advanced Component Development & Prototypes (ACD&P)	R-1 Program Element (Number/Name) PE 0303191D8Z I Joint Electromagnetic Technology (JET) Program
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
Total Program Element	3.357	2.899	3.151	2.656	-	2.656	2.449	2.818	2.922	3.087	Continuing	Continuing
192: Joint Electromagnetic Technology (JET) Program	3.357	2.899	3.151	2.656	-	2.656	2.449	2.818	2.922	3.087	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

The FY 2015 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 2013</u>	<u>FY 2014</u>	<u>FY 2015 Base</u>	<u>FY 2015 OCO</u>	<u>FY 2015 Total</u>
Previous President's Budget	3.158	3.169	3.023	-	3.023
Current President's Budget	2.899	3.151	2.656	-	2.656
Total Adjustments	-0.259	-0.018	-0.367	-	-0.367
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Sequestration Reduction	-0.259	-	-	-	-
• Efficiency Reduction	-	-	-0.367	-	-0.367
• FFRDC Adjustment	-	-0.018	-	-	-

Change Summary Explanation

Change Summary Explanation:

FY 2013: Sequestration Reduction -0.259 million.

FY 2014: FFRDC Reduction -0.018 million.

FY 2015: Efficiency Reduction -0.367 million.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense	Date: March 2014
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Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0303191D8Z I <i>Joint Electromagnetic Technology (JET) Program</i>
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
Title: JET Program Initiatives	2.899	3.151	2.656
FY 2013 Accomplishments: Program Planning and Support			
FY 2014 Plans: Program Planning and Support			
FY 2015 Plans: Program Planning and Support			
Accomplishments/Planned Programs Subtotals	2.899	3.151	2.656

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

N/A

Remarks

E. Acquisition Strategy

N/A

F. Performance Metrics

- Numbers of operational field demonstrations.
- Numbers of false-positive results.
- Successful technology transfer to service component.
- Number of service requirements satisfied.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604161D8Z I <i>Nuclear and Conventional Physical Security/Countering Nuclear Threats</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
Total Program Element	20.652	6.152	8.109	7.936	-	7.936	6.204	6.286	6.658	7.059	Continuing	Continuing
P163: <i>Nuclear and Conventional Physical Security</i>	20.652	6.152	7.061	3.952	-	3.952	6.204	6.286	6.658	7.059	Continuing	Continuing
P042: <i>CNT Rad/Nuc Passive Defense SDD</i>	0.000	-	1.048	3.984	-	3.984	-	-	-	-	Continuing	Continuing

The FY 2015 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 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604161D8Z I <i>Nuclear and Conventional Physical Security/Countering Nuclear Threats</i>
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B. Program Change Summary (\$ in Millions)	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO	FY 2015 Total
Previous President's Budget	6.817	8.155	13.596	-	13.596
Current President's Budget	6.152	8.109	7.936	-	7.936
Total Adjustments	-0.665	-0.046	-5.660	-	-5.660
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.105	-			
• Strategic Efficiency Savings	-	-	-5.660	-	-5.660
• FY13 Adjustment	-0.560	-	-	-	-
• FY14 Adjustment	-	-0.046	-	-	-

Change Summary Explanation

The reduction is a strategic efficiency approach to reduce funding and staffing. As a result, we provide a better alignment of funding and provide support to a smaller military force.

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604161D8Z / Nuclear and Conventional Physical Security/Countering Nuclear Threats	Project (Number/Name) P163 / Nuclear and Conventional Physical Security
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
P163: Nuclear and Conventional Physical Security	20.652	6.152	7.061	3.952	-	3.952	6.204	6.286	6.658	7.059	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

The FY 2015 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.

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

	FY 2013	FY 2014	FY 2015
Title: Detection and Assessment	2.301	2.641	1.395

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604161D8Z / Nuclear and Conventional Physical Security/Countering Nuclear Threats	Project (Number/Name) P163 / Nuclear and Conventional Physical Security

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<p>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.</p> <p>FY 2013 Accomplishments:</p> <ul style="list-style-type: none"> • Transitioned Long-range imaging sensor to operate with a sonar system to identify divers at significant ranges in the underwater environment to low-rate production. • Transitioned optimal active sonar functionality in ultra-shallow water environments to low-rate production. <p>FY 2014 Plans:</p> <ul style="list-style-type: none"> • Develop Portable Detection System for Select Environments • Develop US Navy Spike Weapon System, Improved Electro-optical Seeker • Develop Ground-Based Operational Surveillance System - Expeditionary <p>FY 2015 Plans:</p> <ul style="list-style-type: none"> • Continue to develop Portable Detection System for Select Environments • Continue to develop US Navy Spike Weapon System, Improved Electro-optical Seeker • Continue to develop Ground-Based Operational Surveillance System - Expeditionary 			
<p>Title: Access Controls</p> <p>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.</p> <p>FY 2013 Accomplishments:</p> <ul style="list-style-type: none"> • Conducted Joint Capability Technology Demonstration for Defense Installation Access Control project to prove operational capability <p>FY 2014 Plans:</p> <ul style="list-style-type: none"> • Demonstrate the ability of existing marine mammals to intercept human targets and attach specially developed hardware to delay and deny access to critical resources. 	1.926	2.210	0.751

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604161D8Z / <i>Nuclear and Conventional Physical Security/Countering Nuclear Threats</i>	Project (Number/Name) P163 / <i>Nuclear and Conventional Physical Security</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<ul style="list-style-type: none"> • Provide a continuous evaluation solution for DoD personnel security able to support the automated, continuous evaluation of cleared personnel against the Administrative Guidelines and other security risk management criteria, and alert appropriate to supplement and eventually replace periodic re-evaluations <p>FY 2015 Plans:</p> <ul style="list-style-type: none"> • Provide a continuous evaluation solution for DoD personnel security able to support the automated, continuous evaluation of cleared personnel against the Administrative Guidelines and other security risk management criteria, and alert appropriate to supplement and eventually replace periodic re-evaluations 			
<p>Title: Installation and Transport Security</p> <p>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.</p> <p>FY 2013 Accomplishments:</p> <ul style="list-style-type: none"> • Developed 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. • Developed 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. <p>FY 2014 Plans:</p> <ul style="list-style-type: none"> • Develop improved and common situational awareness to link shipboard security teams and shore-based security and response boats. • Conduct demonstration 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. <p>FY 2015 Plans:</p> <ul style="list-style-type: none"> • Integrate 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. 	0.166	0.191	0.889
<p>Title: Storage and Safeguards</p>	0.148	0.169	-

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604161D8Z / Nuclear and Conventional Physical Security/Countering Nuclear Threats	Project (Number/Name) P163 / Nuclear and Conventional Physical Security

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<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 2013 Accomplishments:</p> <ul style="list-style-type: none"> • Transitioned economical magazine construction that comprehensively satisfies physical security criteria, explosive safety, operational and seismic safety standards to low-rate production. • Transitioned 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 2013 Accomplishments:</p> <ul style="list-style-type: none"> • Expanded engagement opportunities with international partners in Nuclear Security. Produces best practice guide and workshops. • Conducted requirements gap analysis between Global Threat Reduction Initiative and Cooperative Threat Reduction efforts for Global Nuclear Lockdown. <p>FY 2014 Plans:</p> <ul style="list-style-type: none"> • Develop and host Nuclear Testing, Diagnostics, Forensics and Stockpile Stewardship (NTDFSS) Course 	0.295	0.339	-
<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 2013 Accomplishments:</p>	0.800	0.918	0.581

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604161D8Z / <i>Nuclear and Conventional Physical Security/Countering Nuclear Threats</i>	Project (Number/Name) P163 / <i>Nuclear and Conventional Physical Security</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<ul style="list-style-type: none"> Advanced 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. Provided 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>FY 2015 Plans:</p> <ul style="list-style-type: none"> Develop a Defense Security Enterprise Architecture that would link/harmonize disparate and sub-optimal capabilities utilizing existing and emerging Component capabilities to better close known physical security gaps <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 2013 Accomplishments:</p> <ul style="list-style-type: none"> Conducted 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 <p>FY 2015 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 	0.516	0.593	0.336
Accomplishments/Planned Programs Subtotals	6.152	7.061	3.952

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

N/A

Remarks

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604161D8Z / <i>Nuclear and Conventional Physical Security/Countering Nuclear Threats</i>	Project (Number/Name) P163 / <i>Nuclear and Conventional Physical Security</i>

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 of each project is reviewed at quarterly PSEAG. Performance variances are addressed and corrective action is implemented as necessary.

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604161D8Z / Nuclear and Conventional Physical Security/Countering Nuclear Threats	Project (Number/Name) P042 / CNT Rad/Nuc Passive Defense SDD
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
P042: CNT Rad/Nuc Passive Defense SDD	-	-	1.048	3.984	-	3.984	-	-	-	-	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

The FY 2015 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 2013	FY 2014	FY 2015
<p>Title: CNT Rad/Nuc Passive Defense</p> <p>Description: Advanced Development of Joint Radiological and Nuclear passive defense systems (i.e. Radiological Detection System and the Joint Personal Dosimeter).</p> <p>The Radiological Detection System will provide a ruggedized Radiation Detection, Indication, and Computation for real time gamma radiation monitoring and low energy x-ray, beta, alpha, and neutron detection.</p> <p>The Joint Personal Dosimeter will provide a joint solution to increase capability and reduce life-cycle costs.</p> <p>Both systems will address Operation TOMODACHI lessons learned for common, interoperable equipment with adequate sensitivity and common units of measure.</p> <p>FY 2014 Plans: Development of Joint Radiological and Nuclear passive defense systems (i.e. Radiological Detection System and the Joint Personal Dosimeter)</p> <p>FY 2015 Plans:</p>	-	1.048	3.984

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604161D8Z / <i>Nuclear and Conventional Physical Security/Countering Nuclear Threats</i>	Project (Number/Name) P042 / <i>CNT Rad/Nuc Passive Defense SDD</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
Continue with the development of Joint Radiological and Nuclear passive defense systems (i.e. Radiological Detection System and the Joint Personal Dosimeter)			
Accomplishments/Planned Programs Subtotals	-	1.048	3.984

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.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604165D8Z I <i>Prompt Global Strike Capability Development</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
Total Program Element	649.147	176.390	65.393	70.762	-	70.762	79.348	185.649	207.527	226.342	Continuing	Continuing
P164: <i>Hypersonic Glide Experiment and Concepts Demonstration Support</i>	341.970	23.000	2.000	2.000	-	2.000	2.000	2.000	2.000	2.000	Continuing	Continuing
P166: <i>Alternate Re-Entry System/Warhead Engineering</i>	213.486	147.790	55.000	65.200	-	65.200	72.950	176.649	199.500	218.342	Continuing	Continuing
P167: <i>Test Range Development</i>	62.446	-	4.953	-	-	-	1.000	2.000	2.000	2.000	Continuing	Continuing
P168: <i>OSD CPGS Studies</i>	31.245	5.600	3.440	3.562	-	3.562	3.398	5.000	4.027	4.000	Continuing	Continuing

The FY 2015 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 of 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. 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. Program timing will be driven by the outcome of flight test events and DoD budgets. In FY 2015, funding for the individual service initiatives will be contingent upon their abilities to execute and achieve satisfactory progress towards project goals as determined by the CPGS portfolio manager.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604165D8Z I <i>Prompt Global Strike Capability Development</i>
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B. Program Change Summary (\$ in Millions)	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO	FY 2015 Total
Previous President's Budget	110.383	65.440	82.590	-	82.590
Current President's Budget	176.390	65.393	70.762	-	70.762
Total Adjustments	66.007	-0.047	-11.828	-	-11.828
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	90.000	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-2.682	-			
• Efficiency Reduction	-	-	-11.828	-	-11.828
• FFRDC	-	-0.047	-	-	-
• FY13 Sequestration Reduction	-18.783	-	-	-	-
• Baseline Adjustments	-2.528	-	-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense										Date: March 2014		
Appropriation/Budget Activity 0400 / 5					R-1 Program Element (Number/Name) PE 0604165D8Z / <i>Prompt Global Strike Capability Development</i>				Project (Number/Name) P164 / <i>Hypersonic Glide Experiment and Concepts Demonstration Support</i>			
COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
P164: <i>Hypersonic Glide Experiment and Concepts Demonstration Support</i>	341.970	23.000	2.000	2.000	-	2.000	2.000	2.000	2.000	2.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

The FY 2015 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 of 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. 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. Program timing will be driven by the outcome of flight test events and DoD budgets. In FY 2014 and FY 2015, funding for the individual service initiatives 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)

Title: Hypersonic Glide Experiments and Concept Demonstration Development/Support	FY 2013	FY 2014	FY 2015
	23.000	2.000	2.000
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. This sub-project also develops warhead technologies to defeat time-sensitive targets for near and longer-term CPGS applications. 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.			
The objectives of this sub-project are to:			
- 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.			

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604165D8Z / <i>Prompt Global Strike Capability Development</i>	Project (Number/Name) P164 / <i>Hypersonic Glide Experiment and Concepts Demonstration Support</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<p>-Assess the feasibility of producing an affordable solution to fill the CPGS capability gap.</p> <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 2013 Accomplishments:</p> <ul style="list-style-type: none"> - Led national team in risk reduction and technology maturation efforts for CPGS non-nuclear KEP, Penetrator and other warhead concepts - Completed KEP arena and sled pre and post tests analyses, completing Sled Test#2 CDR and mono-rail dry run test - Planned and conducted penetrator weapon design test series for the weapon case, high explosive, fuze, and instrumentation - Collaboration 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 - Continuation of the modification of launch test pad for future flight tests, completing pad hard point alignment and testing, power, and communications systems upgrades - Completed a preliminary systems engineering study of delivery vehicle shape analysis to assess best performance against a variety of range, speed, maneuver, booster configurations, basing and cost - Completed the design and delivery of wind tunnel design models for a representative 3 axes stabilized biconic delivery vehicle, beginning initial wind tunnel testing to validate biconic and related shape design models and potential for future concept use/ experiments - Conducted a mission planning table-top exercise for STRATCOM to enhance early user assessment of operational employment concepts and interfaces to existing/planned STRATCOM/COCOM mission planning tool suites <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. 			

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604165D8Z / <i>Prompt Global Strike Capability Development</i>	Project (Number/Name) P164 / <i>Hypersonic Glide Experiment and Concepts Demonstration Support</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
- Complete Technology Development Strategy and System Engineering documentations incorporating CPGS community data, trade studies and on-going risk reduction/technology development efforts. FY 2015 Plans: - Update service concepts for intermediate and global range CPGS concepts in preparation for JROC and acquisition milestone authority review - 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 - Continue aerodynamic and weapon risk reduction and technology maturation efforts through ground and wind tunnel tests to improve modeling and simulation capabilities and technology readiness, assessing readiness to conducted integrated penetrator component technology tests - Update the Technology Development Strategy and System Engineering documentations based on updated CPGS community engineering and test data, trade studies and on-going risk reduction/technology development efforts Complete KEP sled test analysis and disseminate test data/analysis to CPGS community -Complete planning for low cost terminal phase delivery vehicle testing to include analysis of guidance, navigation, control, aerodynamic, and materials performance to CPGS mission terminal area requirements			
Accomplishments/Planned Programs Subtotals	23.000	2.000	2.000

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

N/A

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense										Date: March 2014		
Appropriation/Budget Activity 0400 / 5					R-1 Program Element (Number/Name) PE 0604165D8Z / <i>Prompt Global Strike Capability Development</i>				Project (Number/Name) P166 / <i>Alternate Re-Entry System/Warhead Engineering</i>			
COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
P166: <i>Alternate Re-Entry System/Warhead Engineering</i>	213.486	147.790	55.000	65.200	-	65.200	72.950	176.649	199.500	218.342	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

The FY 2015 OCO Request will be submitted at a later date.

A. Mission Description and Budget Item Justification

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 of 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. 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. Program timing will be driven by the outcome of flight test events and DoD budgets. In FY 2015, funding for the individual service initiatives 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 2013	FY 2014	FY 2015
Title: Alternative Re-Entry System/Warhead Engineering and Delivery Vehicle Options/Development	147.790	55.000	65.200
<p>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 a potential acquisition program.</p> <p>FY 2013 Accomplishments:</p> <ul style="list-style-type: none"> - Conducted System Requirements Review for AHW Flight Test 2 and relevance for all CPGS concepts - Conducted Integrated Baseline Review and Integrated Master Schedule development for AHW Flight Test 2 - Conducted Preliminary and Critical Design Reviews in preparation for AHW Flight Test 2 			

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604165D8Z / <i>Prompt Global Strike Capability Development</i>	Project (Number/Name) P166 / <i>Alternate Re-Entry System/Warhead Engineering</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<ul style="list-style-type: none"> - Continued design, manufacturing, and testing of components; preliminary integration of components for bench top testing underway - Initiated work associated with PDV items at risk, in accordance with previous tests - Expanded systems engineering parameters for performance and cost assessments for all CPGS concepts - Completed initial Universal Documentation System (UDS) inputs for range and flight safety activities for AHW Flight Test 2 - Executed initial survey of Launch Complex in preparation for upcoming flight test - Conducted Kick-off Review for the first in the new series of demonstrations being demonstrated by Navy SSP - Created Navigation, Guidance and Control hardware-in-the loop facility to support Navy Flight Test 1 with additional broad applicability across all CPGS concepts - Conducted design and wind tunnel testing for Intermediate Range Glide Body - Initiated low cost thermal protection system development - Conducted Conceptual Design Review for Navy Flight Test1 - Developed a competitive Request for Proposal for industry technical trade study and prepared for release <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 AHW Flight Test 2 - Conduct pre-shipment and pre-launch reviews for AHW Flight Test 2 - Deploy to range, conduct pre-launch testing and training, and execute AHW Flight Test 2 - Begin post-Flight Test Data analysis for AHW Flight Test 2 for distribution to the CPGS community for use across projects - Continue ground testing and development of advanced thermal protection materials and concepts - Conduct System Requirements Review through collaboration with the national CPGS team for Navy Flight Test 1 - Conduct Preliminary Design Reviews through collaboration with the national CPGS team for Navy Flight Test 1 - Fabricate prototype miniaturized hardware in support of Navy Flight Test 1 with broad applicability across all CPGS concepts <p>FY 2015 Plans:</p> <ul style="list-style-type: none"> - Continue AHW Flight Test 2 post-Flight test data analysis with special emphasis on applicability to future CPGS testing - Support development of future flight test systems for alternative CPGS concepts as required - Conduct Critical Design Review for Navy Flight Test 1 through collaboration with national CPGS team - Begin integrated system-level test, evaluation, and assembly for Navy Flight Test 1 			
Accomplishments/Planned Programs Subtotals	147.790	55.000	65.200

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

N/A

Remarks

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604165D8Z / <i>Prompt Global Strike Capability Development</i>	Project (Number/Name) P166 / <i>Alternate Re-Entry System/Warhead Engineering</i>

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604165D8Z / <i>Prompt Global Strike Capability Development</i>	Project (Number/Name) P167 / <i>Test Range Development</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
P167: <i>Test Range Development</i>	62.446	-	4.953	-	-	-	1.000	2.000	2.000	2.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

The FY 2015 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 of 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. 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. Program timing will be driven by the outcome of flight test events and DoD budgets. In FY 2014 and FY 2015, funding for the individual service initiatives 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 2013	FY 2014	FY 2015
Title: Test Range Development	-	4.953	-
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 2013 Accomplishments: -Improved telemetry collection and infrastructure in prep for DOTE/IOTE testing of contractor developed system concepts. - Assisted 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, -Collaboration with Missile Defense, Ballistic Missile, and Space programs for test range capability modernization.			
Accomplishments/Planned Programs Subtotals	-	4.953	-

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604165D8Z / <i>Prompt Global Strike Capability Development</i>	Project (Number/Name) P167 / <i>Test Range Development</i>

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

Remarks

D. Acquisition Strategy
N/A

E. Performance Metrics
N/A

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604165D8Z / <i>Prompt Global Strike Capability Development</i>	Project (Number/Name) P168 / <i>OSD CPGS Studies</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
P168: <i>OSD CPGS Studies</i>	31.245	5.600	3.440	3.562	-	3.562	3.398	5.000	4.027	4.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

The FY 2015 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 of 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. 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. Program timing will be driven by the outcome of flight test events and DoD budgets. In FY 2015, funding for the individual service initiatives 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 2013	FY 2014	FY 2015
Title: OSD CPGS Studies	5.600	3.440	3.562
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, measures to avoid conventional missile launch ambiguity. Finally, it supports administrative activities associated with the management and execution of this PE.			
FY 2013 Accomplishments:			
<ul style="list-style-type: none"> - Initiated Command and control overlay study in parallel with planned CPGS Flight Tests - Initiated CPGS concept assessment of alternative technologies and associated costs - Conducted booster system integration studies - Conducted Warhead fusing studies - Continued thermal modeling and simulation 			
FY 2014 Plans:			
<ul style="list-style-type: none"> -Conduct mid-term demonstrations in support of AHW Flight Test 2 to include operational overlay -Continue Command and control overlay study in parallel with planned CPGS Flight Tests 			

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604165D8Z / <i>Prompt Global Strike Capability Development</i>	Project (Number/Name) P168 / <i>OSD CPGS Studies</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<ul style="list-style-type: none"> -Continue CPGS concept assessment of alternative technologies and associated costs -Continue booster system integration studies -Continue Warhead fusing and lethality studies -Continue thermal modeling and simulation <p><i>FY 2015 Plans:</i></p> <ul style="list-style-type: none"> - Conduct cost assessment studies for future system development - Conduct booster system integration studies - Conduct lethality and warhead fusing studies - Continue thermal modeling and simulation 			
Accomplishments/Planned Programs Subtotals	5.600	3.440	3.562

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

N/A

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400: Research, Development, Test & Evaluation, Defense-Wide I BA 5: System Development & Demonstration (SDD)	R-1 Program Element (Number/Name) PE 0604771D8Z I Joint Tactical Information Distribution System (JTIDS)
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
Total Program Element	16.775	18.336	17.423	17.562	-	17.562	15.667	15.908	15.851	14.945	Continuing	Continuing
771: Link-16 Tactical Data Link (TDL) Transformation	16.775	18.336	17.423	17.562	-	17.562	15.667	15.908	15.851	14.945	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

The FY 2015 OCO Request will be submitted at a later date.

A. Mission Description and Budget Item Justification

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. 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. 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.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense	Date: March 2014
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Appropriation/Budget Activity 0400: Research, Development, Test & Evaluation, Defense-Wide I BA 5: System Development & Demonstration (SDD)	R-1 Program Element (Number/Name) PE 0604771D8Z I Joint Tactical Information Distribution System (JTIDS)
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B. Program Change Summary (\$ in Millions)	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO	FY 2015 Total
Previous President's Budget	20.688	19.475	20.498	-	20.498
Current President's Budget	18.336	17.423	17.562	-	17.562
Total Adjustments	-2.352	-2.052	-2.936	-	-2.936
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Strategic Efficiency Reduction	-2.352	-2.052	-2.936	-	-2.936

Change Summary Explanation

1. Reductions reflect sequestration, taxes and other reductions to support program priorities within the USD(AT&L).

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
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Title: Common Joint Tactical Information Initiatives	18.336	17.423	17.562
FY 2013 Accomplishments:			
<ul style="list-style-type: none"> - Cyber Investment Management: Synchronized and coordinated cyberspace acquisition activities, conducted quantitative assessments, and ensured cyberspace investments align with Department priorities, required capabilities and evolving cyber threats. Provided support of the Cyber Investment Management Board and develop implementation guidance and associated direction. Planned and conducted 4 Cyber Investment Management Boards (CIMBs) chaired by USD AT&L. Captured the cyber investment portfolio and identified strategic cyber issues that will need future funding enabling acquisition control on the rapidly increasing Cyber demand. - Conducted analysis and technical assessment of FY14 \$4.561B DoD-wide Cyber investment structure, capabilities being developed and Cyber Mission Alignment through updated Cyber resource aggregation. - Completed investment analysis of the DoD-wide Cyber Special Access Program (SAP) portfolio. - Completed a cyber-rapid acquisition Process Pilot Plan to validate and refine the 'Rapid' and 'Deliberate' cyber acquisition processes stated in the Congressional Report Response to NDAA FY11, Section 933. - Developed initial Cybersecurity Guidebook for Program Managers. Documented mapping of the Risk Management Framework-related activities to the acquisition lifecycle. Assisted PM's in successfully implementing Cybersecurity Requirements at the optimal points throughout the systems acquisition lifecycle. 			

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense	Date: March 2014
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Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604771D8Z <i>I Joint Tactical Information Distribution System (JTIDS)</i>
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<ul style="list-style-type: none"> - Conducted technical analysis for the Cyber Situational Awareness Evaluation of Alternatives (SA EoA) to include senior systems engineering support to EoA study leadership, and analysis of applicable technologies and potential alternatives as well as acquisition programs and costs, to include metrics, methodology, and other associated activities. - Conducted a quantitative assessment of OCO capabilities for Phases 0/1 of military operations. - Joint Tactical Network Center: Provided comprehensive technical assessments of waveform enhancement strategies for SRW, WNW, MUOS and TTNT. Analyzed requirements of new waveforms, achievable throughput, scalability, anti-jam, LIP/LPD and spectral efficiency performance characteristics. Evaluated software communications architectures for relevance and support for waveform portability. - Beyond Line of Sight (BLOS) Analysis and Systems Engineering: Provided architectural guidance and technical analysis for BLOS communications in contested and denied environments consisting of a combination of SATCOM and aerial communications. Assessed communications performance in anti-jam, anti-access area denial environments. Improved ability to predict performance of network architectures and technologies and assess performance of directional apertures. - Protected SATCOM AoA Technical Expertise: Provided 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: Developed technology 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. Aerial roadmaps developed for air-air high capability transport and air-air tactical domains. Evaluated Army, Navy, Air Force system architectures for alignment with aerial networks roadmaps. - JTRS Waveform Assessments: Assessed waveforms (WNW, SRW, SINCGARS, HNW) for implementation and provided recommendations for ground force IP routing network architectures and interoperability with coalition partners. Provided technical risk analyses and test review recommendations for lowering cost and complexity and for ensuring tactical data link and ISR networks harmonization. - Ground Networking Roadmaps: Developed and maintained roadmaps to guide the evolution of ground networking radios and waveforms. Maintained roadmaps for lower echelon and brigade/backbone domains. Developed roadmap to address ground to space domain. Analyzed Army and Marine system architectures for brigade and MEB networks to align with roadmaps. - Maritime Networks: Developed roadmaps to guide the evolution of maritime radios, waveforms and networks. Addressed LOS ship-ship, ship-air and ship-space domains. Identified essential components, enabling technologies, program technology insertion opportunities and key investment decisions to achieve affordability and performance objectives. - Airborne Maritime Fixed (AMF) JTRS: Assessed the AMF program to include the risk of vendor selected radios. Conducted independent technical reviews and recommend program performance improvement options to meet cost, schedule and performance objectives. Provided a technical assessment of the network effects of a WNW airborne node. - FAB T: Provided programmatic analysis, technical reviews, and assessments of the FAB-T program and Presidential and National Voice Conferencing (PNVC) program to reduce development, integration, and procurement risks. Provided assessments and prepared for staffing Acquisition Strategy, DAB preparation, ADMs, and RFPs. 			

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Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604771D8Z <i>I Joint Tactical Information Distribution System (JTIDS)</i>
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<ul style="list-style-type: none"> - MUOS System End-to-End Integration: Developed comprehensive systems engineering, test and terminal certification plans. Assessed military standard/specifications and interface control documents for configuration management. Engineered the system to minimize efforts required to certify new MUOS end user terminals. Analyzed MUOS follow on alternatives in A2AD scenarios against sophisticated jamming adversaries. - SATCOM Common Systems Roadmap: Developed and Maintained roadmaps to guide the evolution of SATCOM common systems for a more resilient gateway infrastructure with lower operating costs and the ability to re-provision resources within minutes vice days and hours. Addressed gateway evolution and resource management domains. Developed a plan for integrating teleport, STEP and service gateway RF heads. - CDL Technology and Competition Assessment: Performed an assessment of the acquisition, standardization, testing, and governance processes for Common Data Links (CDL) in response to Congressional and internal DoD inquiries regarding the lack of CDL vendor competition. Provided an assessment of the aspects of CDL standards that have precluded robust vendor competition. Provided recommendations for CDLs going forward to achieve best balance of performance, cost, competition, and standardization. Identified existing contracts to determine the as-is state of the marketplace and identified upcoming contracts that provide opportunities for improved acquisitions. - Quantitative Capability Delivery Increments (QCDI)/FLOWNET: Developed and implemented 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: Conducted analyses of the technical maturity, performance and interoperability of products and systems undergoing evaluation in the Army's NIE. Evaluated the validity of formal test data from DoD sources and assess whether the data produce an accurate portrayal of the product and system's capability. Recommended priority courses of action with emphasis on best cost/performance delivery to the warfighter. - Joint C2 Portfolio Management: Supported development, integration and test activities across the Services, Agencies and Combatant Commands and deliver the FY14-19 version of the Joint C2 Sustainment and Modernization Plan. - Adaptive Planning and Execution (APEX): Provided management oversight of APEX acquisition activities and authoritative data sources as the APEX technical integrator. Developed first draft of the APEX technical architecture to include logistics and intelligence planning. Updated APEX data architecture and standards and developed technical and systems standards for APEX framework for application across DoD. - C2 Data: Provided technical expertise for ensuring C2 data are visible, accessible, understandable, trustable and interoperable. Updated the C2 data model and standards for inclusion into the National Information Exchange Model (NIEM). Updated the C2 Authoritative Data Source roadmap and developed a C2 data architecture. - Joint C2 Architecture: Provided the technical expertise necessary to update the Joint C2 Architecture to guide Joint C2 capability area development activities across the Services, Agencies and Combatant Commands. - C2 Analyses: Developed strategy to operationalize the U.S. and Allied research on C2 Agility, which recognizes that Commanders must articulate their C2 approach for any given military operation. Formed closer ties among the C2 research, analysis and operational communities and enhanced the state of C2 practice significantly. 			

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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
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<p>- Space Situational Awareness: Conducted Geo SSA architectural analysis and technical assessment of Alternative Sources of GEO SSA. Conducted technical analysis on emerging and existing technologies and capabilities that could be used to implement the GEO SSA strategy. Developed technology roadmaps and investment strategies. Provided Technical Analysis & Assessment of DoD Use of Foreign/Non-traditional SSA Sensors in support of DoD SSA data strategy.</p> <p>- Space Access: Conducted technical assessment and developed DoD inputs to National Rocket Propulsion Strategy (NRPS). Conducted net centric review/technical assessment of Space lift Range; Developed Space Ranges Roadmap & Enterprise Strategy for capabilities through 2025. Conducted technical assessment and net centric review of DoD Satellite Operations (SATOPS) enterprise.</p> <p>- Environmental Monitoring: Developed DoD inputs for annual Federal Plan for Meteorological Services and Supporting Research; led METOC Data Denial Implementation team; conducted technical analysis in support of Defense Weather AoA; conducted 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.</p> <p>- Non-Intelligence Space Programs Technical Assessments: Conducted non-intelligence space program technical reviews, to include data strategies, systems engineering, risks and mitigations. Supported acquisition decisions for weather satellite follow-on, JMS, and Launch Vehicle New Entrants.</p> <p>- PNT Technical Assessments: Conducted technical 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. Assessed high risk areas and developed mitigation strategies for cost effective delivery of capabilities. Developed initial roadmap for better synchronization of PNT programs and capabilities and for implementation of GPSEM/PNT Assurance AoA recommendations.</p> <p>- Space Control/Space C2: Conducted Space Protection Architectural Analysis; Improved Strategy and Roadmap for Space Control Mission area through 2025. Supported IIPT, OIPT, and DAB decisions on the JSpOC Mission System (JMS) program. Directed increased cyber testing of JMS program.</p> <p>- Space Protection: Conducted Space Protection Architectural Analysis; Implemented Enterprise Strategy & Roadmap for Space Control Mission area through 2025, conducted analysis to support Biennial update to Space Protection Strategy.</p> <p>- Defensive Space Control: Conducted analysis on next generation RAIDRS to enhance the enterprise architecture.</p> <p>FY 2014 Plans:</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. Continue to plan and conduct CIMB/CCT meetings to refine the cyber investment portfolio and to identify strategic cyber issues the DoD will face in the future.</p>			
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<ul style="list-style-type: none"> - Refine the Cyber investment portfolio results to include return on investment and risk ultimately leading to an optimization phase focusing on process improvement. - Conduct investment analysis of the DoD-wide Cyber Special Access Program (SAP) portfolio to include return on investment and risk. - Conduct Cyber Rapid Acquisition Process Pilots to allow insight into timelines and potential areas of improvement for new rapid cyber acquisition processes. - Utilize the results of the Process Pilots to implement the new rapid cyber acquisition processes across DoD. - Complete development and implementation of Cybersecurity Guidebook for Program Managers. Contribute to any follow on efforts to revise policy or guidance regarding Cybersecurity within the Acquisition process. - Complete the Cyber Situational Awareness EoA (phase I) and commence work on phase II with a focus on Defend the Nation (DTN). - Define future Cyber Range Enterprise and the need for an Executive Agent. Conduct technical analysis and assessment of cyber range capabilities and capacity versus need. Develop DoD Cyber Range strategy, working with T&E and DOT&E and JS. - Conduct technical analysis to determine tools necessary to help collect, measure, assess DCO/OCO effectiveness and suitability in a Cyber Range Environment. - Complete a quantitative assessment of OCO capabilities for Phases 0/1 of military operations; repeat process for phases 2 and 3. - Conduct OCO Requirements and Architecture Analysis: support flow of requirements from Cyber Attack ICD to more detailed requirements for OCO capabilities; develop and refine OCO architectures. - 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. - CDL Principal Staff Assistant: Coordinate with CDL Executive Agent to develop a technology roadmap and terminal database to improve interoperability, configuration management, and focused technology investments. Develop documentation for Remote Video Terminal (RVT) waveforms to enable competition of CDL procurements. Develop transition strategy to converge on a DoD standard for tactical ISR communications. - Protected SATCOM AoA: Conduct analysis necessary to ensure the Department of Defense (DoD) pursues the most suitable alternative for providing space-based protected satellite communications services. The goal of the AoA is to facilitate high caliber analysis, fair treatment of options, and decision-quality outcomes to inform the MDA at the next Milestone and shape/scope the RFP for the next acquisition phase- 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. - FAB T: Provide programmatic analysis, technical reviews, and assessments of the FAB-T program and Presidential and National Voice Conferencing (PNVC) program to reduce development, integration, and procurement risks. Provide assessments and 			

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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<p>prepared for staffing Acquisition Strategy, Milestone C DAB preparation, ADMs, ICE, APB, TEMP, and SEP as well as other acquisition documents.</p> <ul style="list-style-type: none"> - Handheld, Manpack, and Small Form Fit (HMS) JTRS: Assess the HMS program to include the risk of vendor selected radios (Modified Non-Developmental Item). Conduct independent technical reviews and recommend program performance improvement options to meet cost, schedule and performance objectives. Provide a technical assessment of full and open competition process for both Rifleman and Manpack radios. - Mid-Tier Networking Vehicular Radio (MNVR) JTRS: Assess the AMNVR program to include the risk of vendor selected radios (Modified Non-Developmental Item). Conduct independent technical reviews and recommend program performance improvement options to meet cost, schedule and performance objectives. Provide a technical assessment of full and open competition process for MNVR radios. - 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. - Aerial Networks Roadmaps and Systems Engineering: 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. - Ground Tactical Networks Advanced Capabilities: Develop narrowband capability to enable dismounted troops to operate in jungle canopy, support agile division-wide task reorganization and close air support while reducing network management forward support footprint. - Integrated Electromagnetic Spectrum Operations (EMSO): Build technical development strategy for co-architecting Electronic Warfare (EW) and radio devices to enable integrated EMSO to improve EM battlespace awareness, ensure agile response to changing adversary threats and reduce costs of combined capabilities. - Warfighter Information Network - Tactical (WIN-T) Assess complexity of Soldier Network Extension (SNE) and Point of Presence (PoP) to address complexity and usability issues identified during operational testing. Identify applications to improve the company commander's effectiveness in using SATCOM terminals in the SNE. - Joint C2 Portfolio Management: Support development, integration and test activities across the Services, Agencies and Combatant Commands and deliver the FY15-20 version of the Joint C2 Sustainment and Modernization Plan. - 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 better integrate operational, logistics and intelligence planning with force projection and execution. Update APEX data architecture and standards and synchronize with APEX framework for application across DoD. 			

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense	Date: March 2014
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Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604771D8Z <i>I Joint Tactical Information Distribution System (JTIDS)</i>
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<p>- C2 Data: Provide technical expertise for ensuring C2 data are visible, accessible, understandable, trustable and interoperable. Provide technical assessment and assistance for implementation of National Information Exchange Model (NIEM)-based information exchanges across the DoD. Update the C2 Authoritative Data Source roadmap and update C2 data architecture.</p> <p>– Joint C2 Architecture: Provide technical direction and management oversight for the update the Joint C2 Architecture to guide Joint C2 capability area development activities across the Services, Agencies and Combatant Commands.</p> <p>– C2 Analyses: 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.</p> <p>– 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.</p> <p>-Space Access: conduct limited review of National Security Space Access and Space Range Roadmap; conduct SATOPS modernization assessment; conduct AFSCN Event-driven Net Centric Review/Technical Assessment.</p> <p>– 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</p> <p>– Space Control/Space C2/SSA: Complete GEO SSA Architectural/Cost-Benefit Analysis;; 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;; Evaluate and update as necessary Enterprise Strategy & Roadmap for Space Control Mission Area.</p> <p>– Non-Intelligence Space Programs Technical Assessments: Perform cyber vulnerability assessments on space, PNT, and METOC programs, including JMS, GPS, OCX, AFSCN, MGUE and others. Review system design documents, control plans, remote management control ports and methods. Recommend corrective actions to specific space, PNT, and METOC programs to address cyber vulnerabilities and to inform milestone decisions. Conduct non-intelligence space program technical reviews on to include data strategies, systems engineering, risks and mitigations. Support acquisition milestone decisions for programs including weather satellite follow-on, Launch Vehicle New Entrants, and SSBS follow-on activities.</p> <p>– 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.</p> <p>– PNT Portfolio Management: Implement GPSEM/PNT Assurance Investment Strategy and Roadmap, ensuring AoA recommendations are addressed. Implement NAVWAR Investment Strategy and Roadmap as well as material in support of major program milestones and internal OSD reviews.</p> <p><i>FY 2015 Plans:</i></p>			

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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<ul style="list-style-type: none"> - 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. Continue to plan and conduct CIMB/CCT meetings to refine the cyber investment portfolio and to identify strategic cyber issues the DoD will face in the future. - Refine the Cyber investment portfolio results, ensuring return on investment and risk ultimately leading to an optimization phase focusing on process improvement is included. - Conduct investment analysis of the DoD-wide Cyber Special Access Program (SAP) portfolio to include return on investment and risk. - Utilize the results of the Cyber Rapid Acquisition Process Pilots to implement the new rapid cyber acquisition processes across DoD, ensuring DoD Acquisition Policy is updated to reflect processes. - Manage Cybersecurity Guidebook for Program Managers. Contribute to any follow on efforts to revise policy or guidance regarding Cybersecurity within the Acquisition process. - Oversee implementation of the Cyber Situational Awareness EoA (phase I and II) recommendations. - Implement DoD Cyber Range strategy, working with T&E and DOT&E and JS. - Conduct technical analysis to determine tools necessary to help collect, measure, assess DCO/OCO effectiveness and suitability in a Cyber Range Environment. - Complete a quantitative assessment of OCO capabilities for Phases 0/1 of military operations; repeat process for phases 2/3. - Conduct OCO Requirements and Architecture Analysis: support flow of requirements from Cyber Attack ICD to more detailed requirements for OCO capabilities; develop and refine OCO architectures. - C4ISR Acquisition: Provide technical assessments and programmatic recommendations across C4ISR functional areas to address interoperability gaps and work early in the systems engineering - QCDI/FLONET: 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. - 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. - 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 - Handheld, Manpack, and Small Form Fit (HMS) JTRS: Assess the HMS program to include the risk of vendor selected radios (Modified Non-Developmental Item). Conduct independent technical reviews and recommend program performance improvement 			

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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<p>options to meet cost, schedule and performance objectives. Provide a technical assessment of full and open competition process for both Rifleman and Manpack radios.</p> <ul style="list-style-type: none"> - Mid-Tier Networking Vehicular Radio (MNVR) JTRS: Assess the AMNVR program to include the risk of vendor selected radios (Modified Non-Developmental Item). Conduct independent technical reviews and recommend program performance improvement options to meet cost, schedule and performance objectives. Provide a technical assessment of full and open competition process for MNVR radios. - All JTRS(HMS, MNVR, AMF, JTN)Programs - Provide assessments of program compliance with IT related acquisition policy, in accordance with DoD Series 5000 and applicable senior management direction. Assess readiness for major acquisition program milestone reviews, to include adequate documentation of compliance with statute/regulation/policy associated with acquisition program oversight. Provide programmatic recommendations regarding cost/schedule/performance tradeoffs. - Ground Tactical Networks Advanced Capabilities: Mature narrowband dismounted communications capability with radio hardware prototype, robust modeling and simulation, and reusable software code. Form industry engagement to promote transition into non-developmental item radios. - Integrated Electromagnetic Spectrum Operations (EMSO): Track implementation of iEMSO strategy in radio and EW device development plans. Assess and down-select technical interoperability and architectural approaches. Ensure adequate funding and testing to assess maturity of solutions. - Tactical Data Link Modernization: Lay in Department governance structure to collectively guide modernization of key TDLs challenges in alignment with AT&L Aerial Networking communications technology roadmap to address A2AD and advanced threats. Build joint system engineering organization structure to support deep technical analysis of performance and cost trades and promote more rapid adoption of TDL improvements across Components. - Warfighter Information Network – Tactical (WIN-T): Provide analysis of WIN-T voice, video and data performance during final operational testing and evaluation. Ensure system meets requirements thresholds and determine any external conditions or internal components that significantly affect packet completion ratios, throughput, latency and jitter. - 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. - Joint C2 Portfolio Management: Support development, integration and test activities across the Services, Agencies and Combatant Commands and deliver the FY16-21 version of the Joint C2 Sustainment and Modernization Plan. - 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 better integrate operational, logistics and intelligence planning with force projection and execution. Update APEX data architecture and standards and synchronize with APEX framework for application across DoD. 			

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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<ul style="list-style-type: none"> - C2 Data: Provide technical expertise for ensuring C2 data are visible, accessible, understandable, trustable and interoperable. Provide technical assessment and assistance for implementation of National Information Exchange Model (NIEM)-based information exchanges across the DoD. Update the C2 Authoritative Data Source roadmap and update C2 data architecture. - Joint C2 Architecture: Provide technical direction and management oversight for the update the Joint C2 Architecture to guide Joint C2 capability area development activities across the Services, Agencies and Combatant Commands. - C2 Analyses: 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. - Friendly Force Tracking/ Combat Identification: Provide technical assessment, assistance and recommendations for achieving Mode 5 IFF IOC and FOC. Provide technical support to NATO C3B Capability Panel on Combat Identification. Ensure that NATO Standardized Agreement (STANAG) 4193 incorporate changes necessary for compatibility / interoperability with DoD Mode 5 technical standards. - 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. - Space Access: Oversee implementation of for National Security Space Access & Space Range Roadmap; conduct SATOPS Modernization technical assessments; provide technical Oversight/AFSCN Modernization Implementation. - Space Access: Develop EELV New Entrant Strategy/Technical Assessment & Cost Benefit Analysis/Potential AoA for EELV follow-on; develop implementation plan for National Security Space Access & Space Range Roadmap; conduct SATOPS Modernization technical assessments; 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; Update as required METOC/Weather Enterprise Strategy and Roadmap and oversee implementation of 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; Evaluate and update as necessary Enterprise Strategy & Roadmap for Space Control Mission Area. - Non-Intelligence Space Programs Technical Assessments: Perform cyber vulnerability assessments on space, PNT, and METOC programs, including EELV, SBSS Follow on, Space Fence, and others. Review system design documents, control plans, remote management control ports and methods. Recommend corrective actions to specific space, PNT, and METOC programs to address cyber vulnerabilities and to inform milestone decisions. Conduct non-intelligence space program technical reviews on to include data strategies, systems engineering, risks and mitigations. Support acquisition milestone decisions for programs including weather satellite follow-on, Launch Vehicle New Entrants, and SSBS follow-on activities. 			

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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<ul style="list-style-type: none"> - 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 GPSEM/PNT Assurance Investment Strategy and Roadmap, ensuring AoA recommendations are addressed. 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. - PNT Strategy: Develop enterprise level acquisition strategies & policies in relation to PNT. Oversee implementation and compliance of the GPS Security Policy. 			
Accomplishments/Planned Programs Subtotals	18.336	17.423	17.562

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

N/A

Remarks

E. Acquisition Strategy

In executing JTDL tasking, existing fixed-price and cost-plus contracts will be utilized.
 -Program 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 of associated technology development and Major Defense Acquisition Programs (MDAPS) and Major Automated Information Systems (MAIS).

Measures:

- Key milestones completed for major net-centric acquisitions
- Number of major systems successfully completing net-centric critical performance reviews

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0605022D8Z I <i>Defense Exportability Program</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
Total Program Element	1.915	1.655	3.750	3.244	-	3.244	3.295	3.391	3.267	3.143	Continuing	Continuing
P013: <i>Defense Exportability Features (DEF) Program</i>	1.915	1.655	3.750	3.244	-	3.244	3.295	3.391	3.267	3.143	Continuing	Continuing

The FY 2015 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.

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Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0605022D8Z I <i>Defense Exportability Program</i>
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B. Program Change Summary (\$ in Millions)	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO	FY 2015 Total
Previous President's Budget	1.859	3.763	3.786	-	3.786
Current President's Budget	1.655	3.750	3.244	-	3.244
Total Adjustments	-0.204	-0.013	-0.542	-	-0.542
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Strategic Efficiency Reduction	-	-	-0.542	-	-0.542
• FFRDC	-	-0.013	-	-	-
• Other Reductions	-0.204	-	-	-	-

Change Summary Explanation

FY 2013 from the previous President's Budget submission is predominately due to general Congressional and sequestration reductions and the Small Business Innovation Research (SBIR) transfer.

FY 2015 decrease is a result of efficiencies identified to incorporate exportability features during research and development of programs.

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense										Date: March 2014		
Appropriation/Budget Activity 0400 / 5					R-1 Program Element (Number/Name) PE 0605022D8Z / Defense Exportability Program				Project (Number/Name) P013 / Defense Exportability Features (DEF) Program			
COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
P013: Defense Exportability Features (DEF) Program	1.915	1.655	3.750	3.244	-	3.244	3.295	3.391	3.267	3.143	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

The FY 2015 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 FY15 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)

Title: Defense Exportability Features (DEF) Program	FY 2013	FY 2014	FY 2015
	1.655	3.750	3.244
FY 2013 Accomplishments: Designate the following eight systems as DEF pilot programs: - Armed Aerial Scout Helicopter (US Army)			

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0605022D8Z / <i>Defense Exportability Program</i>	Project (Number/Name) P013 / <i>Defense Exportability Features (DEF) Program</i>
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<ul style="list-style-type: none"> - 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) - Next Generation Jammer (US Navy) <ul style="list-style-type: none"> - 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 ExportabilityPilot 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 or continue contracts for DEF feasibility studies on the following fifteen 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) 			

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0605022D8Z / <i>Defense Exportability Program</i>	Project (Number/Name) P013 / <i>Defense Exportability Features (DEF) Program</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<ul style="list-style-type: none"> - Indirect Fires Protection Capability (US Army) - Integrated Air and Missile Defense (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) - Small Diameter Bomb II (US Air Force) - MQ-9 Reaper Unmanned Aircraft System (US Air Force) - MQ-4C Triton formerly Broad Area Maritime Surveillance (US Navy) - Next Generation Jammer (US Navy) - Three-Dimensional Expeditionary Long-Range Radar (US Air Force) - Common Joint Proximity Height of Burst Fusing (US Army) - Common Infrared Countermeasures (US Army) <ul style="list-style-type: none"> - Review of major defense acquisition programs for exportability as part of the major milestone review process. - Identify new pilot candidates. - 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 recoument 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. -Draft a legislative amendment adjusting the government/contractor cost-sharing ratio from 50%-50 to an "appropriate share." <p>The focus for FY 2014 for the DEF pilot program will be to execute feasibility studies for FY 2013 pilot programs that have yet to receive DEF funding, and to review the next phases on FY 2012-13 DEF pilot programs. As with the FY 2013 programs, FY 2014 feasibility studies will define the required actions for implementing DEF and assess the potential costs of those actions. OUSD (AT&L) will engage with program offices through the Military Departments, and serve as a liaison among the program offices, the Military Departments, and other Technology Security and Foreign Disclosure offices to facilitate the feasibility studies. For pre-MS A systems, the DEF feasibility studies will be addressed in the Technology Development Strategy and the Program Protection Plan (PPP). For the systems that are in the pre-MS B development stage, the DEF feasibility studies will be addressed in the Acquisition Strategy and the PPP. For Post-MS B platforms, when there is already a contract in place, OUSD (AT&L) will work with the program managers and contracting officers to implement the necessary contractual modifications to ensure that the feasibility studies are executed. Depending on the maturity of each program and where it is in the acquisition life cycle, the feasibility studies may be addressed in the Requests for Proposals (RFPs).</p>			

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0605022D8Z / <i>Defense Exportability Program</i>	Project (Number/Name) P013 / <i>Defense Exportability Features (DEF) Program</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<p>OUSD (AT&L) will conduct a follow-up industry round-table meeting to discuss the DEF concept, capture government and industry perspectives, and to identify further corresponding government and industry strategic choices. Government and industry participants will also identify mutual risks and challenges in implementing defense exportability features, and identify legislative, regulatory, or policy change proposals. This will take place in the spring of 2014.</p> <p>OUSD (AT&L) will continue to develop recommended procedures and guidance to be incorporated in the DAG regarding incorporating DE business case analyses into contract and acquisition strategies, as well as procedures to cost share DEF implementation with industry and recoupment of these costs through foreign sales. OUSD (AT&L) will also develop policies and processes to identify additional DoD funding sources for the next phases of DEF activities, as well as cost-sharing with contractors for the initial and follow-on research and development costs of DEF pilot programs, in accordance with Section 252 of the NDAA for FY 2012.</p> <p>FY 2015 Plans:</p> <ul style="list-style-type: none"> - Funding was increased in FY15 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 or continue contracts for DEF feasibility studies on the following fifteen 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) - Integrated Air and Missile Defense (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) - Small Diameter Bomb II (US Air Force) - MQ-9 Reaper Unmanned Aircraft System (US Air Force) - MQ-4C Triton formerly Broad Area Maritime Surveillance (US Navy) - Next Generation Jammer (US Navy) - Three-Dimensional Expeditionary Long-Range Radar (US Air Force) - Common Joint Proximity Height of Burst Fusing (US Army) - Common Infrared Countermeasures (US Army) 			

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0605022D8Z / <i>Defense Exportability Program</i>	Project (Number/Name) P013 / <i>Defense Exportability Features (DEF) Program</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<ul style="list-style-type: none"> - Review of major defense acquisition programs for exportability as part of the major milestone review process. - Identify new pilot candidates. - 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	1.655	3.750	3.244

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

N/A

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity					R-1 Program Element (Number/Name)							
0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 5: System Development & Demonstration (SDD)</i>					PE 0605027D8Z I OUSD(C) IT Development Initiative							
COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
Total Program Element	14.501	6.267	6.788	6.500	-	6.500	6.000	3.000	-	-	-	-
927: <i>Next Generation Resource Management System</i>	14.501	6.267	6.788	6.500	-	6.500	6.000	3.000	-	-	-	-

The FY 2015 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)	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO	FY 2015 Total
Previous President's Budget	7.010	6.788	6.500	-	6.500
Current President's Budget	6.267	6.788	6.500	-	6.500
Total Adjustments	-0.743	-	-	-	-
• Congressional General Reductions	-0.571	-	-	-	-
• Congressional Directed Reductions	-	-	-	-	-
• Congressional Rescissions	-	-	-	-	-
• Congressional Adds	-	-	-	-	-
• Congressional Directed Transfers	-	-	-	-	-
• Reprogrammings	-	-	-	-	-
• SBIR/STTR Transfer	-0.169	-	-	-	-
• Other Program Adjustments	-0.003	-	-	-	-

Change Summary Explanation

FY2013 adjustment for Sequestration (-\$0.571), SBIR/STTR Transfer (-\$.169), and other program adjustments (-\$.003).

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400 / 5					R-1 Program Element (Number/Name) PE 0605027D8Z / OUSD(C) IT <i>Development Initiative</i>				Project (Number/Name) 927 / Next Generation Resource <i>Management System</i>			
COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
927: Next Generation Resource Management System	14.501	6.267	6.788	6.500	-	6.500	6.000	3.000	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

The FY 2015 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.

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014		
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0605027D8Z / OUSD(C) IT Development Initiative	Project (Number/Name) 927 / Next Generation Resource Management System		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2013	FY 2014	FY 2015
<p>Title: Next Generation Resource Management System</p> <p>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.</p> <p>FY 2013 Accomplishments: Program Management Office Performance 1QFY 2013-4Q FY2013. Acquisition documentation development and finalization 1Q FY 2013-2Q FY 2013. MDD 2QFY2013 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 BPR 4Qfy2013 Solicitation documentation development and approval 4QFY2013</p> <p>FY 2014 Plans: Continue Program Management Office 1QFY 2014-4Q FY2014. Milestone A 1QFY2014 RFP Release 1QFY2014. Solicitation Phase 1QFY2014 Evaluation Phase 1QFY2014 - 2QFY2014 Contract Award 4QFY2014 Post Award Activities 4QFY2014</p> <p>FY 2015 Plans: Continue Program Management Office 1QFY 2015-4Q FY2015. MSB 1QFY2015 Increment 1.0 Developmnet,review and acceptance 1QFY2015-1QFY2016</p>		6.267	6.788	6.500
Accomplishments/Planned Programs Subtotals		6.267	6.788	6.500
C. Other Program Funding Summary (\$ in Millions)				
N/A				

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0605027D8Z / OUSD(C) IT <i>Development Initiative</i>	Project (Number/Name) 927 / Next Generation Resource <i>Management System</i>

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

Remarks

D. Acquisition Strategy

Analysis of the Alternatives (AoA) Revisions 1Q FY 2013
MDD 2QFY2013
Business Process Reengineering 4QFY2013
Conduct Market Investigation 2QFY 2013
Finalize market investigation 2QFY2013
MSA 1QFY2014
RFP Release 1QFY2014
Contract Award 4QFY2014
MSB 1QFY2015
Increment 1 development and acceptance 1QFY2015-1QFY2016
Increment 2 development and acceptance 3QFY2016 - 3QFY017
Increment 3 development and acceptance 3QFY2017 - 3QFY2018
Once infrastructure in place, competitive contracts in the out years for individual services/applications.

E. Performance Metrics

N/A

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0605075D8Z I DCMO Policy and Integration
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
Total Program Element	27.594	22.429	19.969	19.351	-	19.351	16.227	16.499	16.258	16.158	Continuing	Continuing
075: <i>DCMO Policy and Integration</i>	27.594	22.429	19.969	19.351	-	19.351	16.227	16.499	16.258	16.158	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

The FY 2015 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), develops or acquires tools, and pilots activities for technology, policies and processes 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.

B. Program Change Summary (\$ in Millions)

	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015 Base</u>	<u>FY 2015 OCO</u>	<u>FY 2015 Total</u>
Previous President's Budget	25.269	22.297	25.135	-	25.135
Current President's Budget	22.429	19.969	19.351	-	19.351
Total Adjustments	-2.840	-2.328	-5.784	-	-5.784
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-2.124	-2.200			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.716	-			
• Efficiencies savings	-	-	-5.784	-	-5.784
• FFRDC	-	-0.128	-	-	-

Change Summary Explanation

In FY 2013 -\$2.124M reductions were due to statutory Sequestration.
 In FY2013 -\$0.716M reduction due to SBIR/STTR.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense	Date: March 2014
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Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0605075D8Z I DCMO Policy and Integration
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Congressional Mark -2.200 and FFRDC -.128
 Note: FY 2015 Efficiencies savings of -\$5.784M

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

	FY 2013	FY 2014	FY 2015
<p>Title: DCMO Policy and Integration</p> <p>FY 2013 Accomplishments: Developed and employed Integrated Business Enterprise Architecture (BEA)</p> <ul style="list-style-type: none"> • Continued evolution of the BEA to meet the 2012 NDAA direction to effectively guide, constrain and permit implementation of interoperable defense business system solutions. • Evaluated 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"> • Completed mapping Procure-to-Pay (P2P) process mapping; continue Hire-to-Retire (H2R) process mapping; began mapping Budget-to-Report (B2R) as directed by the Defense Business Systems Management Committee (DBSMC). • Provided 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. • Deployed and baseline the latest version of the BEA. <p>Enterprise Information Webs (EIWs)</p> <ul style="list-style-type: none"> • Utilized the Initial Operational Capabilities (IOC) of Human Resources (HR) EIW capability to serve as the basis for future EIW releases and transformed it into a Business Intelligence capability using commercially available software. In future years this will be as known Business Intelligence. • Via the BEA, continued to manage Enterprise Data standards to include existing standards and emerging standards such as the Procurement Data Standard (PDS), the Standard Line of Accounting (SLOA), etc. <p>Tools Development</p> <ul style="list-style-type: none"> • Established 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. • Developed and deployed services and support for automated BEA and architecture compliance using federation technologies for enabling compliance. • Expanded the role of the BEA to validate and apply viable semantic capabilities to serve the ODCMO and DoD Enterprise and Federal reporting requirements. 	22.429	19.969	19.351

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense	Date: March 2014
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Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0605075D8Z I DCMO Policy and Integration
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<ul style="list-style-type: none"> • Developed, coordinated and promulgated policies in support of DoD business operations which will uniformly ensure efficiency and consistency. • Used the BEA to guide and constrain investment in Information Technology (IT) business systems, to maintain fidelity of existing systems, and to develop new capabilities that translate these results to an executable Enterprise Transition Plan (ETP). • Coordinated coupling between BEA and ETP business systems' development and deployment milestones. • Provided resources and tools to update milestones, measure guidance, related templates and workbooks to be included in the ETP and reports to Congress. • Developed and deployed tools to further the support of DCMO and Business Mission Systems oversight and minor pilot capabilities. <p>BEA Standards</p> <ul style="list-style-type: none"> • Enabled 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. • Served as 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. <ul style="list-style-type: none"> • Collaborated 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. • Provided input to analyze progress against business system milestones and document analysis in the Congressional Report on Defense Business Operations. • Encouraged 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). • Enabled deployment of Enterprise Resource Planning (ERP) tools consistent with evolving BEA direction and guidance. • Assessed and respond to DoD Component CIO Evaluation Scorecard. • Provided input to support Acquisition Oversight requirements of Major Automated Information Systems (MAIS). • Collaborated with the Federal Chief Technology Officer (CTO) and Federal CIO in support of Federal Reporting and Performance Initiatives. • Supported IT Business Acquisition Oversight by providing technical standards and real time support to Investment Review Boards (IRBs). <p>Acquisition Accountability Office for Afghanistan (AAOA)</p> <ul style="list-style-type: none"> • Focus areas for AAOA and Adaptive Logistics Network (ALN) was a continuation of identifying business process gaps and supporting the institutionalization of process improvements. Key activities included oversight in capturing lessons learned and 			

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense	Date: March 2014
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Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0605075D8Z I DCMO Policy and Integration
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<p>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> <p>FY 2014 Plans: BEA Compliance, Standards, and DCMO Tools Implementations</p> <ul style="list-style-type: none"> • Design, develop and deploy a restructured BEA application and information resource capability that provides more efficient and effective execution of DCMO Section 2222 of Title 10, U.S.C. responsibilities for the Defense BEA. • Enable innovation through utilization of technology to support more and better alignment of business operations for the Department. Innovations will support the strategic E2E BEA view of operations to include resources, processes and technologies. • Further develop and implement the technology strategy to improve the articulation of business strategy, requirements and performance metrics and strengthen outreach to DoD and Federal business stakeholders, decision makers and civilian and commercial business leaders. • Collaborate with DoD CIO regarding interoperability and data requirements and Joint Information Environment (JIE) alignment, implementation and compliance methods and information sharing standards for the BMA. • 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 implementing open standards and enterprise level applications. • Enable deployment of ERP tools consistent with evolving BEA direction and guidance. • Provide input to support Acquisition Oversight requirements of MAIS. • Collaborate with the Federal CTO and Federal CIO in support of Federal Reporting and Performance Initiatives. • Support IT Business Acquisition Oversight by providing technical standards and real time BEA compliance reporting and analytical support to IRBs. • Design, develop and deploy tools for management of business system problem statements, support to Combatant Commanders (COCOMS) in support of their business systems, pilots to support process and policy change in the business mission area and oversight tools for DCMO. <p>FY 2015 Plans: BEA Compliance, Standards, and DCMO Tools Implementations</p> <ul style="list-style-type: none"> • Continue with design and deploy a restructured BEA application and information resource capability that provides more efficient and effective execution of DCMO Title 10 Section 2222 responsibilities for Defense Business Enterprise Architecture. • Continue with innovative utilization of technology to support more and better alignment of business operations for the Department. Innovations will support the strategic E2E BEA view of operations to include resources, processes and technologies. 			

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense	Date: March 2014
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Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0605075D8Z I DCMO Policy and Integration
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<ul style="list-style-type: none"> • Further develop and implement the technology strategy to improve articulation of business strategy, requirements and performance metrics, strengthening outreach DoD and Federal business stakeholders, decision makers and civilian and commercial business leaders. • Collaborate with DoD CIO regarding interoperability and data requirements and JIE alignment, implementation and compliance methods and information sharing standards for the BMA. • Provide input to analyze progress against business system milestones and document analysis in the Congressional Report on Defense Business Operations, continue development and enhancement of tools necessary for oversight of the BMA. • Encourage the evolution of architecture and data standards in support of DoD requirements and processes for implementing open standards and enterprise level applications. • Enable deployment of ERP tools consistent with evolving BEA direction and guidance. • Provide input to support Acquisition Oversight requirements of MAIS and complete tool development for DCMO's role in acquisition oversight. • Collaborate with the CTO and Federal CIO in support of Federal Reporting and Performance Initiatives. • Support IT Business Acquisition Oversight by providing technical standards and real time BEA compliance reporting and analytical support to IRBs. • Design, develop and deploy tools for the evolving and changing emphasis in oversight of the BMA with continued emphasis on support to policy and process change and technology insertion. Continue to operate and deploy pilot activities and tools in the BMA. 			
Accomplishments/Planned Programs Subtotals	22.429	19.969	19.351

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

N/A

Remarks

E. Acquisition Strategy

N/A

F. Performance Metrics

Section 2222 of Title 10, USC required that a single Business Mission Area (BMA) Investment Review Board (IRB) be established. As part of the stand-up of this single IRB, Principal Staff Assistant (PSA) are charged with developing Functional Strategies, which specify required business outcomes for the department. These business outcomes are then incorporated into the department's Business Enterprise Architecture (BEA), under the oversight and direction of the Defense Business Council. This metric measures the incorporation of the PSA identified business outcomes into the BEA. FY 2013 Goal: 70% of PSA Functional Strategy based business outcomes

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity	R-1 Program Element (Number/Name)
0400: <i>Research, Development, Test & Evaluation, Defense-Wide / BA 5: System Development & Demonstration (SDD)</i>	PE 0605075D8Z / <i>DCMO Policy and Integration</i>

incorporated into the BEA. FY 2014 Goal: 80% of PSA Functional Strategy based business outcomes incorporated into the BEA. FY2015 Goal: 90% of PSA Functional Strategy based business outcomes incorporated into the BEA.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0605210D8Z / <i>Defense-Wide Electronic Procurement Capabilities</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
Total Program Element	14.408	26.580	6.184	9.546	-	9.546	9.459	8.664	9.245	9.986	Continuing	Continuing
P*021: <i>Defense-Wide Electronic Procurement Capabilities-Contingency</i>	9.761	26.580	6.184	9.546	-	9.546	9.459	8.664	9.245	9.986	Continuing	Continuing
P*022: <i>SPOT -ES Contingency</i>	4.647	-	-	-	-	-	-	-	-	-	Continuing	Continuing

The FY 2015 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)

	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015 Base</u>	<u>FY 2015 OCO</u>	<u>FY 2015 Total</u>
Previous President's Budget	10.238	6.184	11.178	-	11.178
Current President's Budget	26.580	6.184	9.546	-	9.546
Total Adjustments	16.342	-	-1.632	-	-1.632
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• FY 13 CMS Program Congressional Add	16.342	-	-	-	-
• Reduction Adjustments	-	-	-1.632	-	-1.632

Change Summary Explanation

Ref \$16.342M adjustment- In FY13 the Consolidated and Further Continuing Appropriations Act of 2013, signed by the President on March 26, 2013, included a FY13 RDT&E plus up for the Contract Management Services Program this was a one time congressional add for an Ability One Contract Closeout effort that was initiated as a pilot in FY11. The CMS Program increase is to expand the pilot program to close out services for cost-type contracts, and a portion is to be used

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity	R-1 Program Element (Number/Name)
0400: <i>Research, Development, Test & Evaluation, Defense-Wide / BA 5: System Development & Demonstration (SDD)</i>	PE 0605210D8Z / <i>Defense-Wide Electronic Procurement Capabilities</i>

to sustain existing AbilityOne closeout support teams. This funding plus up is not related to the Defense Electronic Procurement dollars however the funds were placed here because AT&L/DPAP does not own another RDT&E PE.

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0605210D8Z / <i>Defense-Wide Electronic Procurement Capabilities</i>	Project (Number/Name) P*021 / <i>Defense-Wide Electronic Procurement Capabilities- Contingency</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
P*021: <i>Defense-Wide Electronic Procurement Capabilities-Contingency</i>	9.761	26.580	6.184	9.546	-	9.546	9.459	8.664	9.245	9.986	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

The FY 2015 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 2013	FY 2014	FY 2015
Title: Defense-Wide Electronic Procurement Capabilities- Contingency	26.580	6.184	9.546
FY 2013 Accomplishments: 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 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			

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense	Date: March 2014
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Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0605210D8Z / <i>Defense-Wide Electronic Procurement Capabilities</i>	Project (Number/Name) P*021 / <i>Defense-Wide Electronic Procurement Capabilities- Contingency</i>
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<p>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.</p> <p><i>FY 2015 Plans:</i> To mitigate fiscal reductions funding will be focused on the continued development of an end to end paperless reconciliation process for Government Furnished Property (GFP) and to complete implementation of a fraud and misuse data mining detection capability for purchase cards in DoD. These funds will also be used to strengthen existing vendor identification systems in DoD to combat counterfeiting and cyber intrusion. Moderate risk will be taken in reducing efforts to support continued development of contingency contracting and financial management business tools for the warfighter that do not exist, rather funds will focus on improving tools currently in immature development stages, and implement those initiatives/tools in theater. Funds will also focus on developing enterprise mapping capabilities to streamline existing procure to pay exchanges and achieve efficiencies through data standards and auditability in partnership with the Comptroller.</p>			
Accomplishments/Planned Programs Subtotals	26.580	6.184	9.546

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

Remarks

D. Acquisition Strategy
N/A

E. Performance Metrics
NA

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0605210D8Z / <i>Defense-Wide Electronic Procurement Capabilities</i>	Project (Number/Name) P*022 / <i>SPOT -ES Contingency</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
P*022: <i>SPOT -ES Contingency</i>	4.647	-	-	-	-	-	-	-	-	-	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

The FY 2015 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 2013	FY 2014	FY 2015
Title: SPOT-ES Contingency	-	-	-
FY 2013 Accomplishments: The SPOT program was transferred from OSD to DHRA/DMDC beginning in FY 2013.			
Accomplishments/Planned Programs Subtotals	-	-	-

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.

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0605210D8Z / <i>Defense-Wide Electronic Procurement Capabilities</i>	Project (Number/Name) P*022 / <i>SPOT -ES Contingency</i>

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.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400: Research, Development, Test & Evaluation, Defense-Wide I BA 5: System Development & Demonstration (SDD)	R-1 Program Element (Number/Name) PE 0305304D8Z I DoD Enterprise Energy Information Management (EEIM)
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
Total Program Element	0.000	3.176	3.302	3.660	-	3.660	3.510	3.659	3.823	4.102	Continuing	Continuing
304: Enterprise Energy Information Management	0.000	1.641	1.956	1.955	-	1.955	1.953	1.955	1.955	1.955	Continuing	Continuing
305: Real Property Accountability	0.000	1.535	1.346	1.705	-	1.705	1.557	1.704	1.868	2.147	Continuing	Continuing

The FY 2015 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)

	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015 Base</u>	<u>FY 2015 OCO</u>	<u>FY 2015 Total</u>
Previous President's Budget	3.556	3.302	3.104	-	3.104
Current President's Budget	3.176	3.302	3.660	-	3.660
Total Adjustments	-0.380	-	0.556	-	0.556
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Strategic Efficiency Increase	-0.380	-	0.556	-	0.556

Change Summary Explanation

The revised funding levels for FY15 are due to the need to support DoD's plans to achieve and maintain real property accountability from both audit readiness and program management perspectives.

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense										Date: March 2014		
Appropriation/Budget Activity 0400 / 5					R-1 Program Element (Number/Name) PE 0305304D8Z / DoD Enterprise Energy Information Management (EEIM)				Project (Number/Name) 304 / Enterprise Energy Information Management			
COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
304: Enterprise Energy Information Management	-	1.641	1.956	1.955	-	1.955	1.953	1.955	1.955	1.955	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

The FY 2015 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)

Title: Enterprise Energy Information Management	FY 2013	FY 2014	FY 2015
FY 2013 Accomplishments: Funds supported the development and procurement of an enterprise-wide energy data warehouse that will be integrated with existing and future real property systems.	1.641	1.956	1.955
FY 2014 Plans: Funds will support the continued development and procurement of an enterprise-wide energy data warehouse that will be integrated with existing and future real property systems.			
FY 2015 Plans: Funds will support the continued 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	1.641	1.956	1.955

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

N/A

Remarks

PE 0305304D8Z: DoD Enterprise Energy Information Management (EEIM...

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0305304D8Z / <i>DoD Enterprise Energy Information Management (EEIM)</i>	Project (Number/Name) 304 / <i>Enterprise Energy Information Management</i>

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0305304D8Z / DoD Enterprise Energy Information Management (EEIM)	Project (Number/Name) 305 / Real Property Accountability
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
305: Real Property Accountability	-	1.535	1.346	1.705	-	1.705	1.557	1.704	1.868	2.147	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

The FY 2015 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 achieve and maintain real property accountability. This is critical both from audit readiness and program management perspectives. New policies are in place, but business systems must be modified to support data requirements. This funding is used to determine requirements for the Department's Real Property inventory records as well as to develop and procure an enterprise wide data warehouse that will be integrated with existing and future energy and real property systems. This warehouse will collect, maintain, and report on the inventory and assist the Components to implement inventory requirements, including data accuracy and completeness. 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 2013	FY 2014	FY 2015
Title: Real Property Accountability	1.535	1.346	1.705
FY 2013 Accomplishments: This funding was used to determine requirements for the Department's Real Property inventory records as well as to develop and procure an enterprise wide data warehouse that will be integrated with existing and future energy and real property systems.			
FY 2014 Plans: This funding will be used to continue to determine requirements for the Department's Real Property inventory records as well as to develop and procure an enterprise wide data warehouse that will be integrated with existing and future energy and real property systems.			
FY 2015 Plans: This funding is used to continue to determine requirements for the Department's Real Property inventory records as well as to continue to develop and procure an enterprise wide data warehouse that will be integrated with existing and future energy and real property systems.			
Accomplishments/Planned Programs Subtotals	1.535	1.346	1.705

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

N/A

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0305304D8Z / DoD Enterprise Energy Information Management (EEIM)	Project (Number/Name) 305 / Real Property Accountability

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

Remarks

D. Acquisition Strategy
N/A

E. Performance Metrics
N/A

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400: Research, Development, Test & Evaluation, Defense-Wide / BA 6: RDT&E Management Support	R-1 Program Element (Number/Name) PE 0604774D8Z / Defense Readiness Reporting System (DRRS)
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
Total Program Element	6.598	5.815	6.356	5.616	-	5.616	5.619	5.764	6.085	6.466	Continuing	Continuing
774: Defense Readiness Reporting System (DRRS)	6.598	5.815	6.356	5.616	-	5.616	5.619	5.764	6.085	6.466	Continuing	Continuing

The FY 2015 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 hosts information and applications used to support the Geographic and Functional Combatant Commanders.

The transformation of readiness reporting into a new, more comprehensive 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 shift from resource centric readiness reporting to a mission/ capabilities based reporting system oriented towards the National Military Strategy (NMS) makes substantially more complex demands on readiness reporting. DRRS allows the Department to assess readiness globally based on our integrated ability to project and sustain a mix of constructed forces in simultaneous engagements. Finally, the challenges associated with sourcing and evaluating the readiness of our forces engaged in on-going real operations 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. Through this type of advanced information environment, the DRRS dramatically expands the range of readiness information available to manage the force. 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.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense	Date: March 2014
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Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> / BA 6: <i>RDT&E Management Support</i>	R-1 Program Element (Number/Name) PE 0604774D8Z / <i>Defense Readiness Reporting System (DRRS)</i>
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B. Program Change Summary (\$ in Millions)	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO	FY 2015 Total
Previous President's Budget	6.383	6.393	6.393	-	6.393
Current President's Budget	5.815	6.356	5.616	-	5.616
Total Adjustments	-0.568	-0.037	-0.777	-	-0.777
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-0.554	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.014	-			
• Efficiencies Reduction	-	-	-0.777	-	-0.777
• FFRDC Reduction	-	-0.037	-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense										Date: March 2014		
Appropriation/Budget Activity 0400 / 6					R-1 Program Element (Number/Name) PE 0604774D8Z / <i>Defense Readiness Reporting System (DRRS)</i>				Project (Number/Name) 774 / <i>Defense Readiness Reporting System (DRRS)</i>			
COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
<i>774: Defense Readiness Reporting System (DRRS)</i>	6.598	5.815	6.356	5.616	-	5.616	5.619	5.764	6.085	6.466	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

The FY 2015 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 hosts information and applications used to support the Geographic and Functional Combatant Commanders.

The transformation of readiness reporting into a new, more comprehensive 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 shift from resource centric readiness reporting to a mission/ capabilities based reporting system oriented towards the National Military Strategy (NMS) makes substantially more complex demands on readiness reporting. DRRS allows the Department to assess readiness globally based on our integrated ability to project and sustain a mix of constructed forces in simultaneous engagements. Finally, the challenges associated with sourcing and evaluating the readiness of our forces engaged in on-going real operations 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. Through this type of advanced information environment, the DRRS dramatically expands the range of readiness information available to manage the force. 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.

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0604774D8Z / <i>Defense Readiness Reporting System (DRRS)</i>	Project (Number/Name) 774 / <i>Defense Readiness Reporting System (DRRS)</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<p>Title: 774 Defense Readiness Reporting System</p> <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 2013 Accomplishments:</p> <ul style="list-style-type: none"> • Continued Software lifecycle support and system improvements • Continued to assist the Services using DRRS to support their Component Commanders and the Combatant Commanders • Continued refinement of data architecture • Data quality improvements • Data latency improvement with the use of Dashboards • Continue development and integration with Interagency readiness and preparedness systems outside DoD. • Conducted formal third party testing of the system. • Complete the development and fielding of version 4.6 to facilitate the retirement of legacy systems <p>FY 2014 Plans:</p> <ul style="list-style-type: none"> • Achieve Full Operational Capability (FOC) • Continue Software lifecycle support • Continue to assist the Services using DRRS to support their Component Commanders and the COCOMS • Continue refinement of data architecture and integration of GFM DI within DRRS • Data quality improvement • Data latency improvement with the use of Dashboards • Implement PKI authentication within the DRRS application • Continue implementing functionality to facilitate the retirement of legacy systems and automate portions of the Air Force reporting process. 	5.815	6.356	5.616

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014		
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0604774D8Z / <i>Defense Readiness Reporting System (DRRS)</i>	Project (Number/Name) 774 / <i>Defense Readiness Reporting System (DRRS)</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2013	FY 2014	FY 2015
<ul style="list-style-type: none"> • Continue necessary system testing by outside agencies <p>FY 2015 Plans:</p> <ul style="list-style-type: none"> • Continue Software lifecycle support • Continue to assist the Services, CCDRs and Combat Support Agencies fully integrating DRRS • Continue refinement of data architecture • Continue full integration of GFM DI within DRRS • Support the integration of JPES and integration with APEX • Data quality improvement • Data latency improvement with the use of Dashboards • Continue development and integration with Interagency readiness and preparedness systems outside DoD. • Complete Joint Interoperability Testing through the Joint Interoperability Test Command (JITC) 				
Accomplishments/Planned Programs Subtotals		5.815	6.356	5.616
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 system 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. 				

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 6: RDT&E Management Support</i>	R-1 Program Element (Number/Name) PE 0604875D8Z I <i>Joint Systems Architecture Development</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
Total Program Element	4.545	3.227	2.471	3.092	-	3.092	3.704	4.317	4.930	5.542	Continuing	Continuing
P876: <i>Portfolio Systems Acquisition (PSA)</i>	4.545	3.227	2.471	3.092	-	3.092	3.704	4.317	4.930	5.542	Continuing	Continuing

The FY 2015 OCO Request will be submitted at a later date.

A. Mission Description and Budget Item Justification

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 with a focus on Major Defense Acquisition Programs (MDAPs). These efforts include warfighting capability-based analyses; assessments of joint capability areas and joint integrating concepts; development of system-related data; integrated roadmaps to support acquisition investment decisions; and assessments of MDAPs and Major Automated Information Systems (MAIS) 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.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 6:</i> <i>RDT&E Management Support</i>	R-1 Program Element (Number/Name) PE 0604875D8Z <i>I Joint Systems Architecture Development</i>
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B. Program Change Summary (\$ in Millions)	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO	FY 2015 Total
Previous President's Budget	3.845	2.479	5.217	-	5.217
Current President's Budget	3.227	2.471	3.092	-	3.092
Total Adjustments	-0.618	-0.008	-2.125	-	-2.125
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Efficiency Reduction	-	-	-2.125	-	-2.125
• FFRDC	-	-0.008	-	-	-
• Other Program Adjustments	-0.618	-	-	-	-

Change Summary Explanation

FY 2015 Funding was reduced based on the Department's priorities and other program requirements. Program adjustments for FY 2013 includes SBIR/STTR and Sequestration reductions.

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense										Date: March 2014		
Appropriation/Budget Activity 0400 / 6					R-1 Program Element (Number/Name) PE 0604875D8Z / <i>Joint Systems Architecture Development</i>				Project (Number/Name) P876 / <i>Portfolio Systems Acquisition (PSA)</i>			
COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
P876: <i>Portfolio Systems Acquisition (PSA)</i>	4.545	3.227	2.471	3.092	-	3.092	3.704	4.317	4.930	5.542	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

The FY 2015 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)

Title: Portfolio Systems Acquisition Initiatives	FY 2013	FY 2014	FY 2015
	3.227	2.471	3.092
FY 2013 Accomplishments:			
-Conducted assessments of Capability Portfolios and warfare areas to reduce duplication and identify opportunities for cost savings.			
-Conducted analyses and support implementation of acquisition efficiencies, including Better Buying Power.			
-Provided technical expertise in support of warfare area portfolios.			
-Assessed progress of program management initiatives and supported Acquisition Qualification Standards initiative.			
-Expanded "reliability by design" analyses. Conducted review of Littoral Combat Ship, Reaper, Gator, JLTV, 3DELRR.			
-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).			
-Prepared IAMD roadmap to guide investments in a critical area and provided analytical support for the IAMD portfolio.			
FY 2014 Plans:			

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0604875D8Z / <i>Joint Systems Architecture Development</i>	Project (Number/Name) P876 / <i>Portfolio Systems Acquisition (PSA)</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<ul style="list-style-type: none"> -Support Mission Area Portfolio Assessments and warfare areas to identify portfolio and program synergies, reduce duplication, and identify opportunities for cost savings. -Conduct additional analyses and support implementation of Better Buying Power initiatives. -Provide technical expertise in support of warfare area portfolios. -Assess progress of program management initiatives and continue support to a variety of certification and qualification standards activities. -Continue "reliability by design" analyses and support to programs. -Develop DoD courses of action and views on homeland defense implementation and compliance issues in multiple bilateral and multilateral fora. -Provide analytical support to the Homeland Defense Coordinator function within OUSD(AT&L). -Update roadmaps to guide investments in critical areas (e.g., future vertical lift and IAMD). -Continue analytical support for the IAMD portfolio. <p><i>FY 2015 Plans:</i></p> <ul style="list-style-type: none"> -Continue to support Mission Area Portfolio Assessments and warfare areas to identify portfolio and program synergies, reduce duplication, and identify opportunities for cost savings. -Conduct additional analyses and support implementation of Better Buying Power initiatives. -Provide technical expertise in support of warfare area portfolios. -Assess progress of program management initiatives and continue support to a variety of certification and qualification standards activities. -Continue "reliability by design" analyses and support to programs. -Develop DoD courses of action and views on homeland defense implementation and compliance issues in multiple bilateral and multilateral fora. -Provide analytical support to the Homeland Defense Coordinator function within OUSD(AT&L). -Update roadmaps to guide investments in critical areas (e.g., future vertical lift and IAMD). -Continue analytical support for the IAMD portfolio. 			
Accomplishments/Planned Programs Subtotals	3.227	2.471	3.092

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

N/A

Remarks

D. Acquisition Strategy

Not Applicable

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0604875D8Z / <i>Joint Systems Architecture Development</i>	Project (Number/Name) P876 / <i>Portfolio Systems Acquisition (PSA)</i>

E. Performance Metrics

Not Applicable

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 6: RDT&E Management Support</i>	R-1 Program Element (Number/Name) PE 0604940D8Z I <i>Central Test and Evaluation Investment Program (CTEIP)</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
Total Program Element	156.249	177.520	179.607	254.503	-	254.503	245.197	205.496	168.547	177.323	Continuing	Continuing
940: <i>Central Test and Evaluation Investment Program (CTEIP)</i>	156.249	177.520	179.607	254.503	-	254.503	245.197	205.496	168.547	177.323	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

The FY 2015 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 emerging technologies and test requirements resulting from operational concept changes mandated by Congress or Director, Operational Test & Evaluation (DOT&E),

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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 2013	FY 2014	FY 2015 Base	FY 2015 OCO	FY 2015 Total
Previous President's Budget	144.109	240.213	256.141	-	256.141
Current President's Budget	177.520	179.607	254.503	-	254.503
Total Adjustments	33.411	-60.606	-1.638	-	-1.638
• Congressional General Reductions	-	-0.106			
• Congressional Directed Reductions	-12.774	-60.500			
• Congressional Rescissions	-	-			
• Congressional Adds	12.000	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	36.939	-			
• SBIR/STTR Transfer	-2.754	-			
• FY 2015 Adjustment	-	-	-1.638	-	-1.638

Change Summary Explanation

- Strategic efficiency reductions in management headquarters funding and staffing for better alignment and to provide support to a smaller military force.

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
Title: Central Test and Evaluation Investment Program	177.520	179.607	254.503
FY 2013 Accomplishments: JIM Projects: - Completed 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. - Completed 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. - Completed 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.			

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense	Date: March 2014
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C. Accomplishments/Planned Programs (\$ in Millions)

	FY 2013	FY 2014	FY 2015
<ul style="list-style-type: none"> - Completed requirements development and planning and initiated concept development and preliminary design 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. - Completed concept development and preliminary design and initiated 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. - Completed requirements development and planning and initiated 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. - 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 concept development and preliminary design for the Joint Urban Test Capability project to provide urban environment test capabilities. - Continued systems development of the Joint Unmanned Aircraft Systems (UAS) Mission Environment project to develop a capability for testing UAS in simulated system of systems environments. - Continued system development for the Next Generation Electronic Warfare Environment Generator Build A project to provide a multiple jammer beam characterization system for dynamic stimulation and measurement of multiple jamming and radar signals. - 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 systems development for the Common Range Integrated Instrumentation System project to develop a common range instrumentation system to address next generation range data requirements. - Continued 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. - 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 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). - Continued concept development and preliminary design for the Subminiature Flight Safety System project to provide a subminiature, low-cost flight termination system with time-space-position information and data link capabilities. - Initiated the Synthetic Battlefield Emitter Systems project to provide a controlled density open air environment for testing of C4ISR systems. 			

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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
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<ul style="list-style-type: none"> - Initiated the Electronic Warfare Test Resource Enhancement Project to develop 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: Completed development of Precision Target Signatures-Reflective Performance Mover (PTS-RPM) to develop low cost, radar cross section representative, movable targets.</p> <ul style="list-style-type: none"> - Completed delivery of the MILSATCOM Atmospheric Scintillation Simulator project. - Completed delivery of the Threat Model Assessment Program of Operational Test and Evaluation project. - Continued delivery of the J-31 Radar Missile Gun System project. - Continued development of the Multispectral Sea and Land Target Simulator (MSALTS) project. - Continued development of Hostile Fire Indicator Site (HFIS) to enhance existing Hostile Fire Indicator (HFI) test site with key upgrades to fully facilitate HFI testing of warning systems. - Continued development of C2 and Urban Background Environment Simulator (CUBES) to incorporate modern signal processor advances for Installed System Test Facility communications jamming purposes. - Continued development of the Ground Mounted Seeker Simulator project to provide additional missile seekers to the Missile on the Mountain facility. - Continued development of Mobile Flight Mission Simulator (mFMS) Advanced Electronic Attack (AEA) to provide realistic electronic attack capabilities into PATRIOT Flight Mission Simulators. - Initiated and completed development of Direct Injection Plate System (DIPS) to provide Installed System Test Facility with direct RF injection plates for F-35 variants. - Initiated 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). - Initiated development of Torpedo Operational Testing Using Modeling and Simulation (TOTUMS) to enhance torpedo OT&E by upgrading an hardware in the loop (HITL) simulator and environment simulator for high-fidelity, OT-ready realism. - Initiated 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. - Initiated development of the Joint Standard Instrumentation Suite (JSIS) to measure and collect signature, time-space-position information (TSPI), and related data of threat missile and hostile fire munitions (e.g., small arms and rocket-propelled grenade (RPG)) firings to support evaluation of the Joint Allied Threat Awareness System. - Initiated the Automated Test Case Generator Web Service (ATC-GEN WS) to provide Joint Interoperability Test Command (JITC) with the capability to develop Ballistic Missile Defense System (BMDS) and Mode 5 IFF MIL-STD-6016E compliance test cases and an automated test tool on a test network. 			
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<p>- Terminated development of Force on Force Real Time Casualty Assessment Test Instrumentation II (FOF-TI II), intended to provide force-on-force evaluations of the Lightweight Armored Vehicle Anti-Tank Modernization program.</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 beam characterization system for dynamic stimulation and measurement of multiple jamming and radar signals. - 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. - Complete concept development and preliminary design and initiate system development for the Joint Urban Test Capability to provide urban environment test capabilities. - Continue 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 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 for the Joint Unmanned Aircraft 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. - Complete concept development and preliminary design and initiate systems development for the Subminiature Flight Safety System project to provide a subminiature, low-cost flight termination system with time-space-position information and data link capabilities. - Complete concept development and preliminary design and initiate 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 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 the Synthetic Battlefield Emitter Systems project to provide a controlled density open air environment for testing of C4ISR systems. 			

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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<ul style="list-style-type: none"> - 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). - Continue the Electronic Warfare Test Resource Enhancement Project to develop 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. - 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. <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 delivery of the J-31 Radar Missile Gun System project. - 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). - Complete development of Torpedo Operational Testing Using Modeling and Simulation (TOTUMS) to enhance torpedo OT&E by upgrading an HITL simulator and environment simulator for high-fidelity, OT-ready realism. - 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 Boosted Zombie Target (BZT) to develop multi-stage, economical targets for PAC-3 by integrating a GFE booster to blue "Zombie" maneuvering target. - Continue development of Joint Standard Instrumentation Suite (JSIS) to measure and collect signature, TSPI, and related data of threat missile and hostile fire munitions (e.g., small arms and RPG) firings to support evaluation of the Joint Allied Threat Awareness System. - Continue the Automated Test Case Generator Web Service (ATC-GEN WS) to provide JITC with the capability to develop BMDS and Mode 5 IFF MIL-STD-6016E compliance test cases and an automated test tool on a test network. - Initiate the DIADS Sensor Reactivity Upgrade (SRU) to upgrade DIADS radars with enhanced electronic countermeasures (ECM) response features in support of JSF and F-22 operational testing. 			

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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<p>- Initiate the Wideband Configurable Control Jammer (WCCJ) Enhancement to develop and integrate an Electronic Support Measures (ESM) subsystem into WCCJ, thus improving its ability to monitor and prioritize signals during Network Integrated Exercise events.</p> <p>FY 2015 Plans: JIM Projects:</p> <ul style="list-style-type: none"> - 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 concept development and preliminary design and initiate system 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 systems development for the Joint Unmanned Aircraft Systems (UAS) Mission Environment project to develop a capability for testing UAS in simulated system of systems environments. - Complete systems development for Spiral 1 of the Integrated Network Enhanced Telemetry project Block I capability to develop a network-enhanced aeronautical telemetry capability for T&E ranges and facilities. - Complete 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). - Complete 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 system development for the Joint Urban Test Capability to provide urban environment test capabilities. - 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 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 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. 			

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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<ul style="list-style-type: none"> - Continue the Network Centric Weapon (NCW) T&E Environment project to provide an enhanced capability to test and evaluate NCW in a distributed simulation environment. - Continue 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. - Continue the Electronic Warfare Test Resource Enhancement Project to develop 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. - Initiate system development for the Directional Infrared Countermeasures (DIRCM) 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. - Initiate the Aircraft 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 C2 and Urban Background Environment Simulator (CUBES) to incorporate modern signal processor advances for Installed System Test Facility communications jamming purposes. - Complete 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. - Complete the DIADS Sensor Reactivity Upgrade (SRU) to upgrade DIADS radars with enhanced ECM response features in support of JSF and F-22 operational testing. - Complete the Wideband Configurable Control Jammer (WCCJ) Enhancement to develop and integrate an Electronic Support Measures (ESM) subsystem into WCCJ, thus improving its ability to monitor and prioritize signals during Network Integrated Exercise events. - Continue development of Joint Standard Instrumentation Suite (JSIS) to measure and collect signature, TSPI, and related data of threat missile and hostile fire munitions (e.g., small arms and RPG) firings to support evaluation of the Joint Allied Threat Awareness System. - Complete the Automated Test Case Generator Web Service (ATC-GEN WS) to provide JITC with the capability to develop BMDS and Mode 5 IFF MIL-STD-6016E compliance test cases and an automated test tool on a test network. - 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. 			

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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
- 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	177.520	179.607	254.503

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.

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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
Total Program Element	2.574	2.145	2.115	21.661	-	21.661	22.341	23.340	24.407	25.920	Continuing	Continuing
P805: <i>Assessments & Evaluations</i>	2.574	2.145	2.115	21.661	-	21.661	22.341	23.340	24.407	25.920	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

The FY 2015 OCO Request will be submitted at a later date.

Note

Starting in FY2015 and beyond, program content and funding from Program Elements 0603527D8Z and 0604943D8Z were moved to this Program Element to effect efficiencies and streamlined oversight of programmatic content.

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)

	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015 Base</u>	<u>FY 2015 OCO</u>	<u>FY 2015 Total</u>
Previous President's Budget	2.419	2.127	2.173	-	2.173
Current President's Budget	2.145	2.115	21.661	-	21.661
Total Adjustments	-0.274	-0.012	19.488	-	19.488
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-0.274	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Program Element Consolidation	-	-	19.488	-	19.488
• FFRDC	-	-0.012	-	-	-

Change Summary Explanation

Starting in FY2015 and beyond, program content and funding from Program Elements 0603257D8Z and 0604943D8Z were moved to this Program Element to effect efficiencies and streamlined oversight of programmatic content.

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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
Title: Assessments & Evaluations Description: Classified Program FY 2013 Accomplishments: Not applicable, Information is Classified. FY 2014 Plans: Not applicable, Information is Classified. FY 2015 Plans: Not applicable. Information is Classified. Program content and funding was moved to this Program Element to effect efficiencies and increase oversight.	2.145	2.115	21.661
Accomplishments/Planned Programs Subtotals	2.145	2.115	21.661

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

N/A

Remarks

E. Acquisition Strategy

This is a RDT&E Management and Support effort and does acquire any products.

F. Performance Metrics

N/A.

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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
Total Program Element	7.658	7.438	8.255	-	-	-	-	-	-	-	Continuing	Continuing
P943: <i>Thermal Vicar</i>	7.658	7.438	8.255	-	-	-	-	-	-	-	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

The FY 2015 OCO Request will be submitted at a later date.

Note

Starting in FY2015 and beyond, program content and funding from Program Element 0604943D8Z were moved to Program Element 0604942D8Z to effect efficiencies and streamlined oversight of programmatic content.

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)

	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015 Base</u>	<u>FY 2015 OCO</u>	<u>FY 2015 Total</u>
Previous President's Budget	8.214	8.287	8.465	-	8.465
Current President's Budget	7.438	8.255	-	-	-
Total Adjustments	-0.776	-0.032	-8.465	-	-8.465
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-0.776	-0.032			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Consolidation of Program Elements	-	-	-8.465	-	-8.465

Change Summary Explanation

Starting in FY2015 and beyond, program content and funding from Program Element 0604943D8Z were moved to Program Element 0604942D8Z to effect efficiencies and streamlined oversight of programmatic content.

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

	FY 2013	FY 2014	FY 2015
Title: Thermal Vicar	7.438	8.255	-

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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
Description: Not applicable. Information is Classified.			
FY 2013 Accomplishments: Not applicable. Information is Classified.			
FY 2014 Plans: Not applicable. Information is Classified.			
Accomplishments/Planned Programs Subtotals	7.438	8.255	-

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

N/A

Remarks

E. Acquisition Strategy

Not applicable.

F. Performance Metrics

Not applicable.

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Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 6: RDT&E Management Support</i>	R-1 Program Element (Number/Name) PE 0605100D8Z I <i>Joint Mission Environment Test Capability (JMETC)</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
Total Program Element	10.215	21.055	27.878	27.162	-	27.162	27.253	28.263	29.902	32.418	Continuing	Continuing
100: <i>Joint Mission Environment Test Capability (JMETC)</i>	10.215	21.055	27.878	27.162	-	27.162	27.253	28.263	29.902	32.418	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

The FY 2015 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 Department of Defense’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; supporting system development, interoperability testing, and cyber testing; that otherwise would not be readily available to Service/Component acquisition programs. Under Secretary Defense for Acquisition, Technology and Logistics (USD(AT&L)) directed Test Resource Management Center (TRMC) to take responsibility for operations and resources of the National Cyber Range (NCR) beginning October 1, 2012. The Director of TRMC assigned NCR to JMETC. The JMETC 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, Department of Defense (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. Additionally, in FY 2013 funding was added to the JMETC program to provide improved cyber test capability. Also, in FY 2013, responsibility for the National Cyber Range (NCR) was given to the Test Resource Management Center (TRMC) and subsequently put under the JMETC management team. The NCR was funded in FY 2013 through funds provided by Defense Advanced Research Projects Agency (DARPA), Director, Operational Test & Evaluation (DOT&E), Assistant Secretary of Defense (Research & Engineering)(ASD(R&E)) reprogramming, and the TRMC investment programs. JMETC program funding also provides 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;

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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.

The Test Resource Management Center (TRMC) is the Department's lead for the JMETC program, the National Cyber Range, and oversees both their development and operations.

B. Program Change Summary (\$ in Millions)	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO	FY 2015 Total
Previous President's Budget	19.380	31.000	31.557	-	31.557
Current President's Budget	21.055	27.878	27.162	-	27.162
Total Adjustments	1.675	-3.122	-4.395	-	-4.395
• Congressional General Reductions	-	-0.022			
• Congressional Directed Reductions	-1.589	-3.100			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	3.492	-			
• SBIR/STTR Transfer	-0.228	-			
• FY 2015 Adjustment	-	-	-4.395	-	-4.395

Change Summary Explanation

- Strategic efficiency reductions in management headquarters funding and staffing for better alignment and to provide support to a smaller military force.

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
Title: Joint Mission Environment Test Capability	21.055	27.878	27.162
FY 2013 Accomplishments:			
- Joint Mission Environment Test Capability (JMETC)			
- Continued to expand the JMETC persistent infrastructure to 72 sites with an additional 15 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.			
- Supported 48 distinct customer distributed live-virtual-constructive (LVC) test activities to Department of Defense (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)(five test events); Aegis Accelerated Mid-Term			

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

	FY 2013	FY 2014	FY 2015
<p>Interoperability Improvement Program (AMIIP) (later to be called Aegis Performance Assessment Verification (PAV) and Multi-site Test Bed (MST); Joint Integrated Air and Missile Defense Organization’s (JIAMDO) Correlation/De-correlation Interoperability Test (C/DIT); JIAMDO Joint Tactical Air Picture Mission Environment – 12A (JTAP – ME); Joint Interoperability Test Command (JITC) Joint Interoperability Tests (four actual test events); Air Ground Integrated Layer Exploration (AGILE) Fire VII and VIII; E-2D tests; Joint Track Manager Capability /Composite Track Management (JTMC-D/CTM); Distributed Common Ground System – Army (DCGS-A); Air Intercept Missile (AIM-9X); Joint Distributed Infrared Countermeasures (IRCM) Ground Test System (JDIGS); US Naval Air Systems Command (NAVAIR) Integrated Warfare Capability (IWC); Marine Corps Virtual Rapid Prototyping Laboratory (VRPL); Interoperability Test and Evaluation Capability (InterTEC) System Integration Test; Aegis Performance Assessment Verification (PAV), and the Integrated Cyber Event (ICE).</p> <p>- Continued to provide general distributed test planning and execution support to the following customers; MQ-4C Triton, Joint Tactical Networking Center (JTNC) formerly the Program Executive Office (JPEO), JTMC-D/CTM, Aegis PAV and Multi-site Test Bed (MST) (formerly AMIIP), AFSIT, NAVAIR IWC events, InterTEC development and fielding, and numerous other smaller test activities.</p> <p>- Continued planning support to new and on-going acquisition program customers, particularly MQ-4C Triton, Apache Block III, P-8A Poseidon (Increment 3), Unmanned Carrier Launched Airborne Surveillance and Strike (UNCLASS), F-35, F-22, Small Diameter Bob II, Air Intercept Missile (AIM-9X), Integrated Defensive Electronic Countermeasures (IDECM), Army Network Integration Event/Brigade Modernization (NIE), JTNC Joint Reference Implementation Laboratory (JRILs), Common Aviation Command and Control System (CAC2S), Joint Operational Test Approach (JOTA-2) Mode V IFF, Dismounted Detection Radar (DDR), Electromagnetic Rail Gun, Three-Dimensional Expeditionary Long Range Radar (3DELRR), Counter Remote Controlled Improvised Explosive Device (IED) Electronic Warfare (CREW), and Advanced Anti-Radiation Guided Missile (AARGM).</p> <p>- Enhanced the User Interface and content of the web-based JMETC Reuse Repository to store distributed test tools, utilities, lessons learned, and test metadata making all available to the DoD test community.</p> <p>- Supported JIAMDO in the successful renegotiation of the International Agreement between the United States and United Kingdom for C/DIT.</p> <p>- Collaborated and supported the JTNC 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. The design and development for this project has been completed and initial, early testing of the device with various waveforms has shown that this project will achieve it designed goals. This capability will result in a significance cost avoidance (estimated in the millions of dollars) to the JTNC program.</p>			

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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<ul style="list-style-type: none"> - Assisted and supported customers with distributed test tools and expertise for planning and executing their distributed events. - National Cyber Range: <ul style="list-style-type: none"> - Received responsibility for the National Cyber Range in Orlando, FL, a cyber test facility, a majority of which is a fully accredited Secure Compartmentalized Information Facility (SCIF). The facility is comprised of an array of servers, networking, storage devices and an integrated tool suite. During the year, the NCR was accredited by the Defense Intelligence Agency to operate at the Top Secret, Sensitive Compartmented Intelligence level of security, making the NCR fully test capable through the range of classification levels. The NCR provides the ability to rapidly design, deploy and sanitize large scale, high fidelity test and training environments in which extremely malicious threats can be unleashed on operationally, representative systems and networks to assess the impact on the network, networked weapon systems, and the associated mission. Considerable technological advancements were incorporated into the integrated tool suite which is highlighted by the significant level of automation and the ability to support up to four concurrent events, executed in completely isolated testbeds, at different levels of classification. - The NCR supported users in FY 2013 included Office of the Director, Operational Test and Evaluation, US Pacific Command, US Cyber Command, other Defense Agencies, and DoD development programs. Their objectives have included testing for vulnerabilities, scalability, malware propagation, and effective defenses. Even though the primary focus has been on functionalizing, refining and accrediting the capabilities, the NCR conducted 8 events through August of FY 2013, has another 8 events scheduled into FY 2014, and is planning additional tests to be executed after the end of the calendar year. An event normally consists of a week for integration and set-up, a week or two of testing, and a week for analysis. - Cyber Test and Evaluation <ul style="list-style-type: none"> - Initiated the Cyber Range Interoperability Standards (CRIS) effort, developing a common lexicon, developing a standard cyber test process, and beginning the effort to prioritize needed standards which will result in efficiencies through improved interoperability and scalability. This effort was executed through participation by representatives from across the cyber range community. - Worked with the Deputy Assistant Secretary Defense Developmental Test & Evaluation (DASD DT&E), Army Threat Systems Management Office, and the Air Force 46th Test Squadron to conduct an Integrated Cyber Event (ICE). This cyber test event proved that the infrastructure is adequate to test a command and control system. However, it also pointed out the significant need for improvements in areas such as red and blue environments, cyber test instrumentation, and a cyber visualization capability. 			

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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<p>- Deployed the first of several production Regional Service Delivery Points (RSDP). This first system resides at the Threat System Management Office (TSMO) and will provide enterprise resources for computing, storage, and common services. Funded the development of the second Regional Service Delivery Point (RSDP) which will provide increased capacity for cyber test and training. The RSDPs will also promote efficiencies by providing enterprise services, such as realistic traffic generation, visualization tools, instrumentation, and other tools.</p> <p>- Developed Cyber T&E Use Cases, a set of operational and system architecture driven products, that helps identify potential threat vectors and test concepts needed to identify Cyber T&E infrastructure requirements for testing representative C2 Systems, Combat Systems, Weapon Systems, and Business IT Systems.</p> <p>- Initiated planning for significant distributed test infrastructure enhancements that will support multiple, concurrent classification up to and including TS//SCI with a focus on leveraging the RSDP capabilities and incorporating both kinetic and non-kinetic assets to address growing interoperability and cyber T&E requirements.</p> <p>FY 2014 Plans:</p> <p>- Joint Mission Environment Test Capability (JMETC):</p> <p>- Continue to provide distributed test support for 15-20 major customer events such as Apache Block III Link-16 Interoperability test, Joint Tactical Networking Center (JTNC) Joint Reference Implementation Laboratory (JRIL), MQ-4C Triton , Army Integrated Air and Missile Defense (IAMD), JIAMD projects, Joint Interoperability Tests (JITS), AGILE Fire, NAVAIR Integrated Warfare Capability (IWC), Marine Corps Virtual Rapid Prototyping Laboratory (VRPL), and numerous smaller test activities, as well as, continuous interconnectivity between distributed test resources for day-to-day exchange of test operations data.</p> <p>- Continue planning support to new and on-going acquisition programs including; Apache Block III, Army Network Integration Event (NIE)/Brigade Modernization, Counter Remote Controlled Improvised Explosive Device (IED) Electronic Warfare (CREW), JTNC JRIL, F-35, Small Diameter Bomb (SDB)II, MQ-4C Triton, CVN-78, P-8A Poseidon, Advanced Anti-Radiation Guided Missile (AARGM), Integrated Defensive Electronic Countermeasures (IDECM), Unmanned Carrier Launched Airborne Surveillance & Strike (UCLASS), Common Aviation Command and Control System (CAC2S), Joint Space Operations Center (JSpOC) Mission Space (JMS), Marine Corps Combat Operations Center (CoC), and Tactical Mobile(TacMobile).</p> <p>- Continue planning and begin implementation of distributed test infrastructure enhancements that will support multiple, concurrent classification up to and including TS//SCI with a focus on leveraging the RSDP capabilities and incorporating both kinetic and non-kinetic assets to address growing interoperability and cyber T&E requirements.</p>			

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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<ul style="list-style-type: none"> - Continue collaboration with the Training community by providing distributed test planning support to the Joint Staff J7, the Joint Staff J6 Command, Control, and Interoperability (C2I), and to other customers for their distributed test events. - Continue strategic planning efforts to engage new acquisition programs that must demonstrate compliance with Net-Ready Key Performance Parameter (NR-KPP) and Cybersecurity requirements. - Continue coordination efforts to integrate DoD/Service/Industry/Academia distributed test and evaluation infrastructure to the JMETC infrastructure. - Continue to enhance the User Interface and content of the web-based JMETC Reuse Repository to store distributed test tools, utilities, lessons learned, and test metadata making all available to the DoD test community. - Continue to assist customers with the use of distributed test tools and troubleshooting of local network infrastructures. Provide remote and on-site support for the planning and execution of distributed events. - National Cyber Range: <ul style="list-style-type: none"> - Continue to sustain the National Cyber Range's (NCR) capabilities to meet growing customer requirements. The NCR will support test planning and execution for TRITON, P-8A, Army Intelligence and Information Warfare Directorate, Naval Intelligence, Defense Information Systems Agency, National Assessment Group, Director Operational Test and Evaluation, and other acquisition programs. - Complete the NCR tools study to evaluate NCR tools for expansion for enterprise use with a focus on Regional Service Delivery Points (RSDPs). - Develop a plan of action and milestone (POA&M) to implement a wireless cyber test capability at the NCR. - Cyber Test and Evaluation: <ul style="list-style-type: none"> - Continue the planning, alignment, and coordination to establish and improve the test infrastructure for cyber tests and assessments by leveraging other TRMC investments (i.e., Central Test & Evaluation Investment Program (CTEIP) and Test and Evaluation/Science and Test (T&E/S&T)) and capabilities of existing cyber ranges (DoD/Services/Industry/Academia). - Continue to identify, assess, and develop cyber test tools as enterprise solutions to capability gaps. 			

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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
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- Deploy the 2nd RSDP which will provide enterprise compute, storage, and common services resources.
 - 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 improved scalability.
 - Complete the Cyber T&E Roadmap and begin the time-phased process of integrating capabilities across four (4) communities of interest (COI) – testing, experimentation, training, and mission rehearsal – in support of Test and Evaluation (T&E).
- FY 2015 Plans:**
- Joint Mission Environment Test Capability (JMETC)
 - Continue to provide distributed test support for major customer events such as the Joint Tactical Networking Center (JTNC), Joint Reference Implementation Laboratory (JRIL), MQ-4C Triton, Army Integrated Air and Missile Defense (AIAMD), Joint Interoperability Tests (JITs), AGILE Fire, NAVAIR Integrated Warfare Capability (IWC), and numerous smaller test activities, as well as, continuous interconnectivity between distributed test resources for day-to-day exchange of test data.
 - Continue planning support to new and on-going acquisition programs including: Program Executive Office, Intelligence, Surveillance, and Sensor Systems (PEO IEW&S) (multiple programs), JTNC JRIL, F-35, Small Diameter Bomb (SDB) II, MQ-4C Triton, P-8A Poseidon, Advanced Anti-Radiation Guided Missile (AARGM), Integrated Defensive Electronic Countermeasures (IDECM), Unmanned Carrier Launched Airborne Surveillance & Strike (UCLASS), Common Aviation Command and Control System (CAC2S), Joint Space Operations Center (JSpOC) Mission Space (JMS), Tactical Mobile (TacMobile), and Marine Corps Tactical Operations Center (CoC)
 - Continue implementation of distributed test infrastructure enhancements that will support multiple, concurrent classifications up to and including TS//SCI with a focus on leveraging the RSDP capabilities and incorporating both kinetic and non-kinetic assets to address growing interoperability and cyber T&E requirements.
 - Continue strategic planning efforts to engage new acquisition programs that must demonstrate compliance with Net-Ready Key Performance Parameter (NR-KPP) and Cybersecurity requirements.
 - Continue coordination efforts to integrate DoD/Service/Industry/Academia distributed test and evaluation infrastructure to the JMETC infrastructure.

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<ul style="list-style-type: none"> - Deploy the 2nd RSDP which will provide enterprise compute, storage, and common services resources. - 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 improved scalability. - Complete the Cyber T&E Roadmap and begin the time-phased process of integrating capabilities across four (4) communities of interest (COI) – testing, experimentation, training, and mission rehearsal – in support of Test and Evaluation (T&E). <p>FY 2015 Plans:</p> <ul style="list-style-type: none"> - Joint Mission Environment Test Capability (JMETC) - Continue to provide distributed test support for major customer events such as the Joint Tactical Networking Center (JTNC), Joint Reference Implementation Laboratory (JRIL), MQ-4C Triton, Army Integrated Air and Missile Defense (AIAMD), Joint Interoperability Tests (JITs), AGILE Fire, NAVAIR Integrated Warfare Capability (IWC), and numerous smaller test activities, as well as, continuous interconnectivity between distributed test resources for day-to-day exchange of test data. - Continue planning support to new and on-going acquisition programs including: Program Executive Office, Intelligence, Surveillance, and Sensor Systems (PEO IEW&S) (multiple programs), JTNC JRIL, F-35, Small Diameter Bomb (SDB) II, MQ-4C Triton, P-8A Poseidon, Advanced Anti-Radiation Guided Missile (AARGM), Integrated Defensive Electronic Countermeasures (IDECM), Unmanned Carrier Launched Airborne Surveillance & Strike (UCLASS), Common Aviation Command and Control System (CAC2S), Joint Space Operations Center (JSpOC) Mission Space (JMS), Tactical Mobile (TacMobile), and Marine Corps Tactical Operations Center (CoC) - Continue implementation of distributed test infrastructure enhancements that will support multiple, concurrent classifications up to and including TS//SCI with a focus on leveraging the RSDP capabilities and incorporating both kinetic and non-kinetic assets to address growing interoperability and cyber T&E requirements. - Continue strategic planning efforts to engage new acquisition programs that must demonstrate compliance with Net-Ready Key Performance Parameter (NR-KPP) and Cybersecurity requirements. - Continue coordination efforts to integrate DoD/Service/Industry/Academia distributed test and evaluation infrastructure to the JMETC infrastructure. 			

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense	Date: March 2014
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Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 6: RDT&E Management Support</i>	R-1 Program Element (Number/Name) PE 0605100D8Z I <i>Joint Mission Environment Test Capability (JMETC)</i>
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<ul style="list-style-type: none"> - Continue to assist customers with the use of distributed test tools and troubleshooting of the end-to-end network infrastructures. Continue providing remote and on-site support for the planning and execution of distributed events. - National Cyber Range: <ul style="list-style-type: none"> - Continue to sustain the NCR capabilities and processes to support customer demand. Assess improvements needed in encryption, and increase capacity to support increased demand. - Cyber Test and Evaluation: <ul style="list-style-type: none"> - Continue the planning, alignment, and coordination to establish and improve the test infrastructure for cyber tests and assessments by leveraging other TRMC investments (i.e., CTEIP and T&E/S&T) and capabilities of existing cyber ranges (DoD/ Services/Industry/Academia). - Continue to implement distributed test infrastructure enhancements that will support multiple, concurrent classification up to and including TS//SCI with a focus on leveraging the RSDP capabilities and incorporating both kinetic and non-kinetic assets to address growing interoperability and cyber T&E requirements. 			
Accomplishments/Planned Programs Subtotals	21.055	27.878	27.162

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

N/A

Remarks

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.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide / BA 6:</i> <i>RDT&E Management Support</i>	R-1 Program Element (Number/Name) PE 0605104D8Z / <i>Technical Studies Support and Analysis</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
Total Program Element	33.001	30.951	21.930	24.501	-	24.501	25.104	26.108	25.818	25.303	Continuing	Continuing
P421: <i>Technical Studies</i>	33.001	30.951	21.930	24.501	-	24.501	25.104	26.108	25.818	25.303	Continuing	Continuing

The FY 2015 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 strategic redeployment of forces in the face of technological challenges and resource constraints, 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.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> / BA 6: <i>RDT&E Management Support</i>	R-1 Program Element (Number/Name) PE 0605104D8Z / <i>Technical Studies Support and Analysis</i>
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B. Program Change Summary (\$ in Millions)	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO	FY 2015 Total
Previous President's Budget	32.266	24.379	24.589	-	24.589
Current President's Budget	30.951	21.930	24.501	-	24.501
Total Adjustments	-1.315	-2.449	-0.088	-	-0.088
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-2.949	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	2.000	-			
• SBIR/STTR Transfer	-0.366	-			
• Strategic Efficiency Savings	-	-	-0.088	-	-0.088
• FY 2014 Program Adjustments	-	-2.400	-	-	-
• FFRDC	-	-0.049	-	-	-

Change Summary Explanation

The reduction is a strategic efficiency approach to reduce funding and staffing. As a result, we provide a better alignment of funding and provide support to a smaller military force.

In FY 2014 and beyond Global Theater Security Cooperation Management Information Systems was transferred to Defense Security Cooperation Agency.

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.

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605104D8Z / <i>Technical Studies Support and Analysis</i>	Project (Number/Name) P421 / <i>Technical Studies</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
P421: <i>Technical Studies</i>	33.001	30.951	21.930	24.501	-	24.501	25.104	26.108	25.818	25.303	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

The FY 2015 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 strategic redeployment of forces in the face of technological challenges and resource constraints, 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.

From FY 2010 through FY 2013 this program element included 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 was transferred to the Defense Security Cooperation Agency beginning in FY 2014.

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

	FY 2013	FY 2014	FY 2015
Title: Technical Studies and Analyses Support for the Office of the Secretary of Defense	23.942	21.930	24.501
FY 2013 Accomplishments: Technical Support for the USD(Acquisition, Technology & Logistics): Studies and analyses of: Strengthening peacekeeping and counter-insurgency capabilities of allied states, strategic command and control, aircraft engine sustainment, air and missile defense capabilities integration, future vertical lift requirements, cybersecurity operational requirements, overhead infrared technology, space launch capabilities sustainment, 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 safeguards, operational logistics requirements, strategic basing requirements, improving resource efficiency in DoD installations, energy requirements in contingency operations and			

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605104D8Z / <i>Technical Studies Support and Analysis</i>	Project (Number/Name) P421 / <i>Technical Studies</i>

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

	FY 2013	FY 2014	FY 2015
<p>conventional conflicts, logistics infrastructure requirements, NATO policy planning, identifying acquisition program risk, affordability of acquisition programs and preventing cost growth in investment 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> <p>Assessments of active and reserve force structure and weapons systems performance and cost effectiveness, communications infrastructure planning, technical studies and analyses to support independent cost estimates and economic research, scenario analyses, electronic warfare capabilities, military disability claims processing requirements, space tracking and surveillance capabilities, weapons system survivability, munitions industrial base capabilities, special operations force planning, execution of investment programs, comparative analyses of alternative strategic and conventional weapons systems configurations and force levels, unmanned aerial vehicle options, 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>Weapons of mass destruction defense, anti-access threat planning, Asia-Pacific strategic opportunities and challenges, space assurance, developing deterrence strategies, airpower force structure, U.S. - Russia defense policy engagement, cyber strategy, countering infiltration, resiliency of logistics capabilities, sub-Saharan Africa counterterrorism requirements, joint stability operations requirements, 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, unmanned aerial vehicle personnel planning, military sexual harassment and violence prevention, retirement benefit policy, equal opportunity policy, improving military applicant screening, retaining key officer and senior enlisted personnel, and reserve policy planning</p> <p>Technical Support for the USD(Intelligence): Studies and analyses of:</p>			

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605104D8Z / <i>Technical Studies Support and Analysis</i>	Project (Number/Name) P421 / <i>Technical Studies</i>

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

	FY 2013	FY 2014	FY 2015
<p>Strategic nuclear balance, cyber situational awareness, improving cyber support to intelligence operations, and cyber investment strategies</p> <p>Technical Support for the Joint Staff conducting joint research with OSD:</p> <p>Studies and analyses with OSD supporting global operational energy infrastructure, air warfare, small arms requirements, 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>Personal protection equipment from weapons of mass destruction, satellite ground control systems, space portfolio architectures, Allied technology and warfighting capability planning, strategic command and control recapitalization requirements, Arctic mission requirements, conventional munitions, network interoperability in the acquisition process, space and missile industrial base capabilities assessments, cyber infrastructure planning, technical requirements for arms control treaty compliance, future technology requirements in defense manufacturing, foreign investment in the defense industry, improving the use of commercial technology from small manufacturers, impacts of regulations on industry, the shipbuilding supplier industrial base, the effect of service life extension on support costs, measuring system reliability, modeling supply chain performance in the acquisition process, maintenance technology investment planning, strategic basing requirements, DoD installation sustainability, DoD energy and logistic strategic planning, NATO investment planning, 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, aircraft and vertical lift system evaluation, force structure planning, active and reserve personnel force models, assessments in support of scenario analyses, cyber requirements, military healthcare cost growth, economic development effectiveness in counterinsurgency operations, technical studies and analyses to support independent cost estimates and economic research, comparative analyses of alternative strategic and conventional weapons systems configurations and</p>			

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense	Date: March 2014
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Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605104D8Z / <i>Technical Studies Support and Analysis</i>	Project (Number/Name) P421 / <i>Technical Studies</i>
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B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2013	FY 2014	FY 2015
<p>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, maintaining regional deterrence and counterproliferation, strengthening regional peacekeeping operations, NATO policy engagement, international defense trade relationships, European crisis coordination planning, missing personnel recovery capabilities, cyber consequence management, space strategic guidance planning and sensing capabilities, homeland defense and civil/reserve support requirements, border security and evolving threats, 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>Recruiting and retention issues, strengthening veteran support programs and veteran civilian transition programs, 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, civilian workforce sustainability, improving outcomes in DoD education activities, sexual assault prevention, and the 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, standoff attack capabilities, joint command and control, and joint maintenance capabilities improvement</p> <p>FY 2015 Plans:</p>			

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Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605104D8Z / <i>Technical Studies Support and Analysis</i>	Project (Number/Name) P421 / <i>Technical Studies</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<p>Technical Support for the USD(Acquisition, Technology & Logistics): Studies and analyses of:</p> <p>Joint warfighting capability and technology planning, strategic and conventional system technology, counter WMD defense capabilities, space portfolio architectures, industrial base capabilities assessments, cyber operational requirements, defense manufacturing technology, acquisition policy effectiveness, global defense industry trends, technologies for evolving mission requirements, allied defense capabilities, strategic basing requirements, DoD installations planning, logistics supply chain and energy 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>Strategic tradeoffs and risk management, maintaining force readiness, personnel force models, assessments in support of scenario analyses, military health programs, 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 planning, deterrence and counterproliferation requirements, international defense trade and industrial relationships, NATO requirements planning, technological and external effects on strategic requirements, space and cyber strategic guidance planning, contingency humanitarian operations, countering nascent terrorist development, 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>			

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Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605104D8Z / <i>Technical Studies Support and Analysis</i>	Project (Number/Name) P421 / <i>Technical Studies</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2013	FY 2014	FY 2015
Active and reserve recruiting and retention issues, compensation and legacy costs, forecasting the impacts and the development of mitigation strategies for impacts of potential force drawdowns, reserve component readiness and sustainability, military family issues, sexual assault prevention, and new strategies for managing the Total Force				
Technical Support for the USD(Intelligence): Studies and analyses of:				
Surveillance technologies and capabilities, risk management, and military intelligence capabilities				
Technical Support for the Joint Staff conducting joint research with OSD:				
Studies and analyses with OSD addressing mobility capabilities, supply chain requirements, countering anti-access environments, force programming planning, and joint contingency basing requirements				
Title: Global Theater Security Cooperation Management information Systems (TSCMIS) Program		7.009	-	-
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.				
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.				
FY 2013 Accomplishments: Program management (\$1,026K); requirements management (\$282K); software development (\$2,340K); systems engineering (\$1,760); testing (\$450K); logistics management (\$1,151K)				
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 2015 Plans: Program was transferred to the Defense Security Cooperation Agency in FY 2014.				
Accomplishments/Planned Programs Subtotals		30.951	21.930	24.501

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605104D8Z / <i>Technical Studies Support and Analysis</i>	Project (Number/Name) P421 / <i>Technical Studies</i>

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

N/A

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

FY 2015 BA: \$21.001 FY 2015 BA Assoc w/Metrics: \$21.001M Percent FY 2015 BA Assoc w/Metrics: 100%

This program conducts approximately 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.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 6: RDT&E Management Support</i>	R-1 Program Element (Number/Name) PE 0605110D8Z I USD (A&T) <i>Critical Technology Support</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
Total Program Element	-	0.669	-	-	-	-	-	-	-	-	Continuing	Continuing
P110: <i>USD (A&T) Critical Technology Support</i>	-	0.669	-	-	-	-	-	-	-	-	Continuing	Continuing

The FY 2015 OCO Request will be submitted at a later date.

Note

This program was realigned under program element (PE) 0605798D8Z, Defense Technology Analysis, in the Critical Technology Assessments (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 from the unauthorized access and/or exfiltration of technical data maintained on unclassified DIB networks. The DAMO identifies and categorizes the impact of the

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Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 6: RDT&E Management Support</i>	R-1 Program Element (Number/Name) PE 0605110D8Z I USD (A&T) <i>Critical Technology Support</i>
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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)	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015 Base</u>	<u>FY 2015 OCO</u>	<u>FY 2015 Total</u>
Previous President's Budget	0.840	-	-	-	-
Current President's Budget	0.669	-	-	-	-
Total Adjustments	-0.171	-	-	-	-
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-0.080	-			
• Congressional Rescissions	-0.001	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-0.067	-			
• SBIR/STTR Transfer	-0.023	-			

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense										Date: March 2014		
Appropriation/Budget Activity 0400 / 6					R-1 Program Element (Number/Name) PE 0605110D8Z / USD (A&T) Critical Technology Support				Project (Number/Name) P110 / USD (A&T) Critical Technology Support			
COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
P110: USD (A&T) Critical Technology Support	-	0.669	-	-	-	-	-	-	-	-	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

The FY 2015 OCO Request will be submitted at a later date.

Note

This program was realigned under program element (PE) 0605798D8Z, Defense Technology Analysis, in the Critical Technology Assessments (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:

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

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605110D8Z / USD (A&T) Critical Technology Support	Project (Number/Name) P110 / USD (A&T) Critical Technology Support
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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. Accomplishments/Planned Programs (\$ in Millions)

	FY 2013	FY 2014	FY 2015
Title: USD (A&T) Critical Technology Support	0.669	-	-
FY 2013 Accomplishments: - Maintained technical interface to export technology security organizations and functions. - Established and maintained interface with user community for critical technology assessments.			
Accomplishments/Planned Programs Subtotals	0.669	-	-

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

Line Item	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
• PE 0605798D8Z, P579: <i>Critical Technology Assessments</i>	-	0.940	0.604	-	0.604	1.120	1.320	1.442	1.499	Continuing	Continuing

Remarks

This program was realigned under PE 0605798D8Z, Defense Technology Analysis, in the Critical Technology Assessments (P579) project beginning in FY 2014.

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 6: RDT&E Management Support</i>	R-1 Program Element (Number/Name) PE 0605117D8Z I <i>Foreign Materiel Acquisition and Exploitation</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
Total Program Element	159.154	51.366	48.911	-	-	-	-	-	-	-	Continuing	Continuing
411: <i>Foreign Materiel Acquisition and Exploitation</i>	159.154	51.366	48.911	-	-	-	-	-	-	-	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

The FY 2015 OCO Request will be submitted at a later date.

Note

Funding transfers to Air Force beginning in FY 2015.

A. Mission Description and Budget Item Justification

This program manages the acquisition and assessment of foreign weapons systems, military equipment, and military/dual-use technologies for the military services and defense agencies.

B. Program Change Summary (\$ in Millions)

	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015 Base</u>	<u>FY 2015 OCO</u>	<u>FY 2015 Total</u>
Previous President's Budget	56.012	54.311	-	-	-
Current President's Budget	51.366	48.911	-	-	-
Total Adjustments	-4.646	-5.400	-	-	-
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-4.624	-5.400			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Departmental Adjustments	-0.022	-	-	-	-

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

	FY 2013	FY 2014	FY 2015
Title: Foreign Materiel Acquisition and Exploitation	51.366	48.911	-
FY 2013 Accomplishments: Mission Support (Details provided in Defense-Wide classified book)			
FY 2014 Plans:			

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense	Date: March 2014
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Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> / BA 6: <i>RDT&E Management Support</i>	R-1 Program Element (Number/Name) PE 0605117D8Z / <i>Foreign Materiel Acquisition and Exploitation</i>
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
Mission Support (Details provided in Defense-Wide classified book)			
<i>FY 2015 Plans:</i> Funding transfers to Air Force beginning in FY 2015.			
Accomplishments/Planned Programs Subtotals	51.366	48.911	-

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.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400: Research, Development, Test & Evaluation, Defense-Wide I BA 6: RDT&E Management Support	R-1 Program Element (Number/Name) PE 0605128D8Z I Classified Program
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
Total Program Element	97.603	89.695	100.000	-	-	-	-	-	-	-	Continuing	Continuing
128: Classified Program	97.603	89.695	100.000	-	-	-	-	-	-	-	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

The FY 2015 OCO Request will be submitted at a later date.

A. Mission Description and Budget Item Justification

Classified

B. Program Change Summary (\$ in Millions)

	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015 Base</u>	<u>FY 2015 OCO</u>	<u>FY 2015 Total</u>
Previous President's Budget	89.733	-	-	-	-
Current President's Budget	89.695	100.000	-	-	-
Total Adjustments	-0.038	100.000	-	-	-
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	100.000			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Other Program Adjustments	-0.038	-	-	-	-

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

Project: 128: Classified Program

Congressional Add: Classified

	FY 2013	FY 2014
	89.695	100.000
Congressional Add Subtotals for Project: 128	89.695	100.000
Congressional Add Totals for all Projects	89.695	100.000

Change Summary Explanation

N/A

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 6: RDT&E Management Support</i>	R-1 Program Element (Number/Name) PE 0605128D8Z / <i>Classified Program</i>
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014
Congressional Add: Classified	89.695	100.000
FY 2013 Accomplishments: Classified Program		
FY 2014 Plans: Classified Program		
Congressional Adds Subtotals	89.695	100.000

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

N/A

Remarks

E. Acquisition Strategy

N/A

F. Performance Metrics

None

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 6: RDT&E Management Support</i>	R-1 Program Element (Number/Name) PE 0605130D8Z / <i>Foreign Comparative Testing</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
Total Program Element	18.616	15.352	12.125	-	-	-	-	-	-	-	Continuing	Continuing
P130: <i>Foreign Comparative Testing</i>	18.616	15.352	12.125	-	-	-	-	-	-	-	Continuing	Continuing

The FY 2015 OCO Request will be submitted at a later date.

Note

Rapid Fielding (RF) and Comparative Test is being recast with a focus on operational and developmental prototypes derived from evaluation of foreign equipment and products that will provide the U.S. Armed Services and Special Operations Command (SOCOM) capabilities to counter emerging threats. The Foreign Comparative Testing (FCT) program will increase its focus on finding and leveraging foreign technology solutions that affordably extend the life of existing military platforms/capabilities. FCT's broad reach across our allies and friendly foreign countries will enable finding and developing innovative, cost effective, and potentially interoperable solutions for the DoD, Multi-Service and Combatant Command (COCOM) priority requirements.

In FY 2015, Foreign Comparative Testing funding in Program Element 0605130D8Z is being transferred to PE 0603133D8Z to emphasize operational and developmental prototypes and Budget Activity alignment.

A. Mission Description and Budget Item Justification

The Foreign Comparative Testing (FCT) program supports the warfighter by leveraging 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. The FCTs enhance interoperability, facilitate international collaboration, expand opportunities for prototyping to increase competition in innovation and enable more efficient and affordable transition of technologies into acquisition programs of record. 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). The FCT projects are sponsored by the Services and SOCOM. 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.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense	Date: March 2014
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Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> / BA 6: <i>RDT&E Management Support</i>	R-1 Program Element (Number/Name) PE 0605130D8Z / <i>Foreign Comparative Testing</i>
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B. Program Change Summary (\$ in Millions)	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO	FY 2015 Total
Previous President's Budget	18.174	12.134	21.285	-	21.285
Current President's Budget	15.352	12.125	-	-	-
Total Adjustments	-2.822	-0.009	-21.285	-	-21.285
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-1.842	-			
• Congressional Rescissions	-0.024	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-0.700	-			
• SBIR/STTR Transfer	-0.249	-			
• Other Program Adjustments	-0.007	-	-	-	-
• Realignment of funding to PE 0603133D8Z	-	-	-21.285	-	-21.285
• FFRDC Adjustments	-	-0.009	-	-	-

Change Summary Explanation

FY 2015: Funding in Program Element 0605130D8Z is realigned to PE 0603133D8Z to reflect DoD priorities and Budget Activity alignment.

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense										Date: March 2014		
Appropriation/Budget Activity 0400 / 6					R-1 Program Element (Number/Name) PE 0605130D8Z / <i>Foreign Comparative Testing</i>				Project (Number/Name) P130 / <i>Foreign Comparative Testing</i>			
COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
P130: <i>Foreign Comparative Testing</i>	18.616	15.352	12.125	-	-	-	-	-	-	-	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

The FY 2015 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 advanced 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. The FCTs enhance interoperability, facilitate international collaboration, expand opportunities for prototyping and enable more efficient and affordable transition of technologies into acquisition programs of record. 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). The FCT projects are sponsored 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; 619 projects have been completed to date. Of the 324 evaluations that met the sponsors' requirements, 252 led to procurements worth approximately \$11.000 billion in FY 2013 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 2013 constant year dollars.

The FCT program is a catalyst for teaming and 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 United States. To date, companies across 33 states benefited from FCT projects.

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

	FY 2013	FY 2014	FY 2015
Title: Armor Processing (Army)	1.150	0.880	-
Description: The Army is looking to evaluate personal body armor, small arm protective inserts (SAPI), fabricated by new isostatic and high pressure processing technique. This prototype process has had very promising results and has the potential to reduce the weight and improve the ballistic performance of personal body armor at a lower cost. The current SAPI plates are made by conventional processing techniques which use low pressure autoclave to bond ceramic tiles and high performance fiber composites together. The fiber composite materials are processed separately using hot press prior to the final bonding process. This production method cannot provide uniform high pressure throughout the entire processing and therefore, the ballistic performance of current SAPI plates is not optimized. The proposed technology has demonstrated the capability to provide			

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605130D8Z / <i>Foreign Comparative Testing</i>	Project (Number/Name) P130 / <i>Foreign Comparative Testing</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<p>absolute uniform and high pressure for the entire process and also to combine fiber composite consolidation and plate integration into a one-step process. This technology will maximize the bonding strength between fiber composite layers and between composite and the ceramic which will significantly improve the ballistic performance of SAPI plates. Uniform and high pressure processing technology will also dramatically reduce the performance variation which will provide more trade space for weight reduction. The technology developed provides a new manufacturing technique that is unique and unavailable from domestic sources.</p> <p>FY 2013 Accomplishments: Flat panel polyethylene test coupons have been manufactured using varying pressure and temperature processing cycles and are being mechanically tested (bend testing) to measure elastic stiffness. The testing will identify physical differences between laminates consolidated via XTclave™ and traditional axial pressing. Samples were also imaged and mechanically tested for comparison.</p> <p>FY 2014 Plans: Perform modeling and simulation, subcomponent test article production, subcomponent testing, data evaluation and report, armor prototype production, prototype testing and evaluation, write final test report and close out report.</p>			
<p>Title: Clandestine Tactical Audio/Video and Sensor Devices (United States Special Operations Command (USSOCOM))</p> <p>Description: The Clandestine Tactical Audio/Video and Sensor Devices will test, evaluate and qualify ultra-modern, first-of-a-kind, concealable systems that are instrumental in identifying potential adversarial activities, then tracking those activities, and providing response teams with near-real-time actionable intelligence information. This project will qualify new systems that will replace legacy and compromised technology while also avoiding RDT&E, manufacturing, production, and Operations and Support costs worth \$10.750 million.</p> <p>FY 2013 Accomplishments: Analyzed vendor data, contracted for test articles, and began testing preparations at the U.S. Army Intelligence Electronic Test Directorate, Fort Huachuca New Mexico. Conducted technical and safety testing to include verification and acceptance of systems. Completed independent operational test and evaluations, operational user assessments, and submitted final test reports.</p>	1.000	-	-
<p>Title: Dual Purpose 25mm (millimeter) Ammunition for the Joint Strike Fighter (Navy)</p> <p>Description: Dual Purpose 25mm Ammunition for the Joint Strike Fighter will test the performance, reliability and safety of pre-production Norwegian Armor Piercing Explosive (APEX) 25mm rounds for US Navy, Marine Corps and Air Force aircraft application. The APEX projectile is a dual-use round for aircraft gun systems, which is reported to have greater penetration with a delay detonation and provides dual purpose lethality.</p>	1.200	0.815	-

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605130D8Z / <i>Foreign Comparative Testing</i>	Project (Number/Name) P130 / <i>Foreign Comparative Testing</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<p><i>FY 2013 Accomplishments:</i> Briefed item qualification plan which received approval from the Weapons Systems Explosive Safety Review Board (WSESRB) in 3Q – 4Q FY 2013. Obtained drawings of final configuration, and drafted gun qualification test plan in 4Q FY 2013.</p> <p><i>FY 2014 Plans:</i> Finalize gun (GAU-22/A Missionized Gun System) “Delta” qualification plan in 1Q FY 2014. Present Final Type Qualification results to WSESRB during 2Q FY 2014. Procure and receive gun qualification test assets in 1Q FY 2014. Obtain foreign data/ test reports from qualification tests in 1Q – 2Q FY 2014. Execute gun qualification plan during 3Q – 4Q FY 2014. Complete analysis and qualification test report in 4Q FY 2014.</p>			
<p><i>Title:</i> Rapid DNA Profiler (United States Special Operations Command (USSOCOM))</p> <p><i>Description:</i> Evaluate a new system that provides actionable intelligence by positively matching recently discovered evidence with a person of interest, using DNA samples, with results in seventy-five minutes. This new system will quickly confirm connections between detained persons of interest and gathered evidence within seventy-five minutes while also avoiding RDT&E, manufacturing, production, and Operations and Support costs worth \$25.560 million.</p> <p><i>FY 2013 Accomplishments:</i> Analyzed vendor data, received test articles, and conducted technical and safety testing to include verification and acceptance of the systems. Completed operational assessment of systems with representative users, and submitted final test reports.</p>	1.000	-	-
<p><i>Title:</i> Secondary Propulsion Thrusters (Navy)</p> <p><i>Description:</i> Test and qualify pump-jet propulsion technology for the first-time use as Secondary Propulsion Thrusters as a submarine Secondary Propulsion System (SPS). These pump-jet Secondary Propulsion Thrusters have the potential to improve ship control, operational performance and greatly reduce Total Ownership Cost. The new SPS will provide variable speed control and directional thrust to allow the ship’s driver to maneuver the submarine in waters where currents are very volatile and during mooring and underway evolutions. The primary outputs and efficiencies produced by this project are 1) improved control of the submarine; 2) an RDT&E cost avoidance of \$532.000 million; and 3) an Operations and Support cost avoidance of \$181.000 million. Following successful at-sea operational testing, the technology will be considered for insertion into the Virginia Class Block V baseline. The same pump jet technology will also be considered on the Ohio Replacement design.</p> <p><i>FY 2013 Accomplishments:</i> Provided engineering and management support for the jet pump procurement throughout 3Q-4Q FY 2013.</p> <p><i>FY 2014 Plans:</i></p>	1.300	0.050	-

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014		
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605130D8Z / <i>Foreign Comparative Testing</i>	Project (Number/Name) P130 / <i>Foreign Comparative Testing</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2013	FY 2014	FY 2015
Perform factory testing on jet pump in 2Q FY 2014. Finalize land-based test plan, procedures, and receive test articles during 3Q FY 2014. Integrate test article system and start land-based testing in 4Q FY 2014.				
<p>Title: Seismic Detection System (Navy)</p> <p>Description: This project will test and evaluate a state-of-the-art Russian sensor system that can detect the presence of human activity (walking, digging) associated with improvised explosive device (IED) emplacement, perimeter/border intrusion of unauthorized individuals and provide alerts when that activity occurs within a user defined geographical boundary.</p> <p>FY 2013 Accomplishments: Initiated test planning documentation, and received first delivery of test articles in 4Q FY 2013.</p> <p>FY 2014 Plans: Complete testing of first delivery of test articles in 1Q FY 2014. Complete testing of second delivery of test articles in 3Q FY 2014. Submit final Test Report, and complete and Close-Out report in 4Q FY 2014.</p>		1.090	0.550	-
<p>Title: Stabilized Small Arms Mount (Navy)</p> <p>Description: Tests an innovative, highly reliable, two-man portable Stabilized Small Arms Mount (SSAM) suitable for the harsh maritime and operational environments in which the warfighters of small-to-medium size craft operates. The gyro stabilized system should be able to consistently and accurately deliver first hit capability of small arms fire to intended targets without increasing any of the craft's signatures. The system will replace crew-served weapon stations, allowing the operator to move in off the weather deck. The primary outputs and efficiencies produced by this project are 1) increased weapon capability, reliability, and warfighter safety; 2) avoidance of RDT&E costs worth \$4.200 million; and 3) avoidance of Operations and Support costs worth \$49.400 million.</p> <p>FY 2013 Accomplishments: Conducted technical evaluation and contract modifications throughout 1Q-2Q FY 2013. Received and began testing initial systems in 3Q FY 2013. Developed contract and evaluated improved day camera and laser range finder throughout 3Q-4Q FY 2013.</p> <p>FY 2014 Plans: Test and evaluate delivered items during 1Q-2Q FY 2014. Identify other possible improvements which could increase system capabilities in 1Q FY 2014. Finalize the technical data package and contract for follow-on systems in 2Q FY 2014. Obtain Weapon System Explosives Safety Review Board concurrence and conduct initial install on first craft in 3Q FY 2014. Prepare and submit final close-out report in 4Q FY 2014.</p>		1.000	0.500	-
<p>Title: Web Based Weather Portal (Air Force)</p>		1.000	0.058	-

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605130D8Z / <i>Foreign Comparative Testing</i>	Project (Number/Name) P130 / <i>Foreign Comparative Testing</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<p>Description: The Web Based Weather Portal tests and qualifies ‘Visual Weather’ software to provide commercial-off-the-shelf capability to ingest, decode, and display weather observations and forecast products. The portal will expand its use to distribute Air Force Weather processing needs across the enterprise in a net centric mode providing efficiencies, expanded capabilities and cost savings over current approaches. In particular, it can be used for meteorological data processing and visualization, contain interactive forecasting tools, enhance forecast production and workflow management, and develop adherence to the Open Geospatial Consortium's (OGC) standards for Web Mapping Services (WMS), Web Coverage Services, and Web Feature Services (WFS). In addition, Visual Weather is compatible with the Joint Meteorological and Oceanographic (METOC) Broker Language (JMBL), which is Air Force Weather’s current Web service approach to the exchange of information between meteorological and oceanographic data providers and user applications. The use of Visual Weather reduces the time the weather forecaster spends on product generation and allows more time for quality control of the resultant weather product. The distribution of data across the Air Force Weather Enterprise will also provide a level of Continuity of Operations that currently does not exist if connection to the Air Force Weather Agency is lost.</p> <p>FY 2013 Accomplishments: Finalized project planning and solicited and contracted for the software test licenses. Procured and delivered the Visual Weather software and test equipment, conducted Web Based Weather Portal analysis, and finalized test and evaluation planning.</p> <p>FY 2014 Plans: Conduct initial technical testing and prepare technical test report. Conduct operational/user assessment test and evaluation and prepare the operational/user test reports. Focus testing on the performance in the operational environment. Prepare the decision packet and complete the final test report.</p>			
<p>Title: 40mm Counter Defilade Grenade and Fire Control System (Army)</p> <p>Description: Tests and qualifies a new prototype 40mm round capable of providing an enhanced lethality solution for defeating personnel targets in defilade. This ammunition achieves this objective by air-bursting the 40mm munitions over the target thereby increasing the probability of incapacitation. Currently, U.S military does not have this capability in 40mm Low-Velocity (LV) Grenades. The current U.S. inventory of 40mm LV Grenade ammunition has been in use for at least the past 50 years without any improvements in functionality, capability or lethality. This ammunition must be compatible with the M203 or M320 40mm Low velocity rifle mounted or stand-alone Grenade launcher.</p> <p>FY 2013 Accomplishments:</p>	1.150	0.842	-

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605130D8Z / <i>Foreign Comparative Testing</i>	Project (Number/Name) P130 / <i>Foreign Comparative Testing</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<p>Defined acquisition strategy, and sought out a non-standard ammunition group to assist with the specialized purchasing required for the Blanket Purchase Agreements (BPA) with foreign companies. Completed BPA procurement package, released contemplation letters, and awarded contract. Structured and developed procurement contract, and defined milestones.</p> <p>FY 2014 Plans: Procure test articles, conduct engineering analysis/study, analyze vendor data, conduct technical testing, perform operator/user assessment test, write test reports, prepare decision packet and close out report.</p>			
<p>Title: Rapid Airfield Damage Assessment System (RADAS) (Air Force)</p> <p>Description: Test and evaluate a Foreign Object Damage (FOD) Detection System for suitability as a component of the Rapid Airfield Damage Assessment System (RADAS). This system will locate, measure, and classify airfield damage within thirty minutes after an attack to achieve critical repair times to launch or recover aircraft sorties as identified in the Airfield Damage Repair (ADR) Modernization Program. This system utilizes continuous scanning tower-mounted, low-light television sensors to provide 24/7, all weather, FOD detection, with the ability to auto-notify multiple agencies simultaneously (to include to mobile devices). The system will be evaluated for its performance against the ADR measurement and classification requirements as well as the ability to integrate with Geospatial Expeditionary Planning Tool (GeoExPT), ground robotic vehicles, and components of the Multiple Unidentified Explosive Ordnance (UXO) Removal System (MURS). RADAS supports the ADR modernization program which has an identified and validated requirement for an automated damage assessment system.</p> <p>FY 2014 Plans: Procure test articles in 3Q FY 2014 for the technical evaluation phase. Install and integrate the test articles at Silver Flag Contingency Training Site, Tyndall Air Force Base, Florida. Develop and obtain approvals for both technical and war-fighter evaluation test plans in 4Q FY 2014.</p>	-	1.500	-
<p>Title: Minor Resource Projects</p> <p>Description: Enhanced Sniper Detection and Locating (SOCOM), Moving Target Indication System (Navy), Thin Line Towed Array Handler System Technology Insertion (Navy), Multi-Diver Heating and Cooling System for Wet Submersibles, Air Portable Hot Mix Asphalt Plant (Air Force), Mine Resistant Combat Boot (Army), Multifunctional Information Distribution System (MIDS) Joint Tactical Radio System (JTRS) Radio Frequency Amplifier (RFA) (Navy), Energy Absorbing Material for Improved Blunt Impact/Blunt Trauma Protection (D3) (Army), Lightweight M3A1 Recoilless Rifle (Army), Computer Network Defense (CND) Advanced Persistent Threat (APT) Detection (Navy), H-1 Crash-resistant, Ballistic-tolerant, Fuel Cell Qualification (Navy), Mobile Gunnery Live Fire Monitoring System (MGLFMS) (Navy), Electronic Underwater Navigation (United States Special Operations Command (USSOCOM)), and Enhanced Optical and Transceiver Capability (United States Special Operations Command (USSOCOM)).</p>	5.462	6.930	-

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605130D8Z / <i>Foreign Comparative Testing</i>	Project (Number/Name) P130 / <i>Foreign Comparative Testing</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<p><i>FY 2013 Accomplishments:</i> The following projects finalized testing, received test articles, and completed reporting and transition plans: Enhanced Sniper Detection and Locating, Moving Target Indication System, Thin Line Towed Array Handler System Technology Insertion, and Multi-Diver Heating and Cooling System for Wet Submersibles.</p> <p><i>FY 2014 Plans:</i> The following projects will continue to test, receive test articles, and complete reporting and transition plans: Air Portable Hot Mix Asphalt Plant, Mine Resistant Combat Boot, Multifunctional Information Distribution System (MIDS) Joint Tactical Radio System (JTRS) Radio Frequency Amplifier (RFA), Energy Absorbing Material for Improved Blunt Impact/Blunt Trauma Protection (D3), Lightweight M3A1 Recoilless Rifle, Computer Network Defense (CND) Advanced Persistent Threat (APT) Detection (Navy), H-1 Crash-resistant, Ballistic-tolerant, Fuel Cell Qualification, Mobile Gunnery Live Fire Monitoring System (MGLFMS), Electronic Underwater Navigation, and Enhanced Optical and Transceiver Capability.</p>			
Accomplishments/Planned Programs Subtotals	15.352	12.125	-

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

Remarks

D. Acquisition Strategy
N/A

E. Performance Metrics
Since the program's inception in 1980, Office of Secretary of Defense has invested about \$1.170 billion in FY 2013 constant year dollars to initiate 671 projects; 619 projects have been completed to date. Of the 324 evaluations that met the sponsors' requirements, 252 led to procurements worth over \$11.000 billion. In FY 2013, FCT had a transition rate of 84 percent for completed projects, exceeding the objective of 40 percent for demonstration programs.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 6: RDT&E Management Support</i>					R-1 Program Element (Number/Name) PE 0605142D8Z / <i>Systems Engineering</i>							
COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
Total Program Element	39.118	38.882	39.606	44.246	-	44.246	44.256	44.265	44.274	44.283	Continuing	Continuing
P142: <i>Systems Engineering</i>	34.554	34.326	30.324	34.715	-	34.715	34.364	34.345	34.292	34.080	Continuing	Continuing
P143: <i>Program Protection</i>	4.564	4.556	4.300	4.531	-	4.531	4.892	4.920	4.982	5.203	Continuing	Continuing
P241: <i>Systems Engineering Research Center</i>	0.000	-	4.982	5.000	-	5.000	5.000	5.000	5.000	5.000	Continuing	Continuing

The FY 2015 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 DASD(SE)'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, providing 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) 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.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense	Date: March 2014
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Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> / BA 6: <i>RDT&E Management Support</i>	R-1 Program Element (Number/Name) PE 0605142D8Z / <i>Systems Engineering</i>
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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 2013	FY 2014	FY 2015 Base	FY 2015 OCO	FY 2015 Total
Previous President's Budget	43.195	44.237	52.067	-	52.067
Current President's Budget	38.882	39.606	44.246	-	44.246
Total Adjustments	-4.313	-4.631	-7.821	-	-7.821
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-3.023	-4.400			
• Congressional Rescissions	-0.116	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-1.174	-			
• Strategic Efficiency Savings	-	-	-7.821	-	-7.821
• FFRDC	-	-0.231	-	-	-

Change Summary Explanation

The reduction is a strategic efficiency approach to reduce funding and staffing. As a result, we provide a better alignment of funding and provide support to a smaller military force.

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400 / 6					R-1 Program Element (Number/Name) PE 0605142D8Z / <i>Systems Engineering</i>				Project (Number/Name) P142 / <i>Systems Engineering</i>			
COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
P142: <i>Systems Engineering</i>	34.554	34.326	30.324	34.715	-	34.715	34.364	34.345	34.292	34.080	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

The FY 2015 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 and 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 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 engineering policy, guidance, and workforce development to drive the development of fully capable and supportable weapons systems.
- Oversee Component implementation of engineering initiatives and conduct independent assessments.

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense	Date: March 2014
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Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605142D8Z / <i>Systems Engineering</i>	Project (Number/Name) P142 / <i>Systems Engineering</i>
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- 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 courses, to ensure the 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.

System Analysis

- 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 2013	FY 2014	FY 2015
<p>Title: Systems Engineering Initiatives</p> <p>Description: The DASD(SE) provides objective assessments of program risk to support knowledge-based decision making by DoD leaders regarding DoD MDAPs and MAISs.</p> <p>FY 2013 Accomplishments: Strategic Thrust: Major Program Support</p> <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. • Continued expansion of systems integration and development planning risk assessments. • Continued monitoring of programs, provided 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 Progress Reviews (IPRs), Defense Space Acquisition Boards (DSABs) and Information Technology Advisory Boards (ITABs). • Reviewed MDAP Request for Proposals for critical engineering requirements. 	34.326	30.324	34.715

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense	Date: March 2014
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Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605142D8Z / <i>Systems Engineering</i>	Project (Number/Name) P142 / <i>Systems Engineering</i>
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<p>Strategic Thrust: Systems Engineering Capabilities Assessment</p> <ul style="list-style-type: none"> • Conducted analysis of Military Departments systems engineering self-assessments; conducted analysis of DoD’s SE capability. • Authored annual systems engineering Report to Congress. • Developed and strengthened 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, including a complete update to Chapter Four of the Defense Acquisition Guidebook on Systems Engineering; reviewed all acquisition policy for SE implications. • 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; oversaw its implementation and execution 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 Universit Affiliated Research Center (UARC) and conducted 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. • Expand systems integration and development planning risk assessments. • Continue 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. 			

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605142D8Z / <i>Systems Engineering</i>	Project (Number/Name) P142 / <i>Systems Engineering</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<ul style="list-style-type: none"> • 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. <p>Strategic Thrust: Specialty Engineering</p> <ul style="list-style-type: none"> • Continue implementation of engineering policies for the integration of specialty engineering functions as part of the SE responsibility in the acquisition process including, but not limited to, cyber security; program protection in accordance with Reference (gc); software; reliability, availability, and maintainability; 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), all Department non-construction engineering and assist software engineering. • 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 Department's 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"> • Support Service and component implementation of updated 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. 			

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605142D8Z / <i>Systems Engineering</i>	Project (Number/Name) P142 / <i>Systems Engineering</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<p>Strategic Thrust: Systems Engineering Capabilities Assessment</p> <ul style="list-style-type: none"> • Conduct analysis of Military Departments' annual systems engineering self-assessments; conduct analysis of DoD's SE capability. • Author DoD Annual Systems Engineering Report to Congress. • 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 implementation 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. <p>FY 2015 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. • Conduct SE and execution risk assessments. • Perform systems integration and development planning risk assessments. • Monitor programs, providing 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 use of 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. 			

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605142D8Z / <i>Systems Engineering</i>	Project (Number/Name) P142 / <i>Systems Engineering</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<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 in the acquisition process including, but not limited to, cyber security; program protection in accordance with Reference (gc); software; reliability, availability, and maintainability; 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), all Department non-construction engineering and assist software engineering. • 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 the Department's 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. <p>Strategic Thrust: Systems Engineering Capabilities Assessment</p> <ul style="list-style-type: none"> • Conduct analysis of Military Departments' systems engineering self-assessments; conduct analysis of DoD's SE capability. • Author DoD Annual Systems Engineering Report to Congress. 			

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense	Date: March 2014
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Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605142D8Z / <i>Systems Engineering</i>	Project (Number/Name) P142 / <i>Systems Engineering</i>
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<ul style="list-style-type: none"> • 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	34.326	30.324	34.715

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

N/A

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

Improve the Systems Engineering effectiveness of the Department's acquisition enterprise and provide Department leadership with technical insights into acquisition program performance through:

- 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.
- 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 (OIPTs), 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.

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605142D8Z / <i>Systems Engineering</i>	Project (Number/Name) P142 / <i>Systems Engineering</i>
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- A systems engineering workforce staffed, trained and certified with capable and experienced personnel.
- 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.

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400 / 6					R-1 Program Element (Number/Name) PE 0605142D8Z / <i>Systems Engineering</i>				Project (Number/Name) P143 / <i>Program Protection</i>			
COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
P143: <i>Program Protection</i>	4.564	4.556	4.300	4.531	-	4.531	4.892	4.920	4.982	5.203	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

The FY 2015 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. Comprehensive Program Protection Planning 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. Activities carried out support implementation of DoD Directive 5200.44 Trusted Systems and Networks with 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 2013	FY 2014	FY 2015
Title: Program Protection	4.556	4.300	4.531
FY 2013 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. 			
<ul style="list-style-type: none"> • 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). 			
<ul style="list-style-type: none"> • Collaborated in developing Defense Federal Acquisition Regulation Supplement (DFARS) or Federal Acquisition Regulation (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. 			

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense	Date: March 2014
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Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605142D8Z / <i>Systems Engineering</i>	Project (Number/Name) P143 / <i>Program Protection</i>
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<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><i>FY 2014 Plans:</i> 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. <p>• Advance the state of the practice of systems security engineering.</p> <ul style="list-style-type: none"> - Continue development of methodology to identify and mitigate security risk. - Courseware, guidance dissemination, mentoring of Service teams, training, and outreach. <p><i>FY 2015 Plans:</i> 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. <p>• Advance the state of the practice of systems security engineering.</p> <ul style="list-style-type: none"> - Continue development of methodology to identify and mitigate security risk. - Courseware, guidance dissemination, mentoring of Service teams, training, and outreach. 			
Accomplishments/Planned Programs Subtotals	4.556	4.300	4.531

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

Remarks

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605142D8Z / <i>Systems Engineering</i>	Project (Number/Name) P143 / <i>Program Protection</i>
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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.

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605142D8Z / <i>Systems Engineering</i>	Project (Number/Name) P241 / <i>Systems Engineering Research Center</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
P241: <i>Systems Engineering Research Center</i>	-	-	4.982	5.000	-	5.000	5.000	5.000	5.000	5.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

The FY 2015 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 2013	FY 2014	FY 2015
Title: Systems Engineering Research Center	-	4.982	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:			

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605142D8Z / <i>Systems Engineering</i>	Project (Number/Name) P241 / <i>Systems Engineering Research Center</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<p>(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;</p> <p>(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;</p> <p>(3) Trusted Systems: secure defense systems from cyber and other threats through systemic security approaches that complement incomplete current perimeter/network defense methods; and</p> <p>(4) Human Capital Development: speed the professional development of strong systems engineers and technical leaders in the Department and the Defense Industrial Base.</p> <p>FY 2015 Plans: Continue to enhance engineering methods, processes and tools (MPTs) to improve in the following areas:</p> <p>(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;</p> <p>(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;</p> <p>(3) Trusted Systems: secure defense systems from cyber and other threats through systemic security approaches that complement incomplete current perimeter/network defense methods; and</p> <p>(4) Human Capital Development: speed the professional development of strong systems engineers and technical leaders in the Department and the Defense Industrial Base.</p>			
Accomplishments/Planned Programs Subtotals	-	4.982	5.000

C. Other Program Funding Summary (\$ in Millions) N/A
Remarks

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605142D8Z / <i>Systems Engineering</i>	Project (Number/Name) P241 / <i>Systems Engineering Research Center</i>

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.

- Generation and execution of relevant and appropriate SERC Research tasks.
- Promulgation of advanced SE approaches through research publications, presentations and monographs.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 6: RDT&E Management Support</i>	R-1 Program Element (Number/Name) PE 0605151D8Z I <i>Studies and Analysis Support - OSD</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
Total Program Element	0.000	5.901	5.837	2.665	-	2.665	3.035	3.370	3.080	2.491	Continuing	Continuing
001: <i>Joint Service Training & Readiness System Development Program</i>	0.000	5.901	5.837	2.665	-	2.665	3.035	3.370	3.080	2.491	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

The FY 2015 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)

	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015 Base</u>	<u>FY 2015 OCO</u>	<u>FY 2015 Total</u>
Previous President's Budget	6.457	5.871	6.327	-	6.327
Current President's Budget	5.901	5.837	2.665	-	2.665
Total Adjustments	-0.556	-0.034	-3.662	-	-3.662
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-0.556	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Efficiency Reduction	-	-	-3.662	-	-3.662
• FFRDC Reduction	-	-0.034	-	-	-

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense	Date: March 2014
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Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 6: RDT&E Management Support</i>	R-1 Program Element (Number/Name) PE 0605151D8Z / <i>Studies and Analysis Support - OSD</i>
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Change Summary Explanation

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 2013	FY 2014	FY 2015
<p>Title: Joint Service Training & Readiness System Development</p> <p>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.</p> <p>FY 2013 Accomplishments:</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; 	5.901	5.837	2.665

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense	Date: March 2014
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Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I</i> BA 6: <i>RDT&E Management Support</i>	R-1 Program Element (Number/Name) PE 0605151D8Z / <i>Studies and Analysis Support - OSD</i>
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<ul style="list-style-type: none"> • 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 • Continue the evaluation and optimization of training for sexual assault prevention and response. <p>FY 2014 Plans:</p> <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. <p>FY 2015 Plans:</p> <ul style="list-style-type: none"> . Continue to assess workforce skills and analyze training requirement to support DoD's expanded use of unmanned systems; . Continue to assess workforce skills and analyze training requirement to support the DoD Strategy for Operating in Cyberspace; . Continue to plan and assess training requirements for non-standard force requirements; . Continue to identify and analyze specific benefits of early and effective incorporation of system training details into acquisition programs, particularly those with significant human systems interfaces; . Assess effectiveness of VW technology used to support DoD training; 			

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Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 6: RDT&E Management Support</i>	R-1 Program Element (Number/Name) PE 0605151D8Z / <i>Studies and Analysis Support - OSD</i>
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<ul style="list-style-type: none"> . Evaluate effectiveness and impacts of options for reducing force structure; . Assess effectiveness of studied programs to lower or stop suicide rates; . Assess effectiveness of policy changes in the drug demand reduction program; . Continue to investigate the opportunities for a continuum of service in a downsizing military; . Assess effectiveness of alternative approaches for enhancing and managing regionally prepared forces and organizations; . Continue efforts to streamline credentialing and licensing of technical training of service members to help ease transition to civilian life; and . Continue to investigate modeling and simulation technologies to increase training effectiveness and lower costs 			
Accomplishments/Planned Programs Subtotals	5.901	5.837	2.665

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

N/A

Remarks

E. Acquisition Strategy

N/A

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.

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Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide / BA 6:</i> <i>RDT&E Management Support</i>	R-1 Program Element (Number/Name) PE 0605161D8Z / <i>Nuclear Matters- Physical Security</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
Total Program Element	3.824	4.362	4.999	4.366	-	4.366	4.402	4.601	4.459	4.316	Continuing	Continuing
P161: <i>Nuclear Matters</i>	3.824	4.362	4.999	4.366	-	4.366	4.402	4.601	4.459	4.316	Continuing	Continuing

The FY 2015 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.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense	Date: March 2014
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Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide / BA 6:</i> <i>RDT&E Management Support</i>	R-1 Program Element (Number/Name) PE 0605161D8Z / <i>Nuclear Matters- Physical Security</i>
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B. Program Change Summary (\$ in Millions)	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO	FY 2015 Total
Previous President's Budget	4.901	5.028	5.095	-	5.095
Current President's Budget	4.362	4.999	4.366	-	4.366
Total Adjustments	-0.539	-0.029	-0.729	-	-0.729
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Strategic Efficiency Savings	-	-	-0.729	-	-0.729
• FFRDC	-	-0.029	-	-	-
• Program Reduction	-0.539	-	-	-	-

Change Summary Explanation

FY 15 reduction is a strategic efficiency approach to reduce funding and staffing. As a result, we provide a better alignment of funding and provide support to a smaller military force.

FY 2013 decrease is a result of general Congressional and sequestration reductions and the Small Business Innovation Research (SBIR) transfer.

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605161D8Z / Nuclear Matters- Physical Security	Project (Number/Name) P161 / Nuclear Matters
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
P161: Nuclear Matters	3.824	4.362	4.999	4.366	-	4.366	4.402	4.601	4.459	4.316	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

The FY 2015 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 2013	FY 2014	FY 2015
Title: Nuclear Weapons Council (NWC) and Committee of Principals (CoP)	0.645	0.754	0.629
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 2013 Accomplishments: - 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			
FY 2014 Plans:			

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014		
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605161D8Z / <i>Nuclear Matters- Physical Security</i>	Project (Number/Name) P161 / <i>Nuclear Matters</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2013	FY 2014	FY 2015
<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 2015 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 2013 Accomplishments:</p> <ul style="list-style-type: none"> - Executed confidence building programs of cooperation with international partners. - Sponsored international partners at national-level nuclear weapons accident/incident exercises. <p>FY 2014 Plans:</p> <ul style="list-style-type: none"> - Execute confidence building programs of cooperation with international partners. - Sponsor international partners at national-level nuclear weapons accident/incident exercises. <p>FY 2015 Plans:</p> <ul style="list-style-type: none"> - Execute confidence building programs of cooperation with international partners. - Sponsor international partners at national-level nuclear weapons accident/incident exercises. 		0.363	0.502	0.449
<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 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)).</p> <p>FY 2013 Accomplishments:</p> <ul style="list-style-type: none"> - 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 		0.386	0.783	0.650

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Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605161D8Z / <i>Nuclear Matters- Physical Security</i>	Project (Number/Name) P161 / <i>Nuclear Matters</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2013	FY 2014	FY 2015
<p>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."</p> <p>- Supported activities that support nuclear surety policy and provide OSD oversight of the Nuclear Surety program.</p> <p>FY 2014 Plans:</p> <p>- 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."</p> <p>- Support activities that support nuclear surety policy and provide OSD oversight of the Nuclear Surety program.</p> <p>FY 2015 Plans:</p> <p>- 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."</p> <p>- Support activities that support nuclear surety policy and provide OSD oversight of the Nuclear Surety program.</p>				
<p>Title: Stockpile Transformation</p> <p>Description: To meet 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.</p> <p>FY 2013 Accomplishments:</p> <p>- 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.</p> <p>- Managed DoD RDT&E activities for nuclear warheads to include B61, W76, W78, W80(0,1), B83, W87, W88 Weapons.</p> <p>- Supported studies for warhead replacement.</p> <p>FY 2014 Plans:</p> <p>- 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.</p> <p>- Manage DoD RDT&E activities for nuclear warheads to include B61, W76, W78, W80(0,1), B83, W87, W88 Weapons.</p>		1.218	1.215	1.083

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense	Date: March 2014
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Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605161D8Z / Nuclear Matters- Physical Security	Project (Number/Name) P161 / Nuclear Matters
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
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<ul style="list-style-type: none"> - Support studies for warhead replacement. <p>FY 2015 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. 			
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<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 2013 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 2014 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. - Support International Conference on Nuclear Security and Technology Demonstrations as part of the Nuclear Security Summit process. <p>FY 2015 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. 	0.918	0.916	0.839
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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605161D8Z / <i>Nuclear Matters- Physical Security</i>	Project (Number/Name) P161 / <i>Nuclear Matters</i>
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
- Develop OSD-wide approach to overseeing Global Nuclear Defense missions within DoD.			
Title: Nuclear Matters Support Program	0.832	0.829	0.716
Description: The Nuclear Matters support program conducts studies / analyses; DoD-NNSA Nuclear Weapons Council activities; and provides funding for analytical support functions.			
FY 2013 Accomplishments: - 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.			
FY 2014 Plans: - 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.			
FY 2015 Plans: - 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.			
Accomplishments/Planned Programs Subtotals	4.362	4.999	4.366

C. Other Program Funding Summary (\$ in Millions)
 N/A
Remarks

D. Acquisition Strategy
 N/A

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605161D8Z / <i>Nuclear Matters- Physical Security</i>	Project (Number/Name) P161 / <i>Nuclear Matters</i>

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.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 6:</i> <i>RDT&E Management Support</i>	R-1 Program Element (Number/Name) PE 0605170D8Z / <i>Support to Networks and Information Integration</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
Total Program Element	8.033	5.632	6.277	27.901	-	27.901	5.243	5.350	5.543	5.879	Continuing	Continuing
002: <i>Defense Architecture Repository</i>	1.215	0.856	1.083	0.948	-	0.948	0.922	0.940	0.974	1.033	Continuing	Continuing
003: <i>Integrated Planning and Management</i>	1.933	1.638	1.781	24.027	-	24.027	1.481	1.510	1.567	1.662	Continuing	Continuing
004: <i>PNT Navigation</i>	4.885	3.138	3.413	2.926	-	2.926	2.840	2.900	3.002	3.184	Continuing	Continuing

The FY 2015 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)

	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015 Base</u>	<u>FY 2015 OCO</u>	<u>FY 2015 Total</u>
Previous President's Budget	6.307	6.301	6.148	-	6.148
Current President's Budget	5.632	6.277	27.901	-	27.901
Total Adjustments	-0.675	-0.024	21.753	-	21.753
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Sequestration Reduction	-0.513	-	-	-	-
• SBIR/STTR Reduction	-0.160	-	-	-	-
• Program Adjustment	-0.002	-	-	-	-
• FFRDC Reduction	-	-0.024	-	-	-
• Efficiency Reduction	-	-	-0.747	-	-0.747
• Department Increase	-	-	22.500	-	22.500

Change Summary Explanation

FY 2013: Sequestration Reduction -0.513 million, SBIR/STTR Reduction -0.160 million, Program Adjustment -0.002 million.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> / BA 6: <i>RDT&E Management Support</i>	R-1 Program Element (Number/Name) PE 0605170D8Z / <i>Support to Networks and Information Integration</i>	
FY 2014: FFRDC Reduction -0.024 million. FY 2015: Efficiency Reduction -0.747 million, Department increase classified program 22.500 million, this department increase is one piece of the Department increase other associated funding can be found under PE 0605170D8Z BA 4 12.5 million and PE0305199D8Z BA 7, 5 million.		

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense										Date: March 2014		
Appropriation/Budget Activity 0400 / 6					R-1 Program Element (Number/Name) PE 0605170D8Z / Support to Networks and Information Integration				Project (Number/Name) 002 / Defense Architecture Repository			
COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
002: Defense Architecture Repository	1.215	0.856	1.083	0.948	-	0.948	0.922	0.940	0.974	1.033	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

The FY 2015 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 2013	FY 2014	FY 2015
Title: DARS Accomplishments and Plans	0.856	1.083	0.948
FY 2013 Accomplishments:			
Completed the development and published DARS Requirements Document			
- Continued to provide policy and guidance for the reengineering of DARS by integrating it with the Enterprise Discovery Service to provide all search, discovery, and understandability of shared architectures			
- Continued enterprise-level operational support for the DoD Architecture Registry System.			
- Continued to work with DoD Component to refine requirements and processes to effectively expose existing architectures for reuse.			
- Continued to expand and refine DARS to accommodate registration /federation requirements.			
- Integration of DARS data services into the "Core Enterprise Services".			
FY 2014 Plans:			

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605170D8Z / <i>Support to Networks and Information Integration</i>	Project (Number/Name) 002 / <i>Defense Architecture Repository</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
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. - Develop and publish common taxonomy in support of JIE Architectures Labeling and Versioning. - Transition the operation, service, and maintenance of DARS to a Military Service for continuing operations and consolidation <i>FY 2015 Plans:</i> Provide policy and technical guidance for the development of DARS Web Service for automated AV-1 registration and support for Segment reporting - Develop and deliver DARS Scorecard management capability for DoD Architectures			
Accomplishments/Planned Programs Subtotals	0.856	1.083	0.948

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.

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense										Date: March 2014		
Appropriation/Budget Activity 0400 / 6					R-1 Program Element (Number/Name) PE 0605170D8Z / Support to Networks and Information Integration				Project (Number/Name) 003 / Integrated Planning and Management			
COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
003: Integrated Planning and Management	1.933	1.638	1.781	24.027	-	24.027	1.481	1.510	1.567	1.662	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

The FY 2015 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 2013	FY 2014	FY 2015
	1.638	1.781	24.027
FY 2013 Accomplishments:			
Continued Architecture, Testing Analysis and Systems Engineering support for more robust and capable leadership command information services and applications. Investigated concepts and initiated 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 for FY13 included:			
- Continued Phantom Signal testing exercises in order to improve National and Nuclear voice conferencing and decision making.			
- Provided oversight on Senior Leader Secure Communications Modernization efforts across the Presidential and Tier I/II Senior Leader support organizations.			
- Continued 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.			
- Continued 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.			

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605170D8Z / <i>Support to Networks and Information Integration</i>	Project (Number/Name) 003 / <i>Integrated Planning and Management</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<ul style="list-style-type: none"> - Continued to investigate and provide oversight on the implementation of senior leader wideband airborne communications. - Continued to work with and provided 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 provided roadmaps for transitioning to IP-based technologies; worked 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> <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. <p>FY 2015 Plans: \$22.500 Maritime Capabilities- Classified program details provided at a higher classification under separate cover. This is one piece of this classified program additional funding can be found under PE 0605170D8Z BA 4, 12.5 million and PE 0305199D8Z, 5 million. \$1.527 million: Continue to enhance Architecture, Testing Analysis and Systems Engineering to enable leadership command information services (LCIS) and applications are validated to provide assured communications in support of senior leadership.</p> <ul style="list-style-type: none"> - Continue to instantiate the efforts for fielding robust, secure, mobile (smart phone and tablet) devices and services for senior leadership, for use initially in the National Capital Region. - Enhance the scope of Phantom Signal testing and validation activities as well as provide oversight on the Senior Leader Secure Communications Modernization Implementation Strategy. - Funding plans include support of a flexible and dynamic testbed (SeCAN) environment for senior leader solutions and infrastructure advancement validation. Future plans include NLCC modernization approaches and architectures (and implementations, where appropriate) for IP-based NC3. 			
Accomplishments/Planned Programs Subtotals	1.638	1.781	24.027

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605170D8Z / <i>Support to Networks and Information Integration</i>	Project (Number/Name) 003 / <i>Integrated Planning and Management</i>

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

Remarks

D. Acquisition Strategy
N/A

E. Performance Metrics
Integrated Planning & Management Performance Metrics:
- Continue development of the required infrastructure to support Senior Leader Secure Mobile Communications.
- Continue development of the overarching planning for the NLCC Initial Capabilities Document.
- Continue policy development (DoDI) for the management of DoD Nuclear Command, Control, and Communications.

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605170D8Z / Support to Networks and Information Integration	Project (Number/Name) 004 / PNT Navigation
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
004: PNT Navigation	4.885	3.138	3.413	2.926	-	2.926	2.840	2.900	3.002	3.184	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

The FY 2015 OCO Request will be submitted at a later date.

A. Mission Description and Budget Item Justification

Funding supports Global Positioning System (GPS) User Equipment Synchronization with GPS space and operational control segments to conduct DoD CIO oversight of Global Positioning System (GPS) management and planning activities required for meeting JCIDs requirements. Funding also supports the DoD's inputs into interagency activities under the National Space-Based Positioning, Navigation, and Timing Executive Committee.

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

	FY 2013	FY 2014	FY 2015
Title: PNT Navigation	3.138	3.413	2.926
FY 2013 Accomplishments:			
Global Positioning System (GPS) User Equipment Synchronization with GPS space and operational control segments to conduct DoD CIO oversight of Global Positioning System (GPS) management and planning activities required for meeting JCIDs requirements. Funding also supports the DoD's inputs into interagency activities under the National Space-Based Positioning, Navigation, and Timing Executive Committee. Funding supported:			
<ul style="list-style-type: none"> - Implemented and managed the International Supplement to GPS Security Policy - Implemented and managed the Information Assurance/COMSEC Supplement to GPS Security Policy - Implemented and managed the GPS Security Policy - Implemented the GPS Protection Profile matrix from Navigation Warfare Concept of Operations in conjunction with Warfighting Operations Plans (OPLANS) and Contingency Plans (CONPLANS) in coordination with US STRATCOM - Implemented and managed PNT Navigation Warfare Annexes to DoDD 4650.05 and all the Operations Plans (OPLANS) and Contingency Plans (CONPLANS) in coordination with US STRATCOM - Continued developing NextGen interfaces with the GPS Wing, Joint Program Development Office (JPDO), and Air Force. 			
Continued implementation of Red Key Sundown Policy			
<ul style="list-style-type: none"> - 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 in her role as co-chair of the Executive Steering Group - Performed annual update of National Five-year Plan for Space-Based Positioning, Navigation and Timing (PNT) - Began drafting the 2014 Federal Radionavigation Plan (FRP) - Applied Navigation Warfare Concept of Operations (contained in DODI 4650.dd undergoing SD-106 approval process) via the Joint Navigation Warfare Center (JNWC) and US STRATCOM to develop Doctrine, Tactics, Techniques and Procedures, 			

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605170D8Z / <i>Support to Networks and Information Integration</i>	Project (Number/Name) 004 / <i>PNT Navigation</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<p>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> <ul style="list-style-type: none"> - Drafted DODI 4650.xx for user equipment certification in DoD <p>FY 2014 Plans:</p> <p>Global Positioning System (GPS) User Equipment Synchronization with GPS space and control segments to conduct DoD CIO oversight of Global Positioning System (GPS) management and planning activities required for meeting JCIDs requirements and supporting 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 - Manage the Information Assurance/COMSEC Supplement to GPS Security Policy - Manage the GPS Security Policy - Continue implementation of the GPS Protection Profile matrix from Navigation Warfare Concept of Operations in conjunction with Warfighting Operations Plans (OPLANS) and Contingency Plans (CONPLANS) in coordination with US STRATCOM - Manage PNT Navigation Warfare Instruction and 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), and Air Force. <p>Continue implementation of Red Key Sundown Policy</p> <ul style="list-style-type: none"> - 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 her 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 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 - Develop additional Instructions for public affairs, receiver certification, and security policy. Develop GPS Security Policy as DoDM and expand scope to include all source PNT - Conduct an inventory of DoD GPS receivers. - Analyze and promote alternative PNT delivery means for inclusion in the force structure for force protection. - Establish PNT Integration Working Group (PING) <p>FY 2015 Plans:</p>			

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605170D8Z / Support to Networks and Information Integration	Project (Number/Name) 004 / PNT Navigation
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<p>Global Positioning System (GPS) User Equipment Synchronization with GPS space and control segments to conduct DoD CIO oversight of Global Positioning System (GPS) management and planning activities required for meeting JCIDs requirements and supporting 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 as all source PNT DoDM - Manage the Information Assurance/COMSEC Supplement to GPS Security Policy as all source PNT DoDM - Manage the GPS Security Policy as all source DoDM - Continue implementation of the GPS Protection Profile matrix from Navigation Warfare Concept of Operations in conjunction with Warfighting Operations Plans (OPLANS) and Contingency Plans (CONPLANS) in coordination with US STRATCOM - Manage PNT Navigation Warfare Instruction and Annexes to all the Operations Plans (OPLANS) and Contingency Plans (CONPLANS) in coordination with US STRATCOM - Manage NextGen interfaces with the GPS Wing, Joint Program Development Office (JPDO), and Air Force. 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 her 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 FY16 FRP - Apply Navigation Warfare Concept of Operations 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 - Implement additional Instructions (DoDIs) for public affairs and receiver certification, and DoDM for security policy. - Manage inventory of DoD GPS receivers. - Analyze and promote alternative PNT delivery means for inclusion in the force structure for force protection via PING 			
Accomplishments/Planned Programs Subtotals	3.138	3.413	2.926

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

N/A

Remarks

D. Acquisition Strategy

N/A

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605170D8Z / <i>Support to Networks and Information Integration</i>	Project (Number/Name) 004 / <i>PNT Navigation</i>

E. Performance Metrics

Implement and successfully manage PNT Navigation Warfare Instructions and Manuals subordinate to DoDD 4650.05 and 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

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 6: RDT&E Management Support</i>	R-1 Program Element (Number/Name) PE 0605200D8Z I <i>General Support to OUSD(I)</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
Total Program Element	15.014	14.172	6.466	2.855	-	2.855	2.931	3.110	3.283	3.489	Continuing	Continuing
001: <i>Developmental Activities</i>	8.175	2.843	3.292	-	-	-	-	-	-	-	Continuing	Continuing
002: <i>Operations Integration</i>	6.439	2.826	2.862	2.578	-	2.578	2.656	2.708	2.858	3.037	Continuing	Continuing
003: <i>Defense Civilian Intelligence Personnel System</i>	0.400	0.310	0.312	0.277	-	0.277	0.275	0.402	0.425	0.452	Continuing	Continuing
004: <i>Irregular Warfare</i>	0.000	8.193	-	-	-	-	-	-	-	-	Continuing	Continuing

The FY 2015 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. Funding transfers to Air Force starting in FY 2015.

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: The Irregular Warfare Intelligence Support project demonstrates new concepts in support of the Theater Special Operations Commands (TSOC). Regional Special Operations Forces (SOF) deployed in small teams in distributed operations working through partners and coalitions that require new technologies, methodologies, and processes to increase the delivery and sharing of actionable intelligence.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 6:</i> <i>RDT&E Management Support</i>	R-1 Program Element (Number/Name) PE 0605200D8Z / <i>General Support to OUSD(I)</i>
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B. Program Change Summary (\$ in Millions)	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO	FY 2015 Total
Previous President's Budget	6.601	6.504	6.625	-	6.625
Current President's Budget	14.172	6.466	2.855	-	2.855
Total Adjustments	7.571	-0.038	-3.770	-	-3.770
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-1.423	-0.038			
• Congressional Rescissions	-	-			
• Congressional Adds	9.000	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Departmental Adjustments	-0.006	-	-3.770	-	-3.770

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

Project: 004: *Irregular Warfare*

Congressional Add: *Irregular Warfare*

	FY 2013	FY 2014
	8.193	-
Congressional Add Subtotals for Project: 004	8.193	-
Congressional Add Totals for all Projects	8.193	-

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605200D8Z / General Support to OUSD(I)	Project (Number/Name) 001 / Developmental Activities
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
001: <i>Developmental Activities</i>	8.175	2.843	3.292	-	-	-	-	-	-	-	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

The FY 2015 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.

Funding transfers to Air Force beginning in FY 2015.

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

	FY 2013	FY 2014	FY 2015
Title: Developmental Activities	2.843	3.292	-
FY 2013 Accomplishments: Leveraged technologies, assessed innovative capabilities, and developed methodologies to support the Defense Intelligence Enterprise.			
FY 2014 Plans: Leverage technologies, assess innovative capabilities, and develop methodologies to support the Defense Intelligence Enterprise.			
FY 2015 Plans: Funding transfers to Air Force beginning in FY 2015.			
Accomplishments/Planned Programs Subtotals	2.843	3.292	-

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

N/A

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605200D8Z / General Support to OUSD(I)	Project (Number/Name) 002 / Operations Integration
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
002: Operations Integration	6.439	2.826	2.862	2.578	-	2.578	2.656	2.708	2.858	3.037	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

The FY 2015 OCO Request will be submitted at a later date.

A. Mission Description and Budget Item Justification

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.

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

	FY 2013	FY 2014	FY 2015
Title: Operations Integration	2.826	2.862	2.578
FY 2013 Accomplishments: (U) Developed technology and evaluated concepts for applications in support of OUSD(I).			
FY 2014 Plans: (U) Continue technology development and concept evaluation for applications in support of OUSD(I).			
FY 2015 Plans: (U) Continue technology development and concept evaluation for applications in support of OUSD(I).			
Accomplishments/Planned Programs Subtotals	2.826	2.862	2.578

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

N/A

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense										Date: March 2014		
Appropriation/Budget Activity 0400 / 6					R-1 Program Element (Number/Name) PE 0605200D8Z / General Support to OUSD(I)				Project (Number/Name) 003 / Defense Civilian Intelligence Personnel System			
COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
003: Defense Civilian Intelligence Personnel System	0.400	0.310	0.312	0.277	-	0.277	0.275	0.402	0.425	0.452	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

The FY 2015 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 hierarchial organizational relationships.

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

Title: Defense Civilian Intelligence Personnel System (DCIPS)	FY 2013	FY 2014	FY 2015
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.	0.310	0.312	0.277
FY 2013 Accomplishments: Developed modifications to the Global Force Management (GFM) Defense Intelligence Organizational Server (DIOS). These modifications included initial development for Common Access Point (CAP) Phase 1 that consists of planning documents. Also completed conversion to Electronic Messaging Version 4.			
FY 2014 Plans: Continue refining design enhancements to improve the effectiveness of the existing DCIPS performance management software and the Global Force Management (GFM) Defense Intelligence Organizational Server (DIOS). For GFM DIOS, will complete development for Common Access Point (CAP) Phase 1 with implementation in March 2014; will begin development of CAP			

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605200D8Z / General Support to OUSD(I)	Project (Number/Name) 003 / Defense Civilian Intelligence Personnel System
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
Phase 2; and convert to the Information Exchange Data Model (IEDM) standard which will eliminate proprietary software standard thus reducing costs. Navy and Army GFM Organization Servers have already successfully completed conversion to IEDM. FY 2015 Plans: Continue design enhancements to improve the effectiveness of the existing DCIPS performance management software and the Global Force Management (GFM) Defense Intelligence Organizational Server (DIOS). Will develop modifications to GFM DIOS as requirements are identified by the Joint Staff J-8.			
Accomplishments/Planned Programs Subtotals	0.310	0.312	0.277

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015</u> <u>Base</u>	<u>FY 2015</u> <u>OCO</u>	<u>FY 2015</u> <u>Total</u>	<u>FY 2016</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• 0305192D8Z: Defense Civilian Intelligence Personnel System	2.079	2.000	1.903	-	1.903	1.795	1.815	1.850	1.792	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

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605200D8Z / General Support to OUSD(I)	Project (Number/Name) 004 / Irregular Warfare
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
004: Irregular Warfare	-	8.193	-	-	-	-	-	-	-	-	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

The FY 2015 OCO Request will be submitted at a later date.

A. Mission Description and Budget Item Justification

- This program element encompasses those activities pertaining to Irregular Warfare operations support and intelligence integration. It provides technology innovation and new concepts and doctrine in support of TSOCs.

- Irregular Warfare is part of the overall Department effort to implement best practices and doctrinal processes which require close synchronization among intelligence, operations, and coalition partners. Joint warfighter needs are driving the integration of the capabilities.

- The objective is the rapid experimentation and development of existing technologies (hardware, software, analytics) to create Irregular Warfare intelligence capabilities.

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

	FY 2013	FY 2014	FY 2015
Title: Irregular Warfare	-	-	-
Description: The Irregular Warfare Intelligence Support project demonstrates new concepts in support of the TSOCs. Regional SOF deployed in small teams in distributed operations working through partners and coalitions that require new technologies, methodologies, and processes to increase the delivery and sharing of actionable intelligence.			
FY 2013 Accomplishments: - Developed irregular warfare intelligence capabilities and capacities in support of the TSOCs to execute phase zero operations in their respective areas of operation. - Demonstrated new concepts and their value in asymmetric operations.			
Accomplishments/Planned Programs Subtotals	-	-	-

	FY 2013	FY 2014
Congressional Add: Irregular Warfare	8.193	-
FY 2013 Accomplishments: - Developed irregular warfare intelligence capabilities and capacities in support of the TSOCs to execute phase zero operations in their respective areas of operation.		

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605200D8Z / <i>General Support to OUSD(I)</i>	Project (Number/Name) 004 / <i>Irregular Warfare</i>
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	FY 2013	FY 2014
- Demonstrated new concepts and their value in asymmetric operations.		
Congressional Adds Subtotals	8.193	-

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

N/A

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 6: RDT&E Management Support</i>	R-1 Program Element (Number/Name) PE 0605502D8Z I <i>Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR)</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
Total Program Element	-	54.815	-	-	-	-	-	-	-	-	Continuing	Continuing
P502: <i>SBIR</i>	-	48.525	-	-	-	-	-	-	-	-	Continuing	Continuing
P500: <i>STTR</i>	-	6.290	-	-	-	-	-	-	-	-	Continuing	Continuing

The FY 2015 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)

	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015 Base</u>	<u>FY 2015 OCO</u>	<u>FY 2015 Total</u>
Previous President's Budget	-	-	-	-	-
Current President's Budget	54.815	-	-	-	-
Total Adjustments	54.815	-	-	-	-
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	54.815	-			

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605502D8Z / <i>Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR)</i>	Project (Number/Name) P502 / <i>SBIR</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
P502: <i>SBIR</i>	-	48.525	-	-	-	-	-	-	-	-	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

The FY 2015 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 2013	FY 2014	FY 2015
<p>Title: SBIR</p> <p>Description: A set-aside program for small business to engage in defense R&D with potential for commercialization.</p> <p>FY 2013 Accomplishments: Represents 2.7% of the extramural Research, Development, Test and Evaluation (RDT&E) budget for OSD.</p> <p>The FY 2013 OSD SBIR technology investment areas included:</p> <p>Integrated Computational Materials – (a) Accelerating discovery, development, performance prediction and certification of materials and systems; (b) providing predictive tools for more affordable and efficient structural health management of military assets, and (c) developing a durable and damage tolerance equivalent for polymer-matrix composites and similar nonmetallic systems and component/material damage characterization</p> <p>Operational Energy & Power – (a) High Efficiency Energy Conversion; (b) Energy Integrated Design & Simulation; (c) High Efficiency Propulsion; (d) Environmental Control Systems; and (e) Flexible & Adaptive Power Distribution</p> <p>Autonomous Systems – (a) Human/Autonomous Systems Interaction and Collaboration; (b) Scalable Teaming of Multiple Autonomous Systems; and (c) Machine Reasoning, Perception, and Intelligence</p> <p>Unmanned Aerial Propulsion Technology – Increasing UAV propulsion durability in a cost effective manner</p>	48.525	-	-

PE 0605502D8Z: *Small Business Innovation Research/Small Business ...*

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense	Date: March 2014
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Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605502D8Z / <i>Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR)</i>	Project (Number/Name) P502 / <i>SBIR</i>
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
Data to Decisions – Advanced visualization and novel interaction methods for discovery, characterization, analysis, and use of data to decisions			
Cyber Security – Information Assurance in the Cyber Domain Technology			
Accomplishments/Planned Programs Subtotals	48.525	-	-

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

N/A

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605502D8Z / <i>Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR)</i>	Project (Number/Name) P500 / STTR
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
P500: STTR	-	6.290	-	-	-	-	-	-	-	-	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

The FY 2015 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)

Title: STTR	FY 2013	FY 2014	FY 2015
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.	6.290	-	-
FY 2013 Accomplishments: Represents 0.35% of the extramural RDT&E budget for OSD.			
The FY 2013 OSD STTR technology investment areas included:			
Materials Technology – Critical materials research areas, including substitution or reduction concepts, advanced ore dressing or processing to increase recovery and reduce environmental impact, and advanced or more efficient means of recovery from products and recycling			
Information Assurance in the Cyber Domain – Development of techniques for ensuring trust, resiliency, and agility, and to assure that missions for which the DoD relies on information technology can be conducted successfully despite incessant attempted incursions and even successful cyber-attacks on the underlying technologies and systems			
Accomplishments/Planned Programs Subtotals	6.290	-	-

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

N/A

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605502D8Z / <i>Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR)</i>	Project (Number/Name) P500 / <i>STTR</i>

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

Remarks

D. Acquisition Strategy
N/A

E. Performance Metrics
N/A

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 6: RDT&E Management Support</i>	R-1 Program Element (Number/Name) PE 0605790D8Z I <i>Small Business Innovation Research (SBIR)/Small Business Technology Transfer (STTR)</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
Total Program Element	1.911	1.344	1.857	1.634	-	1.634	2.183	2.276	2.416	2.611	Continuing	Continuing
P518: <i>SBIR/Challenge Admin</i>	1.911	1.344	1.857	1.634	-	1.634	2.183	2.276	2.416	2.611	Continuing	Continuing

The FY 2015 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 via 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.

B. Program Change Summary (\$ in Millions)	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO	FY 2015 Total
Previous President's Budget	1.857	1.868	1.907	-	1.907
Current President's Budget	1.344	1.857	1.634	-	1.634
Total Adjustments	-0.513	-0.011	-0.273	-	-0.273
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Program Adjustment	-0.513	-	-	-	-
• FFRDC	-	-0.011	-	-	-
• Efficiency Reduction Adjustments	-	-	-0.273	-	-0.273

PE 0605790D8Z: *Small Business Innovation Research (SBIR)/Small Bu...*

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605790D8Z / <i>Small Business Innovation Research (SBIR)/Small Business Technology Transfer (STTR)</i>	Project (Number/Name) P518 / <i>SBIR/Challenge Admin</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
P518: <i>SBIR/Challenge Admin</i>	1.911	1.344	1.857	1.634	-	1.634	2.183	2.276	2.416	2.611	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

The FY 2015 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 2013	FY 2014	FY 2015
Title: SBIR/Challenge Admin	1.344	1.857	1.634
<p>Description: (U) Program element (PE) 0605790D8Z is the only source of funds for the coordination, administration and execution of the Department's SBIR/STTR Programs. The DoD Office of Small Business Programs is tasked with providing Departmental SBIR/STTR policy guidance, oversight and implementation and therefore requires program element (PE) 0605790D8Z to fund these administrative activities. 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:</p> <ul style="list-style-type: none"> (1) Coordinate and execute the administrative portions of the DoD SBIR/STTR Programs including the development of technical topics, preparation of 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 National conferences and outreach to small technology companies, potential investors in such companies, SDBs WOSBs, Institutions of Higher Learning 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 the DoD SBIR Commercialization Pilot and Commercialization Readiness Program (CPP/CRP); and (5) Prepare all reports mandated by law and policy. 			

PE 0605790D8Z: *Small Business Innovation Research (SBIR)/Small Bu...*

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605790D8Z / <i>Small Business Innovation Research (SBIR)/Small Business Technology Transfer (STTR)</i>	Project (Number/Name) P518 / <i>SBIR/Challenge Admin</i>

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

FY 2013 Accomplishments:

(U) FY 2013 plan included program administration, coordination and execution of the DoD SBIR/STTR Program. Specifically, managed the execution of the FY 2013 DoD SBIR/STTR budget between 13 DoD Components to include:

- (1) Coordinated and executed the administrative portions of the DoD SBIR/STTR Programs including the development of technical topics, preparation of SBIR/STTR R&D solicitations, and receipt of proposal responses;
- (2) Revised the SBIR/STTR Topic Review process which enabled the Military Services to directly approve their respective topics;
- (3) Maintained and modified 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 Departments' SBIR/STTR Programs;
- (4) Developed a comprehensive DoD SBIR/STTR Programs Outreach Guide that identifies strategies and tactics to achieve outreach goals and the objectives set forth by the Department and the SBIR/STTR Reauthorization Act of 2011;
- (5) Reduced outreach costs and expanded target audience by leveraging social media platforms and webinars to conduct outreach to small businesses;
- (6) Established the DoD SBIR Commercialization Working Group (CWG) to promote best practices for meeting legislative requirements and optimizing the standard processes for transitioning SBIR/STTR developed technologies within the Federal government or commercial markets;
- (7) Coordinated oversight, collected results, tracked execution and provided reporting of Phase II technology transition in DoD Commercialization Readiness Program (CRP); and
- (8) Prepared 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 of 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) Improving and implementing an outreach program including the execution of two national level conferences and increased outreach to small technology companies, potential investors in such companies, SDBs, WOSBs, institutions of higher learning and others, to facilitate participation in the SBIR/STTR Programs
- (4) Build on the success of the DoD SBIR Commercialization Working Group (CWG) to promote best practices for meeting legislative requirements and optimizing the standard processes for SBIR/STTR outreach activities through the development

FY 2013	FY 2014	FY 2015

PE 0605790D8Z: *Small Business Innovation Research (SBIR)/Small Bu...*

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605790D8Z / <i>Small Business Innovation Research (SBIR)/Small Business Technology Transfer (STTR)</i>	Project (Number/Name) P518 / <i>SBIR/Challenge Admin</i>

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

	FY 2013	FY 2014	FY 2015
<p>of an DoD SBIR/STTR Program Outreach Working Group (OWG) to increase the outreach efforts to small business, research organizations, acquisition personnel, and prime contractors;</p> <p>(5) Coordinate oversight, collect results, track execution and provide reporting of Phase II technology transition in DoD Commercialization Readiness Program (CRP); and</p> <p>(6) Prepare all reports mandated by law and policy.</p> <p>FY 2015 Plans:</p> <p>(U) FY 2015 plan includes program administration, coordination, and execution of the SBIR/STTR Program. Specifically, provide policy guidance and oversight regarding execution of the FY 2015 DoD SBIR/STTR budget between 13 Components to include:</p> <p>(1) Coordinate and execute the administrative portions of the DoD SBIR/STTR Programs including the development of technical topics, preparation of SBIR/STTR R&D solicitations, and receipt of proposal responses;</p> <p>(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 Departments' SBIR/STTR Programs;</p> <p>(3) Improve and implement an outreach program to increase interest and facilitate participation of small technology companies, potential investors in such companies, research organizations, acquisition personnel, prime contractors and others in the SBIR/STTR Programs</p> <p>(4) Leverage DoD SBIR/STTR Commercialization and Outreach Working Groups to promote best practices for meeting legislative requirements and optimizing standard processes for improving SBIR/STTR technology transition and outreach activities;</p> <p>(4) Coordinate oversight, collect results, track execution and provide reporting of Phase II technology transition in DoD Commercialization Readiness Program (CRP); and</p> <p>(5) Prepare all reports mandated by law and policy.</p>			
Accomplishments/Planned Programs Subtotals	1.344	1.857	1.634

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.

PE 0605790D8Z: *Small Business Innovation Research (SBIR)/Small Bu...*

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605790D8Z / <i>Small Business Innovation Research (SBIR)/Small Business Technology Transfer (STTR)</i>	Project (Number/Name) P518 / <i>SBIR/Challenge Admin</i>

(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.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> / BA 6: <i>RDT&E Management Support</i>	R-1 Program Element (Number/Name) PE 0605798D8Z / <i>Defense Technology Analysis</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
Total Program Element	-	10.940	8.332	12.105	-	12.105	15.389	19.699	22.041	22.988	Continuing	Continuing
P796: <i>Laboratory Resource Management</i>	-	3.998	2.380	2.346	-	2.346	2.851	3.650	3.969	4.057	Continuing	Continuing
P797: <i>Defense Technology Analysis</i>	-	5.803	2.624	4.893	-	4.893	4.941	4.979	5.547	5.910	Continuing	Continuing
P798: <i>Defense Support Teams</i>	-	1.139	2.391	1.822	-	1.822	2.057	2.323	2.497	2.522	Continuing	Continuing
P579: <i>Critical Technology Assessments</i>	-	-	0.937	0.604	-	0.604	1.120	1.320	1.442	1.499	Continuing	Continuing
P102: <i>Data Vulnerability Tiger Team</i>	-	-	-	2.440	-	2.440	4.420	7.427	8.586	9.000	Continuing	Continuing

The FY 2015 OCO Request will be submitted at a later date.

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 (PE) 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 Research, Development, Test and Evaluation (RDT&E) efforts.

The PE 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.

The PE 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

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense	Date: March 2014
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Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 6:</i> <i>RDT&E Management Support</i>	R-1 Program Element (Number/Name) PE 0605798D8Z / <i>Defense Technology Analysis</i>
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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 PE 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.

This PE also provides funding for the Data Vulnerability Tiger Team to establish a joint analysis capability to conduct comprehensive assessments of unclassified information losses, engaging acquisition and intelligence sources to determine consequences and appropriate preventative/mitigation actions.

B. Program Change Summary (\$ in Millions)	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO	FY 2015 Total
Previous President's Budget	12.056	8.362	17.380	-	17.380
Current President's Budget	10.940	8.332	12.105	-	12.105
Total Adjustments	-1.116	-0.030	-5.275	-	-5.275
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-0.849	-			
• Congressional Rescissions	-0.016	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	0.095	-			
• SBIR/STTR Transfer	-0.341	-			
• FFRDC Adjustment	-	-0.030	-	-	-
• Data Vulnerability Tiger Team	-	-	2.440	-	2.440
• Strategic Efficiency Savings	-	-	-7.715	-	-7.715
• Other Program Adjustments	-0.005	-	-	-	-

Change Summary Explanation

The Data Vulnerability Tiger Team is a new project within the DTA PE beginning in FY 2015.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> / BA 6: <i>RDT&E Management Support</i>	R-1 Program Element (Number/Name) PE 0605798D8Z / <i>Defense Technology Analysis</i>	

The reduction is a strategic efficiency approach to reduce funding and staffing. As a result, we provide a better alignment of funding and provide support to a smaller military force.

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605798D8Z / <i>Defense Technology Analysis</i>	Project (Number/Name) P796 / <i>Laboratory Resource Management</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
P796: <i>Laboratory Resource Management</i>	-	3.998	2.380	2.346	-	2.346	2.851	3.650	3.969	4.057	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

The FY 2015 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 2013	FY 2014	FY 2015
Title: Defense Laboratory Office	3.998	2.380	2.346
FY 2013 Accomplishments:			
The ASD(R&E)/Research Directorate Laboratory Office refined and continued the execution of laboratory management responsibilities. Areas of progress include:			
<ul style="list-style-type: none"> • Identification and validation of Department-wide laboratory in-house core technical competencies (CTCs). • Analyzed Service and laboratory performance within CTCs. • Determined alignment of Service laboratory investments in their CTCs and mission requirements. • Completed Phase I of the Unified Research and Engineering database, which provides budgetary and programmatic information on the in-house defense laboratories; data is being used to assess laboratory technical health and performance. • Quantified DoD laboratory infrastructure. • Completed DoD laboratory demographics report. • Initiated execution of DoD Technology Transfer Strategic Plan. • Established Technology Transfer Center of Excellence. • Drafted new DoD Laboratory Policy. • Performed analysis of DoD laboratory patents to determine technical state-of-health of laboratory technology base. 			
FY 2014 Plans:			
<ul style="list-style-type: none"> • Execute a quantitative assessment of the DoD in-house laboratory system. Product will be a companion report to the USD(AT&L) Acquisition Program Performance report. • Continue refinement and analysis of laboratory CTCs; ensure laboratories are maintaining and/or developing needed capabilities in critical mission areas. 			

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605798D8Z / <i>Defense Technology Analysis</i>	Project (Number/Name) P796 / <i>Laboratory Resource Management</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<ul style="list-style-type: none"> Initiate execution of new Technology Transfer Center of Excellence. Support congressional reporting requirements for laboratory Military Construction (MILCON), Section 219, personnel policies and others. <p>FY 2015 Plans:</p> <ul style="list-style-type: none"> Collect and analyze DoD lab metrics as defined in FY 2014 assessment. Determine significance of trends and develop corrective actions as needed. Expand the function of the Technology Transfer Center of Excellence established in FY 2014. Collect and analyze metrics. 			
Accomplishments/Planned Programs Subtotals	3.998	2.380	2.346

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.

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense										Date: March 2014		
Appropriation/Budget Activity 0400 / 6					R-1 Program Element (Number/Name) PE 0605798D8Z / <i>Defense Technology Analysis</i>				Project (Number/Name) P797 / <i>Defense Technology Analysis</i>			
COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
P797: <i>Defense Technology Analysis</i>	-	5.803	2.624	4.893	-	4.893	4.941	4.979	5.547	5.910	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

The FY 2015 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)

	FY 2013	FY 2014	FY 2015
Title: DoD Technology Analysis	5.803	2.624	4.893
FY 2013 Accomplishments: Provided engineering, scientific, analytical, and managerial support to the Office of the Deputy Assistant Secretary of Defense for Research (ODASD(R)) 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; • Overseeing S&T issues and initiatives and responded to Congressional special interests; and • Seeking opportunities for interdepartmental and international cooperation in high priority S&T. Conducted intradepartmental coordination to achieve goals as necessary. 			
FY 2014 Plans: Provide engineering, scientific, analytical, and managerial support to the ODASD(R) 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; and • Seeking opportunities for interdepartmental and international cooperation in high priority S&T. Conduct intradepartmental coordination to achieve goals as necessary. 			
FY 2015 Plans:			

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605798D8Z / <i>Defense Technology Analysis</i>	Project (Number/Name) P797 / <i>Defense Technology Analysis</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
Provide engineering, scientific, analytical, and managerial support to the ODASD(R) 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; and • Seeking opportunities for interdepartmental and international cooperation in high priority S&T. Conduct intradepartmental coordination to achieve goals as necessary. 			
Accomplishments/Planned Programs Subtotals	5.803	2.624	4.893

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. 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.

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605798D8Z / <i>Defense Technology Analysis</i>	Project (Number/Name) P798 / <i>Defense Support Teams</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
<i>P798: Defense Support Teams</i>	-	1.139	2.391	1.822	-	1.822	2.057	2.323	2.497	2.522	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

The FY 2015 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 2013	FY 2014	FY 2015
Title: Defense Support Teams	1.139	2.391	1.822
FY 2013 Accomplishments: Established support teams and conducted technology analyses to support R&E program investment decisions. For selected acquisition programs and efforts, reviewed in technical detail the respective program issues and offered technical solutions to program managers. Assessed the maturity of technologies as candidates for transition to acquisition programs.			
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 transition to acquisition programs.			
FY 2015 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 transition to acquisition programs.			
Accomplishments/Planned Programs Subtotals	1.139	2.391	1.822

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

N/A

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605798D8Z / <i>Defense Technology Analysis</i>	Project (Number/Name) 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 Defense Technology Analysis (DTA) program element. 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 science and technology (S&T) program to guide investment decisions serve as additional metrics.

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605798D8Z / <i>Defense Technology Analysis</i>	Project (Number/Name) P579 / <i>Critical Technology Assessments</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
P579: <i>Critical Technology Assessments</i>	-	-	0.937	0.604	-	0.604	1.120	1.320	1.442	1.499	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

The FY 2015 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 2013	FY 2014	FY 2015
Title: Critical Technology Assessments	-	0.937	0.604
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. Determines goods and technologies being developed worldwide with potential to significantly enhance or degrade U.S. military			

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605798D8Z / <i>Defense Technology Analysis</i>	Project (Number/Name) P579 / <i>Critical Technology Assessments</i>
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<p>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. The Office of the Assistant Secretary of Defense for Research and Engineering (OASD(R&E)) sponsored a study to investigate the desirability of changing the export-control-based purpose of the critical technology assessment program to a broader purpose that would support the broader OASD(R&E) mission. The study has reported out, recommending a more rigorous examination of information sources, best practices, and tools, to definitively determining the achievable benefits.</p> <p>FY 2014 Plans:</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. <p>FY 2015 Plans:</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	-	0.937	0.604

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

Line Item	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
• PE 0605110D8Z, P110: <i>USD(A&T) Critical Technology Support</i>	0.669	-	-	-	-	-	-	-	-	-	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.

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense										Date: March 2014		
Appropriation/Budget Activity 0400 / 6					R-1 Program Element (Number/Name) PE 0605798D8Z / <i>Defense Technology Analysis</i>				Project (Number/Name) P102 / <i>Data Vulnerability Tiger Team</i>			
COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
P102: <i>Data Vulnerability Tiger Team</i>	-	-	-	2.440	-	2.440	4.420	7.427	8.586	9.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

The FY 2015 OCO Request will be submitted at a later date.

A. Mission Description and Budget Item Justification

To date, most of the DOD technical information resides on unclassified networks that must take into account the risk of being targeted for cyber espionage campaigns. Protecting DoD unclassified controlled technical information is a high priority for the Department and is critical to preserving intellectual property and competitive capabilities of our national industrial base. To maintain full confidence in our systems we must also assess the effect the loss of this information has on our warfighting capabilities. DoD contractors who produce or access controlled technical information must incorporate security standards on their networks, and report cyber-intrusion incidents that result in the loss of this information. These requirements are important, but insufficient in the face of a determined adversary. We must take steps to understand the loss and rethink how we safeguard our capabilities. This information, while unclassified, includes data and intellectual property concerning defense systems requirements, concepts of operations, technologies, designs, engineering, systems production and component manufacturing.

This project supports protection of unclassified controlled technical information and analysis of losses to determine consequences and appropriate requirements, acquisition, programmatic, and strategic courses of action.

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

	FY 2013	FY 2014	FY 2015
Title: Data Vulnerability Tiger Team	-	-	2.440
Description: The Data Vulnerability Assessment and Analysis project will establish a joint analysis capability to conduct comprehensive assessments of unclassified information losses, engaging acquisition and intelligence sources to determine consequences and appropriate preventative/mitigation actions.			
FY 2015 Plans: Establish an initial joint analysis capability, and provide support for 1-3 net loss assessment cases. Each case will consist of an integrated blue and red assessment of compromised unclassified controlled technical information with an end product that contains a comprehensive net assessment of technical data losses for each case. The net assessment will also determine the consequences of losses and implications to directly inform requirements, acquisition, programmatic, and strategic courses of action. Additional protection mechanisms will also be provided to inform program protection planning activities for capabilities affected by this loss of information.			
Accomplishments/Planned Programs Subtotals	-	-	2.440

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605798D8Z / <i>Defense Technology Analysis</i>	Project (Number/Name) P102 / <i>Data Vulnerability Tiger Team</i>

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

Remarks

D. Acquisition Strategy
N/A

E. Performance Metrics
The DVTT metric is the number of completed cases.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide / BA 6:</i> <i>RDT&E Management Support</i>	R-1 Program Element (Number/Name) PE 0605804D8Z / <i>Development Test & Evaluation</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
Total Program Element	18.389	19.116	19.394	15.187	-	15.187	14.924	14.660	14.397	14.133	Continuing	Continuing
P804: <i>Development Test & Evaluation</i>	18.389	17.716	19.394	15.187	-	15.187	14.924	14.660	14.397	14.133	Continuing	Continuing
P806: <i>Energy</i>	0.000	1.400	-	-	-	-	-	-	-	-	Continuing	Continuing

The FY 2015 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 Development Test and Evaluation (DASD(DT&E)) 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 Development Test and Evaluation (DT&E) in the Department of Defense (DoD).

The Development Test and Evaluation (DT&E) program element is budgeted in the Research Development Test and Evaluation (RDT&E) budget activity to support and improve the DT&E efforts of Major Defense Acquisition Program (MDAP), Major Automated Information System (MAIS), and other Special Interest (SI) acquisition programs designated by Under Secretary of Defense for Acquisition, Technology and Logistics (USD(AT&L)); as they progress through the acquisition/development lifecycle; assess the DT&E capabilities of the Military Departments and Department of Defense (DoD) Components; oversee the Test and Evaluation (T&E) career field of the defense acquisition workforce; develop policy and guidance for the conduct of DT&E within the DoD; and prepare the annual DT&E report to Congress.

The Department of Operational Energy Plans and Programs (DOEPP) Project 806 is funded within this program element for technical analysis and policy guidance for the DoD 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)).

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 6:</i> <i>RDT&E Management Support</i>	R-1 Program Element (Number/Name) PE 0605804D8Z / <i>Development Test & Evaluation</i>
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B. Program Change Summary (\$ in Millions)	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO	FY 2015 Total
Previous President's Budget	15.110	15.451	16.091	-	16.091
Current President's Budget	19.116	19.394	15.187	-	15.187
Total Adjustments	4.006	3.943	-0.904	-	-0.904
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-1.612	-			
• Congressional Rescissions	-0.026	-			
• Congressional Adds	5.000	4.000			
• Congressional Directed Transfers	-	-			
• Reprogrammings	1.200	-			
• SBIR/STTR Transfer	-0.547	-			
• Strategic Efficiency Savings	-	-	-0.904	-	-0.904
• FFRDC Adjustments	-	-0.057	-	-	-
• Other Program Adjustments	-0.009	-	-	-	-

Change Summary Explanation

The reduction is a strategic efficiency approach to reduce funding and staffing. As a result, we provide a better alignment of funding and provide support to a smaller military force.

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense										Date: March 2014		
Appropriation/Budget Activity 0400 / 6					R-1 Program Element (Number/Name) PE 0605804D8Z / <i>Development Test & Evaluation</i>				Project (Number/Name) P804 / <i>Development Test & Evaluation</i>			
COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
P804: <i>Development Test & Evaluation</i>	18.389	17.716	19.394	15.187	-	15.187	14.924	14.660	14.397	14.133	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

The FY 2015 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 (MAIS), and Special Interest (SI) acquisition programs as designated by USD(AT&L). It also provides for the assessment of DT&E capabilities of the Military Departments and Department of Defense (DoD) Components, oversees the Test & Evaluation (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 beginning at Milestone A, 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 (SE) 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 release the Engineering and Manufacturing Development (EMD) Request For Proposal (RFP) (pre MS B) and begin production (MS C) with the goal of reducing discovery of performance issues later 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 Chief Information Officer (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.

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605804D8Z / <i>Development Test & Evaluation</i>	Project (Number/Name) P804 / <i>Development Test & Evaluation</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<p>Title: Developmental Test and Evaluation</p> <p>FY 2013 Accomplishments:</p> <ul style="list-style-type: none"> -Worked with Major Defense Acquisition Program (MDAP), Major Automated Information System (MAIS) and Special Interest (SI) Program Managers to develop comprehensive Development Test & Evaluation (DT&E) strategies to support capability development and acquisition. Reviewed and approved all Test and Evaluation Master Plans (TEMPs) submitted to support major acquisition reviews. -Developed the DT&E portion of the Joint Annual Report to Congress that provides an assessment of MDAP DT&E progress and assesses the Test & Evaluation (T&E) workforce. -Refined DT&E policies and methodologies addressing DT&E across all MDAP, MAIS and SI programs. -Published formal DT&E Assessments in support of Milestone B, Milestone C and Operational Test decision processes. -Provided data-based assessments of system performance in support of all scheduled Defense Acquisition Board decisions. -Sustained the Scientific Test & Analysis Techniques Center of Excellence (STAT COE). -Planned and conducted events that support DT&E Cybersecurity strategy. -Promoted the application of sound DT&E and related technical disciplines across the Department's acquisition community and programs. <p>FY 2014 Plans:</p> <ul style="list-style-type: none"> -Work with MDAP/MAIS/SI Program Managers, Chief Developmental Testers, and Lead DT&E organizations to improve DT&E planning through the development of disciplined Evaluation Framework Matrixes and the use of Scientific Test and Analysis Techniques (STAT). -Implement the DASD(DT&E) 'Shift Left' philosophy that focuses on ensuring T&E strategies are developed in advance of releasing EMD RFPs and increasing the amount of data available to support production decisions with specific focus on CyberSecurity and interoperability. -Work with MDAP/MAIS 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 for MDAPs. -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 SI 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 STAT COE through Fiscal Year 2014. 	17.716	19.394	15.187

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605804D8Z / <i>Development Test & Evaluation</i>	Project (Number/Name) P804 / <i>Development Test & Evaluation</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<p>-Promote the application of sound DT&E and related technical disciplines across the Department's acquisition community and programs.</p> <p>FY 2015 Plans:</p> <p>-Work with MDAP/MAIS/SI Program Managers, Chief Developmental Testers, and Lead DT&E organizations to improve DT&E planning through the development of disciplined Evaluation Framework Matrixes and the use of Scientific Test and Analysis Techniques (STAT).</p> <p>-Implement the DASD(DT&E) 'Shift Left' philosophy that focuses on ensuring T&E strategies are developed in advance of releasing EMD RFPs and increasing the amount of data available to support production decisions with specific focus on CyberSecurity and interoperability.</p> <p>-Work with MDAP/MAIS Program Managers to develop comprehensive DT&E strategies to support capability development and acquisition.</p> <p>-Review and approve all TEMPs submitted to support major acquisition reviews for MDAPs.</p> <p>-Develop the DT&E Annual Report to Congress that provides an assessment of MDAP DT&E progress and assesses the T&E workforce.</p> <p>-Refine DT&E policies and methodologies addressing DT&E across all MDAP, MAIS and SI programs.</p> <p>-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.</p> <p>-Review and approve all TEMPs submitted to support major acquisition reviews for MDAPs.</p> <p>-Promote the application of sound DT&E and related technical disciplines across the Department's acquisition community and programs.</p>			
Accomplishments/Planned Programs Subtotals	17.716	19.394	15.187

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

N/A

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

- Engaged and conducted oversight on all AT&L-designated MDAP, MAIS, and SI Programs.
- Advised at Defense Acquisition Board (DABs), Overarching Integrated Product Teams (OIPTs), and Nunn-McCurdy Reviews.
- Reviewed and approved Test and Evaluation Master Plans (TEMPS) for MDAP, MAIS, and AT&L-designated Special Interest programs.

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605804D8Z / <i>Development Test & Evaluation</i>	Project (Number/Name) P804 / <i>Development Test & Evaluation</i>
<ul style="list-style-type: none">• Prepared formal DT&E assessments to inform Acquisition decision makers of readiness for production.• 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 (STAT COE) through Fiscal Year 2014.• Planned and executed pilot events to focus on cybersecurity test infrastructure gaps and to examine different test methodologies.		

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605804D8Z / <i>Development Test & Evaluation</i>	Project (Number/Name) P806 / <i>Energy</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
P806: <i>Energy</i>	-	1.400	-	-	-	-	-	-	-	-	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

The FY 2015 OCO Request will be submitted at a later date.

Note
The Hybrid Energy Storage Module Program applies to Fiscal Year 2013 only in PE 0605804D8Z.

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 2013	FY 2014	FY 2015
Title: Hybrid Energy Storage Module Program	1.400	-	-
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.			

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605804D8Z / <i>Development Test & Evaluation</i>	Project (Number/Name) P806 / <i>Energy</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<p><i>FY 2013 Accomplishments:</i></p> <p>-Tactical Track: Efforts ongoing by Acumentrics Inc to develop the Hybrid Energy Storage Demonstrator. Initial breadboard demonstrations showed successful operation coordinating multiple power sources.</p> <p>-Aircraft Track: Source selection for the Aircraft demonstration unit was completed and contracting effort was initiated. The demonstration unit will improve three key characteristics of the MEA: electrical power quality, component lifespan, and overall system performance for all flight conditions, including possible weight and volume savings. ARPA-e AMPED technology is being examined for system integration.</p> <p>-Large Power Track: Source selection for the Large Power demonstrators was completed and contracting effort was initiated. The efforts will develop and demonstrate energy storage system technologies capable of supporting continuous transient loads with integrated power sources for large platforms such as ships. ARPA-e AMPED technology is being examined for system integration.</p> <p>-HESM System Analysis: Modeling and HESM system operational analysis is ongoing for each program track examining impact and quantifying benefits.</p>			
Accomplishments/Planned Programs Subtotals	1.400	-	-

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

N/A

Remarks

D. Acquisition Strategy

N/A.

E. Performance Metrics

Transition of HESM demonstration unit.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 6:</i> <i>RDT&E Management Support</i>	R-1 Program Element (Number/Name) PE 0606100D8Z I <i>Budget and Program Assessments</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
Total Program Element	10.351	4.221	4.068	4.100	-	4.100	4.150	4.200	4.250	4.300	Continuing	Continuing
101: <i>Budget and Program Assessments</i>	10.351	4.221	4.068	4.100	-	4.100	4.150	4.200	4.250	4.300	Continuing	Continuing

The FY 2015 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.

<u>B. Program Change Summary (\$ in Millions)</u>	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015 Base</u>	<u>FY 2015 OCO</u>	<u>FY 2015 Total</u>
Previous President's Budget	4.454	4.083	4.763	-	4.763
Current President's Budget	4.221	4.068	4.100	-	4.100
Total Adjustments	-0.233	-0.015	-0.663	-	-0.663
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-0.319	-			
• Congressional Rescissions	-0.005	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.063	-			
• Realignment for higher priority	-	-	-0.663	-	-0.663

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense	Date: March 2014
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Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> / BA 6: <i>RDT&E Management Support</i>	R-1 Program Element (Number/Name) PE 0606100D8Z / <i>Budget and Program Assessments</i>
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• FFRDC	-	-0.015	-	-	-
• Reprogramming	0.156	-	-	-	-
• Other Adjustment	-0.002	-	-	-	-

Change Summary Explanation

To ensure minimal impact to the Secretary while meeting requirements of the Strategic Choices Management Review and OSD Review, such as realignment of Management Headquarters to Combat Capabilities, CAPE is reducing other investment accounts by as much as 50% to cover required budget reductions.

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense										Date: March 2014		
Appropriation/Budget Activity 0400 / 6					R-1 Program Element (Number/Name) PE 0606100D8Z / Budget and Program Assessments				Project (Number/Name) 101 / Budget and Program Assessments			
COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
101: Budget and Program Assessments	10.351	4.221	4.068	4.100	-	4.100	4.150	4.200	4.250	4.300	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

The FY 2015 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 2013	FY 2014	FY 2015
Title: OSD Support for Programming Budget	4.221	4.068	4.100
<p>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.</p> <p>FY 2013 Accomplishments:</p> <ul style="list-style-type: none"> Continued to expand mission and regional breadth of ISR-support studies, using a data intensive approach that quantitatively linked ISR inputs to operational outcomes. 			

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0606100D8Z / <i>Budget and Program Assessments</i>	Project (Number/Name) 101 / <i>Budget and Program Assessments</i>

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

	FY 2013	FY 2014	FY 2015
<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. The effort explored and 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, Force Readiness, irregular warfare/war on terror, and conventional conflict across steady state and surge environments. Assessed current capacity within DoD to quantitatively identify and assess alternatives to direct appropriations. 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. Continued assessments for technologies and strategies for space and cyberspace security. In support of the Secretary's commitment to eradicate sexual assault in the military, initiated a study to collect and analyze data from Service Military Criminal Investigative Organizations to assess the extent of the problem, with the objective of identifying potential development or expansion of programs to eliminate the problem. <p>FY 2014 Plans: Evaluate and upgrade Strategic C4 and ISR programs to inform program, budget, and Defense Acquisition Board reviews. Analyze war-fighting 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. Analyze 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. Evaluate scenarios for medium and long-term planning; including evaluation of threat databases and forecasts for economic, demographic, and technological trends and developments to determine impact on national security resources. Analyze irregular warfare scenarios to support transformation initiatives and major acquisition decisions. Evaluate medical cost growth to reliably forecast costs for budgeting. Develop a tool to evaluate the impact of alternative benefit structures and policies on future costs. Develop alternative cyber defense strategies to improve the cyber security and mission assurance of the Department of Defense, by support of training objectives and scenarios and advocating for and assisting in the development of a data driven analysis. Continue to analyze sexual assault investigations from Service Military Criminal Investigative Organizations to identify programs that can be developed or expanded to eliminate the problem.</p> <p>FY 2015 Plans: Studies, analyses, and assessments will be focused on: - Strategic C4 and ISR programs to inform program, budget, and Defense Acquisition Board reviews</p>			

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0606100D8Z / <i>Budget and Program Assessments</i>	Project (Number/Name) 101 / <i>Budget and Program Assessments</i>

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

	FY 2013	FY 2014	FY 2015
<ul style="list-style-type: none"> - In support of WSARA, independently assessing, analyzing, and, where appropriate, updating cost indices, inflation rates, and escalation rates used in preparation of the President's budget for major acquisition programs. - Developing and enhancing databases that provide cost data for major weapon systems - Improving estimates produced by the Defense Employment and Purchases Projection System and Defense Translator, which are used in decision briefs to the President, Congress, Secretary of Defense, and Deputy Secretary of Defense. The translator accounts for the distribution of Defense spending among the industries producing the goods and services that support DoD. - Modeling and analysis of aircraft survivability against various threat detection approaches and in various operational environments. Assessing the ability of aircraft and weapons to operate in anti-access/area denial regions. - Scenarios and modeling for mobile intelligence targets. - Analyzing and identifying frameworks for Force Structure planning - In support of the Defense Strategic Guidance, analyzing rotary wing programs to assess alternative platforms for combat rescue; examining the cost of all mission alternatives and acquisition strategies. 			
Accomplishments/Planned Programs Subtotals	4.221	4.068	4.100

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.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 6: RDT&E Management Support</i>	R-1 Program Element (Number/Name) PE 0203345D8Z / <i>Defense Operations Security Initiative</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
Total Program Element	1.720	2.355	5.288	1.956	-	1.956	2.404	2.712	3.054	3.477	Continuing	Continuing
345: <i>Defense Operations Security Initiative</i>	1.720	2.355	5.288	1.956	-	1.956	2.404	2.712	3.054	3.477	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

The FY 2015 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 reorient DoD OPSEC capabilities and capacities across the Department. The overall program mission is to enable defense components ability to effectively plan, integrate, execute and assess OPSEC in concert with other information-related capabilities used against adversaries or potential adversaries. Funds support the development and integration of capabilities and next generation technologies for department OPSEC activities.

The objectives of the overall DOSI program are:

1. Establish governance structures, processes and procedures for development and oversight of infrastructure, policy, authorities, and warfighter advocacy across the defense components 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 (CI) and Signals Intelligence support; and intelligence support to 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. Develop an integrated OPSEC education, training and exercise program that can be incorporated with MILDEC and other information-related capabilities and focus on exercise support and formal education curricula review and development.
4. Develop a technology and capability research, development, testing, and evaluation program to identify emerging physical, technical, and administrative means and capabilities.
5. Enhance the integration and synchronization of OPSEC with MILDEC to increase effectiveness and efficiency of defense component activities.
6. Increase the integration of OPSEC with other information-related capabilities such as Electronic Warfare (EW), Computer Network Operations (CNO), Intelligence, CI, Security, and Special Technical Operations (STO) to form an enhanced integrated whole.
7. 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.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400: Research, Development, Test & Evaluation, Defense-Wide / BA 6: RDT&E Management Support	R-1 Program Element (Number/Name) PE 0203345D8Z / Defense Operations Security Initiative
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B. Program Change Summary (\$ in Millions)	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO	FY 2015 Total
Previous President's Budget	2.637	5.306	7.121	-	7.121
Current President's Budget	2.355	5.288	1.956	-	1.956
Total Adjustments	-0.282	-0.018	-5.165	-	-5.165
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-0.222	-0.018			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.059	-			
• Departmental Adjustments	-0.001	-	-5.165	-	-5.165

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<p>Title: Defense Operations Security Initiative (DOSI)</p> <p>Description: The Defense Operations Security (OPSEC) Initiative (DOSI) is an effort to reorient DoD OPSEC capabilities and capacities across the Department. The overall program mission is to enable defense components with the ability to effectively plan, integrate, execute and assess OPSEC in conjunction with information-related capabilities, and intelligence activities to be used against adversaries or potential adversaries. Funds support emerging physical and technical and next generation technologies for department OPSEC capabilities.</p> <p>FY 2013 Accomplishments:</p> <ul style="list-style-type: none"> - Identified a number of measures and countermeasures requiring further research, testing, and development for OPSEC requirements; advocated for the acquisition of several emerging physical, technical, and administrative technologies and tools. - Developed a program to assess friendly and adversary measures and countermeasures based on observable actions, indicators, or information that provides a basis for identifying such control measures as Action Controls, Countermeasures, and Counter Analysis. - Completed evaluation of revised reporting methodology on OPSEC force structures and drafted/coordinated objective force structures for COCOMs, services and defense agencies to satisfy the Department's OPSEC capability and capacity requirements. - Worked with the Joint Staff, COCOMs, Services and Combat Support Agencies to complete the OPSEC Joint Concept Development and Experimentation (JCD&E) initiative and address joint force capability gaps and current/future security challenges to the Joint Requirements Oversight Council (JROC). <p>FY 2014 Plans:</p> <ul style="list-style-type: none"> - Develop signature suppression capability to meet specific combatant command requirements for a key U.S. weapon system. 	2.355	5.288	1.956

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide / BA 6: RDT&E Management Support</i>	R-1 Program Element (Number/Name) PE 0203345D8Z / <i>Defense Operations Security Initiative</i>
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
- Examine and invest research and development in technologies and capabilities to support current and emerging measures and countermeasure OPSEC requirements; advocate for acquisition and sustainment of physical, technical, and administrative technologies and tools. - Execute program to research and 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. FY 2015 Plans: - Continue to examine and invest research and development in technology and capabilities to support current and emerging OPSEC requirements; advocate for acquisition and sustainment of physical, technical, and administrative technologies and tools.			
Accomplishments/Planned Programs Subtotals	2.355	5.288	1.956

D. Other Program Funding Summary (\$ in Millions)										Cost To	Total Cost
Line Item	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Complete	Total Cost
• 0203345D8Z O&M DW: <i>Defense Operations Security Initiative</i>	-	-	4.300	-	4.300	5.200	5.200	5.300	5.400	Continuing	Continuing

Remarks

E. Acquisition Strategy

N/A

F. Performance Metrics

Performance metrics are measured through the reorientation of Operations Security (OPSEC) capabilities and capacities across the Department of Defense's assigned responsibilities. Performance metrics are based on the assessment of whether the Department of Defense possesses the following:

- Functionally relevant and timely analyses in support of OPSEC activities
- Authorities through policy to plan, resource, and execute OPSEC
- Functionally relevant and available training, education, and exercises to support the Department's OPSEC activities
- Program, plans and, resources OPSEC to enable the Department's military deception planning, integration, and execution

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity					R-1 Program Element (Number/Name)							
0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 6: RDT&E Management Support</i>					PE 0305193D8Z / <i>Cyber Intelligence</i>							
COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
Total Program Element	35.984	14.645	7.586	6.748	-	6.748	6.596	6.770	7.049	7.490	Continuing	Continuing
001: <i>Cyber and Intelligence Operations Integration</i>	35.984	14.645	7.586	6.748	-	6.748	6.596	6.770	7.049	7.490	Continuing	Continuing

The FY 2015 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 capabilities across intelligence disciplines and seamlessly connecting them to operational capabilities/capacities.
- The objective of this program is the rapid experimentation and development of existing technologies (hardware, software, databases, analytics, etc.) to create new cyber intelligence capabilities and demonstrate their value in support of operations.

B. Program Change Summary (\$ in Millions)	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO	FY 2015 Total
Previous President's Budget	16.041	7.624	7.681	-	7.681
Current President's Budget	14.645	7.586	6.748	-	6.748
Total Adjustments	-1.396	-0.038	-0.933	-	-0.933
• Congressional General Reductions	-	-	-	-	-
• Congressional Directed Reductions	-1.390	-0.038	-	-	-
• Congressional Rescissions	-	-	-	-	-
• Congressional Adds	-	-	-	-	-
• Congressional Directed Transfers	-	-	-	-	-
• Reprogrammings	-	-	-	-	-
• SBIR/STTR Transfer	-	-	-	-	-
• Departmental Adjustments	-0.006	-	-0.933	-	-0.933

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0305193D8Z / <i>Cyber Intelligence</i>	Project (Number/Name) 001 / <i>Cyber and Intelligence Operations Integration</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
001: <i>Cyber and Intelligence Operations Integration</i>	35.984	14.645	7.586	6.748	-	6.748	6.596	6.770	7.049	7.490	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

The FY 2015 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/collaborative environment and Cyberspace with conventional and asymmetric military operations. Further, 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 2013	FY 2014	FY 2015
Title: Cyber and Intelligence Operations Integration	14.645	7.586	6.748
FY 2013 Accomplishments: - Developed cyber and Intelligence Operations Integration (IOI) capabilities and capacity to support COCOMs and Services to execute cyber and asymmetric operations activities. - Supported development of critical and emerging cyber, cyber intelligence, and IOI technologies that support warfighter needs.			
FY 2014 Plans: - Develop cyber and IOI capabilities and capacity to support COCOMs and Services to execute cyber and asymmetric operations activities to include critical and emerging cyber, cyber intelligence, and IOI technologies that support warfighter needs.			
FY 2015 Plans: - Continue to develop cyber and IOI capabilities and capacity to support COCOMs and Services to execute cyber and asymmetric operations activities to include critical and emerging cyber, cyber intelligence, and IOI technologies that support warfighter needs.			
Accomplishments/Planned Programs Subtotals	14.645	7.586	6.748

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

N/A

Remarks

D. Acquisition Strategy

The Cyber and IOI 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.

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0305193D8Z / <i>Cyber Intelligence</i>	Project (Number/Name) 001 / <i>Cyber and Intelligence Operations Integration</i>

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:

- 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.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400: Research, Development, Test & Evaluation, Defense-Wide I BA 6: RDT&E Management Support	R-1 Program Element (Number/Name) PE 0804767D8Z I COCOM Exercise Engagement and Training Transformation (CE2T2)
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
Total Program Element	74.789	56.325	38.909	44.005	-	44.005	43.084	43.917	44.904	44.904	Continuing	Continuing
758: Joint National Training Capability (JNTC)	39.166	24.381	19.290	28.003	-	28.003	29.656	32.822	33.514	33.514	Continuing	Continuing
761: Joint Simulations Systems (JSS)	7.208	3.017	3.098	2.193	-	2.193	2.333	-	-	-	-	17.849
769: Joint Knowledge Development & Distribution Capability (JKDDC)	4.375	4.656	3.986	4.000	-	4.000	4.000	4.000	4.092	4.092	Continuing	Continuing
770: U.S. Forces Korea Training and Exercise Support	17.553	6.497	6.121	4.483	-	4.483	1.378	1.378	1.410	1.410	Continuing	Continuing
754: Immersive Simulation	0.000	11.750	-	-	-	-	-	-	-	-	-	11.750
701: Air Force JNTC	2.955	2.041	2.234	2.716	-	2.716	2.794	2.794	2.858	2.858	Continuing	Continuing
772: Navy JNTC	3.532	3.983	4.180	2.610	-	2.610	2.923	2.923	3.030	3.030	Continuing	Continuing

The FY 2015 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 directly support the new defense strategy and enhance joint warfighting readiness by building training capabilities that support the operational readiness of the force. The elements associated with this coordinated effort consist of:

- Joint National Training Capability (JNTC)
- Joint Simulation System (JSS)
- Joint Knowledge Development & Distribution Capability (JKDDC)
- U.S. Forces Korea Training & Exercise Support (USFK)
- Air Force JNTC
- Navy JNTC

JNTC: Investment in the Joint National Training Capability (JNTC) program will enable Service and Combatant Commands (CCMD) to train as they operate. This investment will develop a cloud-enabled joint training environment, building on previous development of Scenario Management Tools for planning and executing joint training. In 2016, this investment will enable access at the point of need (Service and CCMD trainers) for planning and executing joint training. This investment will

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense Date: March 2014

Appropriation/Budget Activity R-1 Program Element (Number/Name)
0400: Research, Development, Test & Evaluation, Defense-Wide I BA 6: PE 0804767D8Z I COCOM Exercise Engagement and Training Transformation (CE2T2)
RDT&E Management Support

increase the relevance and realism of training by providing training capabilities which replicate the contemporary and future operating environment. This program also enables the Department of Defense (DOD) to be responsive to the warfighters' pace of changing operational concepts, threat environments, and best practices.

JSS: The Joint Simulation System (JSS) will decompose, harvest, and reuse DoD investment in joint simulations to develop cloud-enabled modular services (CEMS), reaching Initial Operating Capability in FY16. JSS will enhance existing Joint Conflict and Tactical Simulation (JCATS) and Joint Theater Level Simulation (JTLS) to meet CCMDs' training requirements. JSS will provide design and development of web-based applications used as services in CEMS environment.

JKDDC: Joint Knowledge Development & Distribution Capability (JKDDC) Joint Knowledge Online (JKO) is the DOD unique and authoritative source for online joint training. JKDDC JKO is 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 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. JKO research and development will improve:

- Small Group Scenario Trainer (SGST) desk top modeling and simulation based training: These capabilities train and prepare 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: This facilitates the global distribution of web-based joint training content on portable, hand-held platforms.
- JKO Learning Management System (LCMS): JKO LCMS development is required to deliver JKO courses and track/report students' completions more efficiently.
- Develop the future virtual worlds learning environment. It will provide training and learning to promote adaptability and agility in the workforce through an interactive, immersive virtual gaming environment.

USFK: The U.S. Forces Korea (USFK) Training & Exercise Support program is developing simulations capable of satisfying all joint exercise training requirements in the Korean Theater of Operations. Interoperability with the Republic of Korea-developed Korean Simulation System is a critical and unique requirement of this USFK RDT&E program. 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 other combatant commander training programs that use the aging Joint, Live, Virtual, and Constructive (JLVC) simulations and the emerging JLVC 2020 simulations.

Air Force JNTC: The Air Force JNTC funding is providing a focused upgrade to developing models for space based capabilities and integrated them into the JLVC environment. The Air Force is also supporting development of cross domain solutions allowing for the linking of systems with differing security requirements, which significantly extend the breadth of the training audiences to additional joint and coalition participants.

Navy JNTC: These funds enable Navy to develop unique maritime capabilities that integrate LVC elements into a seamless joint training environment. Navy program activities include conducting research, development, test and evaluation, and cross-service architecture certification on joint-capable systems, developing cross-domain architectures for US and Coalition Forces as well as ensuring sister service modeling/simulation and instrumentation efforts follow a common unified standard.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 6:</i> <i>RDT&E Management Support</i>	R-1 Program Element (Number/Name) PE 0804767D8Z I <i>COCOM Exercise Engagement and Training Transformation (CE2T2)</i>
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B. Program Change Summary (\$ in Millions)	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO	FY 2015 Total
Previous President's Budget	77.475	43.247	44.008	-	44.008
Current President's Budget	56.325	38.909	44.005	-	44.005
Total Adjustments	-21.150	-4.338	-0.003	-	-0.003
• Congressional General Reductions	-	-4.300			
• Congressional Directed Reductions	-15.000	-			
• Congressional Rescissions	-0.082	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.932	-			
• Sequestration	-5.136	-	-	-	-
• FFRDC Reduction	-	-0.038	-	-	-
• Travel Efficiencies	-	-	-0.003	-	-0.003

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.

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0804767D8Z / COCOM Exercise Engagement and Training Transformation (CE2T2)	Project (Number/Name) 758 / Joint National Training Capability (JNTC)
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
758: Joint National Training Capability (JNTC)	39.166	24.381	19.290	28.003	-	28.003	29.656	32.822	33.514	33.514	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

The FY 2015 OCO Request will be submitted at a later date.

A. Mission Description and Budget Item Justification

Investment in the Joint National Training Capability (JNTC) program will enable Service and Combatant Commands (CCMD) to train as they operate. This investment will develop a cloud-enabled joint training environment, building on previous development of Scenario Management Tools for planning and executing joint training. In 2016, this investment will enable access at the point of need (Service and CCMD trainers) for planning and executing joint training. This investment will increase the relevance and realism of training by providing training capabilities which replicate the contemporary and future operating environment. This program also enables the Department of Defense (DOD) to be responsive to the warfighters' pace of changing operational concepts, threat environments, and best practices.

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

	FY 2013	FY 2014	FY 2015
Title: Joint National Training Center (JNTC)	24.381	19.290	28.003
<p>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.</p> <p>FY 2013 Accomplishments:</p> <ul style="list-style-type: none"> • Continued development and refinement of the Joint, Live, Virtual, and Constructive (JLVC) 2020 modeling and simulation strategy, roadmap, and conceptual design working with the Services, CCMDs, coalition partners, agencies, and the DOD modeling and simulation community to build a relevant post Operation Enduring Freedom joint training environment. • Conducted JLVC 2020 Integration Event #1. • Documented the "as-is" Joint Training Enterprise Architecture (JTEA) in DOD Architecture Framework (DODAF) artifacts. Coordinated future joint training environment to-be framework with Enterprise stakeholders. 			

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
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B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2013	FY 2014	FY 2015
<ul style="list-style-type: none"> • Researched and defined the future joint training enterprise communications and information services construct of the Joint Training Enterprise Architecture and developed a systems engineering plan supporting the architecture development effort. This aligned the joint training enterprise with the mandated DOD 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. • Continued 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, began development of 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"> • Developed modular mix and match integration of simulation activity and master scenario event list events to simplify and reduce manpower through automation within the JLVC modeling and simulation federation. • Continued to enhance joint logistics modeling within the JLVC modeling and simulation federation to increase realism of logistics planning and execution in training by providing simulated in transit visibility of logistics. • Virtual Collective Training Environment completed Phase 2, Proof of Concept. The primary objectives of this phase were 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 investigated Virtual World Framework capabilities, assessed these capabilities against mission requirements, and conducted a comparative analysis. The fundamental questions answered were how well virtual world technologies satisfy collective joint 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. • Continued Joint Training Enterprise Network Test Bed systems certification, product evaluation, network problem replication and troubleshooting off the production network. The test bed significantly mitigated risk to the operational network, permitted simultaneous test and evaluation without impact to exercise events, and permitted fielding capabilities at a much quicker rate than waiting for windows of availability on the production network. • Expanded 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 download order of battle data from different sources. • Evaluated the potential of standard web-based services combined with Virtual World type technologies to support joint training using emulated command and control systems. • Researched services in the area of system-of-system interoperability in joint training and experimentation including command and control, sensor, and robotic to simulation interoperability. • Evaluated and developed methods supporting initialization, orchestration and composition of LVC systems using Coalition Battle Management Services. 			

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

	FY 2013	FY 2014	FY 2015
<ul style="list-style-type: none"> • Developed JLVC 2020 Capability Release 0.3 system architecture drawings. • Continued developing the cloud-capable computing environment for JLVC 2020. • Continued developing JLVC 2020 virtualized test environment. • Supported Special Operations (MOBILE UNIT) with procurement of hardware and software for two Air Force Synthetic Environment for Reconnaissance and Surveillance (AFSERS) ISR stations, provided Engineering, Software, and Subject Matter Experts (SME). • Supported multiple training events by providing AFSERS/Multi-User Simulation Environment engineering to comply with Combat Air Forces Distributed Missions Operations (DMO) Standards for AFSERS integration with the DMO Network & Air Reserve Component Network. • Provided engineering services and software modifications to Air Base Simulator, integration, and test to address LVC support to logistic community systems integration into JNTC exercises. • Developed a connection to Joint Information Operations Range (JIOR) to facilitate low-cost TS/SCI links; integration into the Air and Space Collaborative Environment Information Operations Suite and Space System Generator. • Continued to support the development and enhancements to Joint Simulation Bus (JBUS), a common, cost effective, and extensible LVC interface solution for command and control, communication, computers, collaboration and integration (C5I), and legacy simulation interfaces used in the LVC federation, and Service training environments. Researched and developed, and integrated additional JBUS capabilities to disparate training systems developed and fielded by Services, joint, agency, and partner nations into the joint training environment using common solutions and joint standards. • Prototyped a tech solution to integrate constructive A2/AD and IO/ISR capabilities that support CCMD exercise and Service training requirements, provide improved ability to train realistically and efficiently as well as development of adaptive training architecture for high-end A2/AD, cyber and IO at the operational and tactical level and integration into the joint training environment. Addressed shortfalls in the simulation architectures ability to train for operations to deter and defeat aggression, IO/ISR, and A2/AD and provide full integration of Navy training systems into the joint training environment. • Continued development on Joint After Action Review Resource Library (JAAR-RL) Version 3.0. Continued test and integration of new data collection, after action review, and analysis tools based on JAAR-RL. • Developed an “initial emulated cyber environment” using a suite of emulation tools, devices, CCMD scenario products (recorded/modified playback of previous CCMD scenarios), and Network Effects Simulation System software application technology to test and analyze joint warfighting capabilities under degraded cyber conditions within a lab setting. • Developed a high fidelity virtual environment for the Cyber Community that realistically emulates real-world networks for joint and Service training. <p>FY 2014 Plans:</p>			

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Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0804767D8Z / <i>COCOM Exercise Engagement and Training Transformation (CE2T2)</i>	Project (Number/Name) 758 / <i>Joint National Training Capability (JNTC)</i>

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

	FY 2013	FY 2014	FY 2015
<ul style="list-style-type: none"> • Continue development and refinement of the JLVC 2020 strategy, roadmap, and conceptual design working with the Services, CCMDs, coalition partners, agencies, and DOD modeling and simulation community to deliver a future joint training environment reliant on cloud-enabled modular services with an initial capability in fiscal year 2016, and an operational capability in fiscal year 2019. This environment will be aligned with DOD plans for the implementation of the Joint Information Environment, to include the proof of concept for the Joint Force Development special purpose processing node. • Conduct JLVC 2020 Integration Events #2 and #3 to prepare for initial limited operational capability in fiscal year 2015. • Continue to build the Joint Training Enterprise Architecture decomposing modeling and simulation, networking and information technology applications into a cloud-enabled modular service supporting CCMD and Service joint training requirements. • Begin engineering and technical management support to facilitate agreement among Enterprise stakeholders on way ahead for the “to be” joint training environment. • 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 (VWF) capability (Capability Release 1). Capability Release 1 will be realized through the Command and Control Systems in Virtual Environments Modeling and Simulation Coordination Office High Level Task initiative. Command and Control Systems in Virtual Environments will integrate the VWF 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 Control Systems in Virtual Environments will employ cloud-enabled modular simulation services that will provide joint warfighters the ability to rapidly access and compose training applications and capabilities to meet specific joint requirements, and then deliver that capability how, when, and where required. • Based on discovery identified with the initial cloud capabilities research, continue development on next phase of cloud-enabled modular services in support of delivering wargaming, environment, presentation, and interface services supporting Joint Force Development and the JLVC 2020 training capability. This effort will contribute to the long range joint training environment design, development, and fielding 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 through a storefront and virtual training interface homepage. • Based on discovery identified with system of systems interoperability, continue research to establish a web-based semantic and pragmatic data exchange standard that promotes interoperability between command and control, sensor, and robotic to simulation systems. 			

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

	FY 2013	FY 2014	FY 2015
<ul style="list-style-type: none"> • Continue developing virtual frameworks, advanced web gaming, scenario excursion tools, and emerging systems interoperability services interfacing technologies to create a globally integrated JLVC 2020 virtual environment that can be stimulated by cloud-based modular services to support home based training. • Develop a prototype JLVC 2020 virtual environment that will reduce exercise planning in a cost-effective, integrated enterprise architecture solution that reduces or eliminates waste and redundancy in existing training architectures and mitigates risk. Prototype system to shadow a fiscal year 2015 exercise/event for a return on investment evaluation. • Conduct research and develop a standard that allows the seamless exchange of JLVC 2020 System Interoperability Service information and data between sensors, robotics, command and control, and joint training systems. System Interoperability Service will enable meaningful data exchange between sensors, robotics, command and control, and modeling and simulation systems, and migration of legacy systems into a cloud-based "service-oriented" environment. • Conduct research and validate use of web technologies to achieve interoperability at the data-dynamic-pragmatic-semantic-syntactic levels. • Perform engineering analysis of industry and government products that can be used to enable joint training in a cloud environment. Development of an implementation plan by industry, academia, and practitioners for JLVC 2020 Capability Release 1.0 and 2.0 concepts to include cloud, widgets, and web-based services. • Continue to develop the JLVC 2020 technical infrastructure that will provide the Joint Training Enterprise Architecture/Joint Information Environment type infrastructure and software necessary to host the JLVC 2020 simulation and related web-based services in the DOD "cloud" computing environment that targets a full operational capability enabled in 2019. • Continue to develop a prototype of the JLVC 2020 cloud-enabled technical infrastructure and cloud-enabled joint modeling and simulation training solution on the Defense Information Systems Agency's Defense Enterprise Computing Center Rapid Access Computing Environment. • Continue developing the joint training cloud "storefront" web services for customer access and leverage existing Defense Information Systems Agency Defense Enterprise Computing Center and target the Joint Information Environment-cloud (FY16) for hosting JLVC 2020 joint training services and tools. • Develop connection to Joint Information Operations Range (JIOR) to facilitate low-cost TS/SCI links; integrate Air and Space Collaborative Environment Information Operations Suite and Space System Generator. This capability expands the current space representation in the Air and Space Collaborative Environment Information Operations Suite to include interactions in the TS/SCI realm. • Modify existing USAF logistic simulations to integrate with GEOBASE C2 to provide geospatial capabilities for efficient decision making across the full mission spectrum. This capability will provide logistics simulation integration that provides geospatial capabilities for efficient decision-making across the full mission spectrum. 			

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

	FY 2013	FY 2014	FY 2015
<ul style="list-style-type: none"> • Add fidelity to GPS Environment Generator modeling capabilities to include common-use precision guided munitions by providing location, health, and operational status of each satellite in the GPS. This provides the ability to degrade GPS signals replicating jamming, forcing exercise participants to develop procedures to work in this degraded environment. • Continue development of the prototype solution to include operation and management of the pilot joint CDIS Enterprise cloud services capability demonstrated during the JS J7, USN, and USAF pilot project, until transitioning to the Joint Training Enterprise Architecture (JTEA) in FY18. This effort will include day-to-day operation, software updates, rule set coordination and implementation, Defense Information Assurance Security Accreditation Working Group representation, and Joint CDIS Working Group representation until successfully transitioned to the JTEA. • Continue development and enhancements to JBUS, a common, cost-effective, and extensible LVC interface solution for C5I and legacy simulation interfaces used in the LVC federation and Service training environments. The goal of this effort is to identify and implement common technical solutions to integrate joint, service, agency, and partner training systems in order to achieve full interoperability of these devices in a robust and extensible integrating architecture that meets the war-fighters training objectives. • Integrate constructive A2/AD and IO/ISR capabilities that support CCMD exercise and Service training requirements, provide improved ability to train realistically and efficiently, as well as development of adaptive training architecture for high-end A2/AD, cyber, and IO at the operational and tactical level, and integration into the joint training environment. • Develop a common database GUI for the MTWS in order to access the common database repository, support joint, coalition, and Service (Title 10) training events within the JLVC 2020, populate common database repository with GeoFidelis Infrastructure data and custom-built USMC terrain. This innovative leverages an established DOD process of working towards an integrated automated ingestion process for modeling and simulation correlated terrain databases and 3-D modeling for training programs. • Develop (JAAR-RL), Version 3.X Capability - Provides an After Action Review capability that is a virtualized, web enabled suite of Enterprise Services supporting the JTEA. <p>FY 2015 Plans:</p> <ul style="list-style-type: none"> • Continue development and refinement of the JLVC 2020 modeling and simulation strategy, roadmap, and conceptual design working with the Services, CCMDs, coalition partners, agencies, and the DOD 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. • Conduct JLVC 2020 Integration Events #2 and #3 to prepare for initial limited operational capability release in fiscal year 2015. • 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. • Consolidate joint force development information technology systems into an integrated capability and make available as part of the joint training enterprise. 			

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

	FY 2013	FY 2014	FY 2015
<ul style="list-style-type: none"> • Alignment of the joint training environment with the DOD mandated Joint Information Environment, advancing the target architecture for the joint force development special purpose processing node based on lessons learned from the proof of concept. • Virtual Collective Training Environment will complete development of the prototype system: Phase 3 will focus on development and delivery of a prototype VWF capability (Capability Release 1). • Continue development on next phase of cloud-enabled modular services in support of delivering modeling and simulation services supporting Joint Force Development and JLVC 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 an initial operating capability that provides consumers the ability to search for and download 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. • Continue research and prototyping to establish a standard that promotes interoperability between command and control, sensor, and robotic to simulation systems. • Continue enhancement of classified networks and expansion of space representation in the Air and space Collaborative Environment Information Operations. Continue to upgrade existing Simulation/ C2Technology Infrastructure Continue development of a Cross Domain Information Sharing (CDIS) Enterprise Network Architecture including cloud services capabilities. • Continue development and enhancement to the JBUS used in the LVC federation and Service training environments. • Continue Marine Air-Ground Task Force Tactical Warfare Simulation (MTWS) Graphical User Interface (GUI) for common database repository in support of joint, coalition, and Service training events. • Continue development of JAAR-RL 3.X capability allowing for a virtualized, web enabled After Action Review. 			
Accomplishments/Planned Programs Subtotals	24.381	19.290	28.003

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

Line Item	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To	
										Complete	Total Cost
• 0804767D8Z: <i>JNTC O&M Funding</i>	24.756	26.028	25.732	-	25.732	26.541	26.080	26.065	26.488	Continuing	Continuing
• 0804767D8Z-: <i>JNTC Procurement Funding</i>	2.322	-	-	-	-	-	-	-	-	Continuing	Continuing

Remarks

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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?

Measures:

- Achieve a ten percent increase per year in Joint Training Data Scenario production builds / downloads from FY 14 through FY 16.
- 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%.

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Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0804767D8Z / COCOM Exercise Engagement and Training Transformation (CE2T2)	Project (Number/Name) 761 / Joint Simulations Systems (JSS)
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
761: Joint Simulations Systems (JSS)	7.208	3.017	3.098	2.193	-	2.193	2.333	-	-	-	-	17.849
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

The FY 2015 OCO Request will be submitted at a later date.

A. Mission Description and Budget Item Justification

The Joint Simulation System (JSS) will decompose, harvest, and reuse DoD investment in joint simulations to develop cloud-enabled modular services (CEMS), reaching Initial Operating Capability in FY16. JSS will enhance existing Joint Conflict and Tactical Simulation (JCATS) and Joint Theater Level Simulation (JTLS) to meet CCMDs' training requirements. JSS will provide design and development of web-based applications used as services in CEMS environment.

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

	FY 2013	FY 2014	FY 2015
Title: Joint Simulation System (JSS)	3.017	3.098	2.193
<p>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 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.</p> <p>FY 2013 Accomplishments:</p> <ul style="list-style-type: none"> • Continued the integration, verification, validation, accreditation, and delivery of a stable and reliable software version of the JLVC Federation version 6.0 to support current CCMD and Service joint training requirements. • Developed civilian infrastructure network models and simulations to increase realism to the training audience. • Developed modeling and simulation web-services, cloud computing, and virtualization to comply with DOD guidance. • Continued JLVC 2020 prototyping of cloud-enabled modular services. Prototyped 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. • Developed terrain service prototype (static and streaming) to demonstrate how the cloud-based modular service concept can be applied to Joint training. 			

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<ul style="list-style-type: none"> Developed enhancements in the JLVC modeling and simulation federation to address hybrid warfare and Anti-Access/Area Denial (A2/AD) defense training capabilities to comply with Chairman Joint Chiefs of Staff (CJCS) training priorities. <p>FY 2014 Plans:</p> <ul style="list-style-type: none"> Federate A2/AD and hybrid threats modeling and simulation capabilities. Develop hybrid threat effects on civilian population and A2/AD modeling to comply with CJCS training priorities. Continue JLVC 2020 prototyping of cloud-enabled modular services. Continue 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>FY 2015 Plans:</p> <ul style="list-style-type: none"> Federate A2/AD and hybrid threats modeling and simulation capabilities. Develop hybrid threat effects on civilian population and A2/AD modeling to comply with CJCS training priorities. Continue JLVC 2020 prototyping of cloud-enabled modular services. Continue 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. 			
Accomplishments/Planned Programs Subtotals	3.017	3.098	2.193

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015</u> <u>Base</u>	<u>FY 2015</u> <u>OCO</u>	<u>FY 2015</u> <u>Total</u>	<u>FY 2016</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• 0804767D8Z: <i>JSS O&M Funding</i>	1.007	0.957	0.953	-	0.953	0.943	0.944	-	-	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:

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<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"> • Provide the JLVC Federation version 6.0 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. 		

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Appropriation/Budget Activity 0400 / 6					R-1 Program Element (Number/Name) PE 0804767D8Z / COCOM Exercise Engagement and Training Transformation (CE2T2)				Project (Number/Name) 769 / Joint Knowledge Development & Distribution Capability (JKDDC)			
COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
769: Joint Knowledge Development & Distribution Capability (JKDDC)	4.375	4.656	3.986	4.000	-	4.000	4.000	4.000	4.092	4.092	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

The FY 2015 OCO Request will be submitted at a later date.

A. Mission Description and Budget Item Justification

Joint Knowledge Development & Distribution Capability (JKDDC) Joint Knowledge Online (JKO) is the DOD unique and authoritative source for online joint training. JKDDC JKO is 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 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. JKO research and development will improve:

- Small Group Scenario Trainer (SGST) desk top modeling and simulation based training: These capabilities train and prepare 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: This facilitates the global distribution of web-based joint training content on portable, hand-held platforms.
- JKO Learning Management System (LCMS): JKO LCMS development is required to deliver JKO courses and track/report students' completions more efficiently.
- Develop the future virtual worlds learning environment. It will provide training and learning to promote adaptability and agility in the workforce through an interactive, immersive virtual gaming environment.

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

Title: Joint Knowledge Development & Distribution Capability (JKDDC)	FY 2013	FY 2014	FY 2015
	4.656	3.986	4.000
Description: JKDDC JKO technology initiatives principally include Small Group Scenario Trainer (SGST) desk top modeling and simulation based training, mobile "pilot" courseware training devices, JKO Learning Content Management System (LCMS), and OSD requested virtual worlds prototype. 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 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 JKO LCMS development is required to deliver JKO courses and track/report students' completions more efficiently. The future virtual worlds			

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

	FY 2013	FY 2014	FY 2015
<p>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>FY 2013 Accomplishments:</p> <ul style="list-style-type: none"> • Crafted and began implementing a comprehensive plan to develop mobile “pilot” training device capabilities focused on JKO’s entire Joint Individual Training Toolkit. Plan components included 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. • Developed and deployed 32 mobile “pilot” training products on JKO managed mobile content delivery/tracking platform. • Developed and delivered four JKO Learning Content Management System (LCMS) releases resulting in a more effective and efficient online training management application that is interoperable with DOD personnel management systems. • Developed a future virtual worlds learning prototype that provided training and learning environments (software agents) that are consistent with the Virtual Worlds Framework (VWF). The Combating Trafficking in Persons prototype course available via JKO “pilot” mobile technology demonstrated how online training could be delivered via the VWF. <p>FY 2014 Plans:</p> <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, job aids, and video capabilities in addition to current courseware capabilities. • Develop and deliver two JKO Learning Content Management System (LCMS) releases resulting in a more effective and efficient online training management application that is interoperable with DOD personnel management systems. Requirements are derived from CCMD user feedback and emerging DOD training priorities. <p>FY 2015 Plans:</p> <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, job aids, and video capabilities in addition to current courseware capabilities. • Develop and deliver two JKO Learning Content Management System (LCMS) releases resulting in a more effective and efficient online training management application that is interoperable with DOD personnel management systems. 			

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
• Requirements are derived from CCMD user feedback and emerging DOD training priorities.			
Accomplishments/Planned Programs Subtotals	4.656	3.986	4.000

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

Line Item	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
• 0804767D8Z: <i>JKDDC O&M Funding</i>	6.348	6.036	6.031	-	6.031	6.038	5.928	6.030	5.774	Continuing	Continuing

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

Joint Staff prescribed 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?

Measures:

- 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.
- 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.

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Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0804767D8Z / COCOM Exercise Engagement and Training Transformation (CE2T2)	Project (Number/Name) 770 / U.S. Forces Korea Training and Exercise Support
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
770: U.S. Forces Korea Training and Exercise Support	17.553	6.497	6.121	4.483	-	4.483	1.378	1.378	1.410	1.410	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

The FY 2015 OCO Request will be submitted at a later date.

A. Mission Description and Budget Item Justification

The U.S. Forces Korea (USFK) Training & Exercise Support program is developing simulations capable of satisfying all joint exercise training requirements in the Korean Theater of Operations. Interoperability with the Republic of Korea-developed Korean Simulation System is a critical and unique requirement of this USFK RDT&E program. 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 other combatant commander training programs that use the aging Joint, Live, Virtual, and Constructive (JLVC) simulations and the emerging JLVC 2020 simulations.

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

	FY 2013	FY 2014	FY 2015
Title: USFK Training & Exercise	6.497	6.121	4.483
<p>Description: This program provides Joint Training Environment support to 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 JLVC 2020 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 CCMDs, Services, and coalition Partners.</p> <p>FY 2013 Accomplishments: Researched, developed, tested and evaluated for USFK, Republic of Korea (JLVC 6.x modeling and simulation federation and Korean simulations) bridge. • Continued development and integration of Marine Air-Ground Task Force Tactical Warfare Simulation High Level Architecture 1516 Laissez-Faire to engineer interoperability with the Korean modeling and simulation federation and the JLVC 6.x modeling and simulation federation. • Researched, developed, and tested the Marine Air-Ground Task Force Tactical Warfare Simulation aggregated composable models.</p>			

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

	FY 2013	FY 2014	FY 2015
<ul style="list-style-type: none"> • Completed Joint Exercise Control Suite Cross Federation testing tool. • Completed initial development of refugee and civilian traffic modeling and simulations into the JLVC 6.x modeling and simulation federation. • Completed initial development of U.S. Forces Korea civilian infrastructure modeling and simulations into the JLVC 6.x modeling and simulation federation. • Completed initial development of targeting networks and visualization modeling and simulations into the JLVC 6.x modeling and simulation federation to enable visualization of intended targeting effects. • Continued Air Force Modeling and Simulation Training Toolkit database support. • Completed Joint Conflict and Tactical Simulation Low Overhead Driver High Level Architecture 1516 Modular Federated Object Model migration. • Continued Joint Land Component Constructive Training Capability database support. • Completed initial Navy Continuous Training Environment Modular Federation Object Model and Dynamic Data Model implementation. • Developed initial Modular Federation Object Model design. • Initial Marine Air-Ground Task Force Tactical Warfare Simulation Modular Federation Object Model migration completed. • Completed coalition-releasable Joint Semi-Automated Forces baseline. • Continued Korean Battle Simulation Center Terrain support. • Completed initial Defense Training Network Guard for JLVC 6.x modeling and simulation federation. • Continued enterprise architecture subject matter expertise research and analysis to facilitate delivery of state of the art USFK training capability. • Started development of the Joint Terrain Data Services specific dataset and server to meet USFK exercise training requirements. <p>FY 2014 Plans:</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 JLVC 2020 modeling and simulation capability to meet USFK theater specific, CCMD, Service, and coalition training requirements. • Achieve full interoperability of joint service and ROK modeling and simulations, capable of supporting large (e.g. 1M entities), high-intensity combat scenarios by 2016. • Document the future “to be” Joint Training Environment in the DOD Architecture Framework (DODAF) artifacts. <p>FY 2015 Plans:</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 JLVC 2020 modeling and simulation capability to meet USFK theater specific, CCMD, Service, and Coalition training requirements. 			

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
• Achieve full interoperability of joint service and ROK modeling and simulations, capable of supporting large (e.g. 1M entities), high-intensity combat scenarios by 2016.			
Accomplishments/Planned Programs Subtotals	6.497	6.121	4.483

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

<u>Line Item</u>	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015</u> <u>Base</u>	<u>FY 2015</u> <u>OCO</u>	<u>FY 2015</u> <u>Total</u>	<u>FY 2016</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• 0804767D8Z: <i>U.S. Forces Korea Training & Exercise Proc</i>	0.307	0.309	0.299	-	0.299	0.304	-	-	-	-	0.304

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?

Measures:

- Develop software for interoperability of JLVC 6.x simulations, with initial integration of the Army’s Multi-Resolution Federation (MRF), 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 USFK.

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Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0804767D8Z / <i>COCOM Exercise Engagement and Training Transformation (CE2T2)</i>	Project (Number/Name) 754 / <i>Immersive Simulation</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
<i>754: Immersive Simulation</i>	-	11.750	-	-	-	-	-	-	-	-	-	11.750
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	

The FY 2015 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 2013	FY 2014	FY 2015
<p>Title: Immersive Simulation</p> <p>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.</p> <p>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.</p> <p>FY 2013 Accomplishments:</p> <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 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. 	11.750	-	-

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

	FY 2013	FY 2014	FY 2015
<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	11.750	-	-

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

N/A

Remarks

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D. Acquisition Strategy
N/A

E. Performance Metrics
Program terminated as part of Secretary of Defense efficiency cuts.

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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
701: <i>Air Force JNTC</i>	2.955	2.041	2.234	2.716	-	2.716	2.794	2.794	2.858	2.858	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

The FY 2015 OCO Request will be submitted at a later date.

A. Mission Description and Budget Item Justification

The Air Force JNTC funding is providing a focused upgrade to developing models for space based capabilities and integrated them into the JLVC environment. The Air Force is also supporting development of cross domain solutions allowing for the linking of systems with differing security requirements, which significantly extend the breadth of the training audiences to additional joint and coalition participants.

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

Title: AF JNTC	FY 2013	FY 2014	FY 2015
<p>Description: Air Force continues to develop joint enablers that drive realistic/effective training by producing a deployable Electronic Warfare training capability for Europe which replicates double digit Surface-to-Air Missiles and advance Anti-Aircraft Artillery threats for U.S. and coalition forces. In addition, Air Force assists in the development of Joint Cross Domain Information Sharing (JCDIS) Enterprise Network Architecture, which includes engineering, development, and deployment which will enable joint and coalition participants to train while classified information is segregated and protected, as required. Air Force is creating cyber-contested environments in the distributed mission operations setting to challenge the joint exercise/training audience. Finally, comprehensive space effects are being integrated into the JLVC federation of models.</p> <p>FY 2013 Accomplishments:</p> <ul style="list-style-type: none"> • Developed a Cyber Simulator to create a LVC environment to train/exercise offensive/defensive tactical cyber operators. • Modified current JLVC Federations to simulate Blue Cyber effects on adversary networks. Enhanced exercise environment simulate the execution of operational and strategic plan/orders in a constructive environment to better train cyber warriors. • Developed a Multinational Aviation Live Virtual Constructive Training System (MALTS). This portable theater electronic warfare system presents aircrews with a highly realistic threat system. Provides the opportunity for aircrews to neutralize/suppress Red Integrated Air Defense Systems (IADS). • Continued Multi-Level Security (MLS). MLS enables virtual and constructive entities of various classification levels to be accessed by users with different security clearances and needs-to-know, and prevents users from obtaining access to information for which they lack authorization. <p>FY 2014 Plans:</p>	2.041	2.234	2.716

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
Continue Cyber Simulator. Expand the capability to create a LVC environment to train/exercise offensive/defensive tactical cyber operators. Continue Blue Cyber Effects. Expand the capability to train cyber personnel on Blue cyber-attack on adversary networks. Continue Multinational Aviation Live Virtual Constructive Training System (MALTS). Continue development of a deployable electronic warfare range to train/exercise aircrew capabilities. Continue Multi-Level Security (MLS). MLS enables virtual and constructive entities of various classification levels to be accessed by users with different security clearances and needs-to-know, and prevents users from obtaining access to information for which they lack authorization.			
<i>FY 2015 Plans:</i> Continue Cyber Simulator. Expand the capability to create a LVC environment to train/exercise offensive/defensive tactical cyber operators. Continue Blue Cyber Effects. Expand the capability to train cyber personnel on Blue cyber-attack on adversary networks. Continue Multinational Aviation Live Virtual Constructive Training System (MALTS). Continue development of a deployable electronic warfare range to train/exercise aircrew capabilities. Continue Multi-Level Security (MLS). MLS enables virtual and constructive entities of various classification levels to be accessed by users with different security clearances and needs-to-know, and prevents users from obtaining access to information for which they lack authorization.			
Accomplishments/Planned Programs Subtotals	2.041	2.234	2.716

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
• 0804767D8Z: <i>Air Force JNTC O&M Funding</i>	17.722	13.774	12.043	-	12.043	11.064	10.824	10.908	10.849	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:

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- 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?

Measures:

- Multinational Aviation LVC Training System (MALTS) is the deployable Electronic Warfare (EW) system which will replicate opposing forces double digit surface to air missiles and advanced AAA threats for Europe and Africa. This EW system is a critical cornerstone for Joint Forcible Entry Operations and for overcoming A2/AD challenges expected in the theaters.
- As the increased/enhanced EW training capability is used in LVC events, observations regarding better ways to use it, better ways to train, better ways to provide feedback to the training audience should be recorded and briefed back to the Warrior Preparation Center senior leadership.

Assisting Joint Staff and the Navy in developing Joint Cross Domain Information Sharing (JCDIS) Enterprise Network Architecture, which includes engineering, development, and deployment which will enable joint and coalition participants to train while classified information is segregated and protected, as required.

- Will install additional JCDIS enclave communications solutions at applicable Air Force Distributed Training Centers (multiple Training Programs) and supporting technical facilities.

Air Force is creating cyber-contested environments in the distributed mission operations setting to challenge the joint exercise/training audience.

- Adding cyber-contested environments will enhance existing LVC development environment to support exercises and training.

Air Force is developing comprehensive space effects which are being integrated into the JLVC federation of models.

- Integrating a fully operational Space Based Infrared System Missile Warning Simulator will allow space operators to actively participate in Distributed Mission Operations-Space LVC missile warning and Infrared special events.

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0804767D8Z / <i>COCOM Exercise Engagement and Training Transformation (CE2T2)</i>	Project (Number/Name) 772 / Navy JNTC
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
772: Navy JNTC	3.532	3.983	4.180	2.610	-	2.610	2.923	2.923	3.030	3.030	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

The FY 2015 OCO Request will be submitted at a later date.

A. Mission Description and Budget Item Justification

These funds enable Navy to develop unique maritime capabilities that integrate LVC elements into a seamless joint training environment. Navy program activities include conducting research, development, test and evaluation, and cross-service architecture certification on joint-capable systems, developing cross-domain architectures for US and Coalition Forces as well as ensuring sister service modeling/simulation and instrumentation efforts follow a common unified standard.

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

	FY 2013	FY 2014	FY 2015
<p>Title: Navy Joint National Training Center</p> <p>Description: Develops unique maritime capabilities that integrate LVC 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 RDT&E efforts Joint Semi Automated Forces (JSAF) modeling and simulation development and JNTC/JLVC Navy Federation Object Model (FOM) Integration directly support the Unified Command Plan (UCP) and are aligned with the DOD information operations (IO) Roadmap.</p> <p>FY 2013 Accomplishments:</p> <ul style="list-style-type: none"> • Continued alignment of Navy LVC training standards with JLVC training standards, particularly next generation JLVC architecture. • Provided capabilities that support Ballistic Missile Defense (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. • Addressed additional Coalition Partner Integration, Aegis BMD 5.0, Aegis Ashore Team Trainer, Integrated Undersea Surveillance System/Surveillance Towed Array Sensor System integration, Combined Armed Forces - Distributed Mission Operations (DMO) integration, Cooperative Engagement Capability, and Naval Integrated Fires Capability - Counter Air. • Navy developed significant improvements to JSAF's representation of a realistic threat environment to address high priority training gaps. These threat environment improvements included a more tactically-realistic electronic signals environment; unmanned Intelligence, Surveillance and Reconnaissance platform representation and employment, support and stimuli for 	3.983	4.180	2.610

PE 0804767D8Z: *COCOM Exercise Engagement and Training*
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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0804767D8Z / <i>COCOM Exercise Engagement and Training Transformation (CE2T2)</i>	Project (Number/Name) 772 / <i>Navy JNTC</i>

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

	FY 2013	FY 2014	FY 2015
<p>U.S. signals collection models, training systems and combat systems, Electronic Attack representation, and an improved threat common operational picture representation for two-sided event support.</p> <ul style="list-style-type: none"> Continued to invest in capabilities that mitigate joint training gaps in joint exercises and home station training. Extended and integrated virtual and augmented reality into training to facilitate the mastery of tasks not easily addressed in live training. Continued the development of JSAF's representations to Opposing Forces (O), Anti-Submarine Warfare (ASW), Electronic Warfare (EW), Signals Intelligence (SIGINT), Electronic Intelligence (ELINT), Communications Intelligence (COMINT), Integrated Air and Missile Defense (IAMD), MDA, and BMD capabilities in support of the Fleet, Joint and Coalition missions. Continued development in support of Korea Battle Simulation Center (KBSC) integration, including releasable parametrics and KBSC specific enhancements. Improved knowledge of and capabilities to build the capacity and competence of U.S., allied and partner forces for internal and external defense. Delivered annual version of the Navy Training Baseline to include priority joint requirements. Delivered annual version of the Navy Training FOM and Interoperability Guide. <p>FY 2014 Plans:</p> <ul style="list-style-type: none"> Continue alignment of Navy LVC training standards with JLVC training standards, particularly next generation JLVC and Joint Training Enterprise Architectures. 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 unmanned aircraft systems (UAS) streaming video generation and distribution. Integration of additional Coalition Partner nation capabilities including Japanese PATRIOT and Air Defense Ground Environment. 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. <p>FY 2015 Plans:</p> <ul style="list-style-type: none"> Continue alignment of NAVY LVC training standards with JLVC training standards. Limited development of BMD training capabilities, however, efforts to integrate Aegis Ashore and upgrade numerous EUCOM/CENTCOM BMD models will be minimal. Minimal efforts related to integration of additional Coalition Partner nation capabilities. 			

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
• Continue the development of JSAF's representations to OPFOR, ASW, EW, SIGINT, ELINT, COMINT, IAMD, MDA, and BMD capabilities in support of the fleet, and joint missions.			
Accomplishments/Planned Programs Subtotals	3.983	4.180	2.610

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
• 0804767D8Z: Navy JNTC O&M Funding	7.103	7.352	6.992	-	6.992	6.627	6.626	6.667	6.631	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:

- 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.

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0804767D8Z / <i>COCOM Exercise Engagement and Training Transformation (CE2T2)</i>	Project (Number/Name) 772 / <i>Navy JNTC</i>
<p>• Navy's current JLVC and other federation simulation distribution are 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.</p>		

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 6: RDT&E Management Support</i>	R-1 Program Element (Number/Name) PE 0909999D8Z I <i>Financing for Cancelled Account Adjustments</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
Total Program Element	1.471	0.992	-	-	-	-	-	-	-	-	Continuing	Continuing
546: <i>Financing for Cancelled Account Adjustments</i>	1.471	0.992	-	-	-	-	-	-	-	-	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

The FY 2015 OCO Request will be submitted at a later date.

A. Mission Description and Budget Item Justification

Not applicable for this item

B. Program Change Summary (\$ in Millions)

	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015 Base</u>	<u>FY 2015 OCO</u>	<u>FY 2015 Total</u>
Previous President's Budget	-	-	-	-	-
Current President's Budget	0.992	-	-	-	-
Total Adjustments	0.992	-	-	-	-
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	0.992	-			
• SBIR/STTR Transfer	-	-			

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

	FY 2013	FY 2014	FY 2015
Title: Not applicable for this item.	0.992	-	-
FY 2013 Accomplishments: Financing For Cancelled Accounts			
Accomplishments/Planned Programs Subtotals	0.992	-	-

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

N/A

Remarks

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> / BA 6: <i>RDT&E Management Support</i>	R-1 Program Element (Number/Name) PE 0909999D8Z / <i>Financing for Cancelled Account Adjustments</i>
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E. Acquisition Strategy
N/A

F. Performance Metrics
Not applicable for this item.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0607210D8Z I <i>Industrial Base Analysis and Sustainment Support</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
Total Program Element	0.000	-	9.993	14.778	-	14.778	17.896	15.536	10.341	5.719	Continuing	Continuing
819: <i>Industrial Base Analysis and Sustainment</i>	0.000	-	9.993	14.778	-	14.778	17.896	15.536	10.341	5.719	Continuing	Continuing

The FY 2015 OCO Request will be submitted at a later date.

Note

This was a new start program in FY 2014 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.

B. Program Change Summary (\$ in Millions)	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO	FY 2015 Total
Previous President's Budget	-	14.000	12.000	-	12.000
Current President's Budget	-	9.993	14.778	-	14.778
Total Adjustments	-	-4.007	2.778	-	2.778
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-4.000			
• Congressional Rescissions	-	-0.007			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Reduction	-	-	-1.718	-	-1.718

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense	Date: March 2014
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Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0607210D8Z I <i>Industrial Base Analysis and Sustainment Support</i>
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• Travel efficiencies savings	-	-	-0.004	-	-0.004
• Missile Sector Sustainment	-	-	4.500	-	4.500

Change Summary Explanation

FY 2014 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.

FY2015 increase for Missile Sector Sustainment is targeted to improvements in the existing production process efficiencies, exploration of advanced materials for higher performance, and upgrading of outdated technology for missile components.

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense										Date: March 2014		
Appropriation/Budget Activity 0400 / 7					R-1 Program Element (Number/Name) PE 0607210D8Z / <i>Industrial Base Analysis and Sustainment Support</i>				Project (Number/Name) 819 / <i>Industrial Base Analysis and Sustainment</i>			
COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
819: <i>Industrial Base Analysis and Sustainment</i>	-	-	9.993	14.778	-	14.778	17.896	15.536	10.341	5.719	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

The FY 2015 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 2013	FY 2014	FY 2015
Title: Industrial Base Sustainment	-	9.993	14.778
<p>Description: Sector by Sector, Tier by Tier (S2T2) fragility and criticality assessments are applied across the DoD enterprise to identify and prioritize industrial base niches requiring additional investment by DoD. The purpose of investment is to sustain essential industrial production and design team capabilities. 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.</p> <p>IBS will include focused projects in the following critical areas in FY 2014: Butanetriol, a solid rocket fuel precursor chemical; Infrared Focal Plane Array; Advanced Solid Rocket Propulsion; Test Facilities for Radiation Hardened Electronics.</p> <p>With a decline in the procurement of missile programs, design and production skills for critical components within the missile sector industrial base are at risk which could result in costly delays and unanticipated expense. The loss of this design and production capability could have a significant impact on many current and future missile programs damaging the readiness of the</p>			

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Appropriation/Budget Activity 0400 / 7	R-1 Program Element (Number/Name) PE 0607210D8Z / <i>Industrial Base Analysis and Sustainment Support</i>	Project (Number/Name) 819 / <i>Industrial Base Analysis and Sustainment</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<p>Department. The missile sector sustainment effort will improve the existing production process efficiencies, explore advanced materials for higher performance, and upgrade outdated technology for missile components. FY 2014 and FY 2015 efforts will include the following important capabilities: high precision attitude control, thermal batteries; and fuzes.</p> <p>FY 2014 Plans: Address supply chain vulnerabilities and early indicators of program risk and make corrective and innovative investments in essential defense supply chains.</p> <p>Butanetriol: This project develops a qualified domestic source for Butanetriol (BT), a solid rocket fuel precursor chemical, that will preclude the necessity of procurement from a prohibited foreign source. Since 2008, DoD's projected requirements have shrunk to levels that substantially change the business case for development of new domestic source. To re-enable the business case and develop a permanent domestic industrial base, DoD plans to fund a project to close the gap between the new and old business cases.</p> <p>Infrared Focal Plane Array (IRFPA): This project focuses on sustaining a continuous production capability for the impending modernization program of Improved Forward Looking Infrared (I-FLIR). There is a gap between the end of horizontal integration of FLIR and the slated start of I-FLIR modernization. In order to bridge the gap, the Department plans to maintain the foundry capability and intellectual base of critical suppliers through time-phased lots of IRFPAs.</p> <p>Advanced Solid Rocket Propulsion: To support future missile interceptor missions, advanced kill vehicle thrusters for high precision and long duration missions are required. This is a defense-unique industrial base niche. In order to maintain this capability and avoid the loss of skills and intellectual capital, the Department is executing a project to develop high precision attitude control.</p> <p>Test Facilities for Radiation Hardened Electronics: joint efforts with other DoD, Department of Energy, and the National Reconnaissance Office to maintain industrial base facilities that are capable of testing radiation hardened electronics. Provides resources to cover a one-time FY 2014 funding gap.</p> <p>FY 2015 Plans: Address supply chain vulnerabilities and early indicators of program risk and make corrective and innovative investments in essential defense supply chains.</p> <p>Missile Sector Sustainment: Fragility and Criticality Assessments have assessed the impacts to the missile industrial base caused by declining procurements. Specific action is necessary preserve industrial base capabilities for fuzes and thermal batteries.</p>			

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
Projects will be executed to improve the efficiency of existing production processes, explore advanced materials for higher performance and upgrade outdated technology.			
Industrial Base Sustainment Other: DoD will conduct additional industrial base assessments in FY 2014 to identify weaknesses and fragile and critical capabilities for FY 2015 project development. A call for FY 2015 projects has also been sent to the Service's Acquisition Executives requesting that proposals rate the fragility and criticality of subject capabilities. A Joint Industrial Base Working Group Panel will rank the proposals, and the Deputy Assistant Secretary for Manufacturing and Industrial Base Policy will make the final selection.			
Accomplishments/Planned Programs Subtotals	-	9.993	14.778

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

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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
Total Program Element	0.000	-	1.944	2.953	-	2.953	3.951	4.761	5.946	6.944	Continuing	Continuing
P112: <i>Operational System Development</i>	0.000	-	1.944	2.953	-	2.953	3.951	4.761	5.946	6.944	Continuing	Continuing

The FY 2015 OCO Request will be submitted at a later date.

A. Mission Description and Budget Item Justification

This 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.

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.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense	Date: March 2014
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B. Program Change Summary (\$ in Millions)	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO	FY 2015 Total
Previous President's Budget	-	1.955	4.988	-	4.988
Current President's Budget	-	1.944	2.953	-	2.953
Total Adjustments	-	-0.011	-2.035	-	-2.035
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Reduction Adjustments	-	-0.011	-2.035	-	-2.035

Change Summary Explanation

Requirements reduced in response to headquarters management initiatives to better align program with smaller military force.

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Appropriation/Budget Activity 0400 / 7	R-1 Program Element (Number/Name) PE 0607310D8Z / <i>Operational Systems Development</i>	Project (Number/Name) P112 / <i>Operational System Development</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
<i>P112: Operational System Development</i>	-	-	1.944	2.953	-	2.953	3.951	4.761	5.946	6.944	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

The FY 2015 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.

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 2013	FY 2014	FY 2015
Title: Countering Weapons of Mass Destruction (CWMD) Systems	-	1.944	2.953
Description: <ul style="list-style-type: none"> • 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. 			

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 7	R-1 Program Element (Number/Name) PE 0607310D8Z / <i>Operational Systems Development</i>	Project (Number/Name) P112 / <i>Operational System Development</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<ul style="list-style-type: none"> Enhancements to major defense acquisition programs to address CWMD mission and systems' gaps. A CWMD organizational capabilities review and update as required. <p>FY 2013 Accomplishments: N/A</p> <p>FY 2014 Plans:</p> <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. <p>FY 2015 Plans: This PE will continue to fund development efforts to upgrade systems that have been fielded or provide planned product improvements based upon the prioritized capabilities required of existing platforms requirements 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.</p>			
Accomplishments/Planned Programs Subtotals	-	1.944	2.953

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

N/A

Remarks

D. Acquisition Strategy

Utilize a knowledge based approach to achieve an operational prototype in FY14 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.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0303140D8Z I <i>Information Systems Security Program</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
Total Program Element	11.348	10.496	10.638	11.304	-	11.304	10.127	9.896	10.683	11.387	Continuing	Continuing
140: <i>Information Systems Security Program</i>	11.348	10.496	10.638	11.304	-	11.304	10.127	9.896	10.683	11.387	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

The FY 2015 OCO Request will be submitted at a later date.

A. Mission Description and Budget Item Justification

The The DoD CIO 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. DoD CIO 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.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0303140D8Z I <i>Information Systems Security Program</i>
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B. Program Change Summary (\$ in Millions)	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO	FY 2015 Total
Previous President's Budget	11.780	10.673	12.867	-	12.867
Current President's Budget	10.496	10.638	11.304	-	11.304
Total Adjustments	-1.284	-0.035	-1.563	-	-1.563
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Sequestration Reduction	-0.969	-	-	-	-
• Efficiencies Reduction	-	-	-1.563	-	-1.563
• SBIR/STTR Reduction	-0.310	-	-	-	-
• Program Reduction	-0.005	-	-	-	-
• FFRDC Reduction	-	-0.035	-	-	-

Change Summary Explanation

Program Change Explanation:

FY 2013: Sequestration Reduction -0.969 million, SBIR/STTR reduction -0.310 million, Program adjustment-0.005 million.

FY 2014: FFRDC Reduction -0.035 million.

FY 2015: Efficiency reduction -1.563 million.

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
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<p>Title: Information Systems Security Program Plans and Accomplishments</p> <p>FY 2013 Accomplishments: Developed products and test tools for a comprehensive cybersecurity awareness program, and extended cyber defense training exercises to all DoD agencies.</p> <ul style="list-style-type: none"> • Continued CND Architecture and Capability development. • 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 	10.496	10.638	11.304
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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense	Date: March 2014
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Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0303140D8Z I <i>Information Systems Security Program</i>
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<p>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.</p> <ul style="list-style-type: none"> • Refined 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. • Developed DoD policy for Digital 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 to ensure the security standards and policies are implemented with 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 adoption strategy as the DoD Mobile Device Strategy and Roadmap will work in lockstep with the cloud computing strategy. • Developed Advanced Persistent Threat (APT) data standards and data collection capabilities • Piloted NIPRNet – INTERNET isolation capabilities. • Expanded the scope of the International Cyber Defense Workshop to include more training modules and expanded IA range capabilities in SAST model; developed web portals for classified five-eyes (FVEY) information sharing and methodologies for releasing IA/CND information to formal partners in near real time. • Performed Continuous Monitoring and Risk Scoring (CM/RS); developed the strategy and objectives for institutionalizing continuous monitoring across DoD; coordinated CM/RS capabilities; and prepared applicable CM/RS issuances. • Provided strategic management and oversight of the Computer Network Defense Service Provider (CNDSP) Program; and conducted trend analysis to identify systemic trends and associated gaps to the CNDSP program. • Researched PKI interoperability policy, governance, and interoperability implementation recommendations to incorporate PKI and strong identity technologies in cyber environments to support DoD and Warfighter operations. 			

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense	Date: March 2014
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Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0303140D8Z / <i>Information Systems Security Program</i>
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<ul style="list-style-type: none"> • Developed Cross Domain (CD) technical & acquisition expertise (e.g., CD investment strategy, and CD enterprise capability). • Developed, coordinated and supported a series of Cyber initiatives and associated issue papers for the POM-15 Resource Management Decision (RMD) process that will provide resources to DISA, NSA, DOD-CIO, and the Services. • Conducted a series of Cyber and Information Assurance program reviews with the Services, DISA, and NSA to address program implementation and resourcing status. • In support of the DOD CNDSP Program, conducted a series of technical & operational Measures of Effectiveness (MOE) Evaluations to address effectiveness of the CNDSPs implementation of DODD/I-8530.1/.2. Results of the MOE also facilitated the success of Component Command Cyber Readiness Inspections (CCRIs) as directed to be accomplished by USCYBERCOM. • Developed, coordinated, and maintained Cyber metrics for reporting to DOD-CIO, DCMO and other organizations as necessary. <p>FY 2014 Plans: Continue development of capabilities (products and test tools, etc.) for a comprehensive cybersecurity awareness program.</p> <ul style="list-style-type: none"> • Continue cyber-defense training exercises for all DoD agencies. • Continue research, analyses, and development of education, training, and awareness concepts and course-contents related to SCRM, HwA, SwA, and Assured Services (and associated SCRM Standards with respect to people-process-technology-metrics) • Research, analyses, and development of concepts for consistent protection from supply chain exploitation and attack within/by individual acquisitions and procurements of DoD materiel and services on which DoD systems, networks, and missions depend. • Monitor the on-going implementation of SCRM key practices and test and evaluation processes across DoD. • 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. 			

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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<ul style="list-style-type: none"> • 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 refinement of the DoD policy for Digital 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 in the CNDSP program. • Support DODD/I-8530 .1/.2 with CNDSP evaluations and Conduct Measures of Effectiveness (MOE) Evaluations to address effectiveness of the CNDSPs implementation of DODD/I-8530.1/.2, and to address cyber security issues identified by USCYBERCOM. • Conduct Cyber Security program reviews with the Services, DISA, & NSA to address program implementation and resourcing issues and requirements. • Conduct Portfolio Reviews of Cybersecurity initiatives addressing Component cost, schedule, and performance of ISSP funded initiatives. • Develop, coordinate, and support Cyber initiatives and associated issue papers for the POM-16 Resource Management Decision (RMD) process that will provide resources to DISA, NSA, DOD-CIO, and the Services. • Develop, coordinate, and maintain Cyber metrics for reporting to DOD-CIO, DCMO and other organizations as necessary. • 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. 			

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense	Date: March 2014
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Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0303140D8Z / <i>Information Systems Security Program</i>
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
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- Continue implementation and refinement of NIPRNet and SIPRNet Mapping and Leak Detection Solution to identify vulnerabilities and develop risk mitigation strategy.
 - Monitor the software engineering and implementation of the advanced Whitelisting database capability to reduce NIPRNet exposure to the Internet.
 - Expand the scope of the International Cyber Defense Workshop to include more training modules and develop new IA range capabilities for the virtual workshop; develop methodologies for releasing IA/CND information to formal partners in near real time.
 - Continue collaboration 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.
- FY 2015 Plans:**
Continue development of capabilities (products and test tools, etc.) for a comprehensive cybersecurity awareness program.
- Continue cyber-defense training exercises for all DoD agencies.
 - Continue research, analyses, and development of education, training, and awareness concepts and course-contents related to SCRM, HwA, SwA, and Assured Services (and associated SCRM Standards with respect to people-process-technology-metrics)
 - Research, analyses, and development of concepts for consistent protection from supply chain exploitation & attack within/by individual acquisitions and procurements of DoD materiel and services on which DoD systems, networks, and missions depend.
 - Monitor the on-going implementation of SCRM key practices and test and evaluation processes across DoD.
 - 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

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<ul style="list-style-type: none"> • Continue implementation and refinement of NIPRNet and SIPRNet Mapping and Leak Detection Solution to identify vulnerabilities and develop risk mitigation strategy. • Monitor the software engineering and implementation of the advanced Whitelisting database capability to reduce NIPRNet exposure to the Internet. • Expand the scope of the International Cyber Defense Workshop to include more training modules and develop new IA range capabilities for the virtual workshop; develop methodologies for releasing IA/CND information to formal partners in near real time. • Continue collaboration 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. <p>FY 2015 Plans: Continue development of capabilities (products and test tools, etc.) for a comprehensive cybersecurity awareness program.</p> <ul style="list-style-type: none"> • Continue cyber-defense training exercises for all DoD agencies. • Continue research, analyses, and development of education, training, and awareness concepts and course-contents related to SCRM, HwA, SwA, and Assured Services (and associated SCRM Standards with respect to people-process-technology-metrics) • Research, analyses, and development of concepts for consistent protection from supply chain exploitation & attack within/by individual acquisitions and procurements of DoD materiel and services on which DoD systems, networks, and missions depend. • Monitor the on-going implementation of SCRM key practices and test and evaluation processes across DoD. • 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 			

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Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0303140D8Z / <i>Information Systems Security Program</i>
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<p>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.</p> <ul style="list-style-type: none"> • 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 refinement of the DoD policy for Digital 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. • Monitor the software engineering and implementation of the advanced Whitelisting database capability to reduce NIPRNet exposure to the Internet. • Continue collaboration 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. 			

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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<ul style="list-style-type: none"> • Monitor the DIB CS/IA program expansion under FVEY CND MOU and any International amendments to the Framework Agreement. • Expand the scope of the International Cyber Defense Workshop to include more training modules and continue to develop new IA range capabilities for the virtual workshop; develop methodologies for releasing IA/CND information to formal partners in near real time. • Support DODD/I-8530.1/.2 for CNDSP evaluations and Conduct Measures of Effectiveness (MOE) Evaluations to address effectiveness of the CNDSPs implementation of DODD/I-8530.1/.2. and cyber security issues identified by USCYBERCOM. • Conduct Cyber Security program reviews with the Services, DISA, and NSA to address program implementation and resourcing issues and requirements. • Conduct Portfolio Reviews of Cyber security initiatives addressing Component cost, schedule, and performance of ISSP funded initiatives. • Develop, coordinate, and support Cyber initiatives and associated issue papers for the POM-16 Resource Management Decision (RMD) process that will provide resources to DISA, NSA, DOD-CIO, and the Services. • Develop, coordinate, and maintain Cyber metrics for reporting to DOD-CIO, DCMO and other organizations as necessary. 			
Accomplishments/Planned Programs Subtotals	10.496	10.638	11.304

D. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
• 0303140D8Z O&M DW: <i>Information System Security Program</i>	13.253	13.178	11.509	-	11.509	12.255	12.485	12.159	11.805	Continuing	Continuing

Remarks

E. Acquisition Strategy

N/A

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F. Performance Metrics

Zanethenon improvements available as a core enterprise IA/CND simulation tools.

- 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.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0303260D8Z I <i>Defense Military Deception Program Office</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
Total Program Element	2.335	1.157	1.242	0.951	-	0.951	0.974	1.012	1.068	1.135	Continuing	Continuing
891: <i>Defense Military Deception Program</i>	2.335	1.157	1.242	0.951	-	0.951	0.974	1.012	1.068	1.135	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

The FY 2015 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 of Defense. More specifically, the program mission is to enable authorized DoD Components to effectively plan, integrate, execute and assess MILDEC. The Defense MILDEC Program Office (DMDPO) provides oversight, guidance, and program management support for the Defense MILDEC program. It includes capability development, education, training, exercises, career force management, operational and programmatic assessments, intelligence, planning, analysis, and operational employment in support of military operations. Funds support the research, development, and integration of MILDEC capabilities, next generation devices, and technologies to support current and emerging MILDEC activities.

B. Program Change Summary (\$ in Millions)

	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015 Base</u>	<u>FY 2015 OCO</u>	<u>FY 2015 Total</u>
Previous President's Budget	1.294	1.246	1.083	-	1.083
Current President's Budget	1.157	1.242	0.951	-	0.951
Total Adjustments	-0.137	-0.004	-0.132	-	-0.132
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-0.108	-0.004			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.028	-			
• Departmental Adjustments	-0.001	-	-0.132	-	-0.132

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

	FY 2013	FY 2014	FY 2015
Title: Defense Military Deception Program Office (DMDPO)	1.157	1.242	0.951
Description: The Defense Military Deception Program (DMDP) is an effort to revitalize DoD Military Deception (MILDEC) capability and capacity across the Department of Defense. More specifically, the program mission is to enable authorized DoD Components to effectively plan, integrate, execute and assess MILDEC. The Defense MILDEC Program Office (DMDPO)			

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Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0303260D8Z / <i>Defense Military Deception Program Office</i>
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<p>provides oversight, guidance, and program management support for the Defense MILDEC program. It includes capability development, education, training, exercises, career force management, operational and programmatic assessments, intelligence, planning, analysis, and operational employment in support of military operations. Funds support the research, development, and integration of MILDEC capabilities, next generation devices, and technologies to support current and emerging Department MILDEC activities.</p> <p>FY 2013 Accomplishments:</p> <ul style="list-style-type: none"> - Developed and established experimentation, testing and evaluation procedures for emerging devices, decoys and technologies enabling MILDEC to meet Department of Defense Components' emergency needs, urgent needs and forecasted priorities. - Developed and instituted analytical constructs which require intelligence and operational communities to characterize, forecast, target, wargame, and assess the information environment in support of the Department MILDEC activities. - Partnered with US Special Operations command with a technology and vulnerability assessment for decoy requirements. <p>FY 2014 Plans:</p> <ul style="list-style-type: none"> - Further refine experimentation, test and evaluation procedures for emerging devices, decoys and technologies enabling MILDEC to meet Department of Defense Components' emergency needs, urgent needs and forecasted priorities. - Begin to develop frameworks enabling MILDEC considerations in the Acquisition, Technology and Logistics (AT&L) RDT&E life cycle of key capabilities. - 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. - Examine and invest research and development in technology and capabilities that support current and emerging decoy and MILDEC requirements for US Southern Command, US Pacific Command, and the US Army Threat Systems Management Office; advocate for acquisition and sustainment of physical, technical, and administrative technologies and capabilities. <p>FY 2015 Plans:</p> <ul style="list-style-type: none"> - Continue to develop and establish experimentation, test and evaluation procedures for emerging devices, decoys and technologies enabling MILDEC to meet Department of Defense Components' emergency needs, urgent needs and forecasted priorities. - Continue to develop frameworks enabling MILDEC considerations in AT&L RDT&E life cycle of key capabilities. - Continue to examine and invest research and development in technology and capabilities to support current and emerging MILDEC requirements; advocate for acquisition and sustainment of physical, technical, and administrative technologies and tools. - Participate in Defense RDT&E processes to advance basic and applied research, science and technology, and technology development and testing to elevate MILDEC capability and capacity across the Department. 			
Accomplishments/Planned Programs Subtotals	1.157	1.242	0.951

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

<u>Line Item</u>	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015</u> <u>Base</u>	<u>FY 2015</u> <u>OCO</u>	<u>FY 2015</u> <u>Total</u>	<u>FY 2016</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• 0303260D8Z O&M DW: <i>Defense Military Deception Program Office</i>	4.461	3.617	3.724	-	3.724	5.973	6.081	4.544	4.678	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 related capabilities are available for Department of Defense components
 - 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 governance, oversight, and strategy across the Department of Defense for the planning and execution of MILDEC activities

F. Performance Metrics

- Performance metrics are measured through revitalization of MILDEC capability and capacity as a traditional military activity as demonstrated by the following:
- Department of Defense components possess the authorities through policy to plan, resource and execute Department of Defense MILDEC
 - Department of Defense components possess functionally relevant and timely analyses in support of MILDEC activities
 - Department of Defense components possess functionally relevant and available training, education and exercises to support the Department's MILDEC activities
 - Department of Defense components program, plan and resource MILDEC activities to enable the Department's MILDEC planning, integration and execution

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0305125D8Z I <i>Critical Infrastructure Protection (CIP)</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
Total Program Element	12.814	9.339	9.728	8.846	-	8.846	7.308	7.589	8.013	8.515	Continuing	Continuing
125: <i>CRITICAL INFRASTRUCTURE PROTECTION (CIP)</i>	12.814	9.339	9.728	8.846	-	8.846	7.308	7.589	8.013	8.515	Continuing	Continuing

The FY 2015 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).

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense	Date: March 2014
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Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0305125D8Z I <i>Critical Infrastructure Protection (CIP)</i>
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B. Program Change Summary (\$ in Millions)	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO	FY 2015 Total
Previous President's Budget	10.462	9.752	10.069	-	10.069
Current President's Budget	9.339	9.728	8.846	-	8.846
Total Adjustments	-1.123	-0.024	-1.223	-	-1.223
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-1.106	-0.024			
• Congressional Rescissions	-0.013	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Strategic Efficiency Reduction	-	-	-1.223	-	-1.223
• Other Program Adjustment	-0.004	-	-	-	-

Change Summary Explanation

FY 2015 efficiencies adjustment to support Department higher priorities.

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400 / 7	R-1 Program Element (Number/Name) PE 0305125D8Z / <i>Critical Infrastructure Protection (CIP)</i>	Project (Number/Name) 125 / <i>CRITICAL INFRASTRUCTURE PROTECTION (CIP)</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
125: <i>CRITICAL INFRASTRUCTURE PROTECTION (CIP)</i>	12.814	9.339	9.728	8.846	-	8.846	7.308	7.589	8.013	8.515	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

The FY 2015 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 DpD 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 2013	FY 2014	FY 2015
	9.339	9.728	8.846
FY 2013 Accomplishments:			
- Provided DCIP Policy and Program Guidance			

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 7	R-1 Program Element (Number/Name) PE 0305125D8Z / <i>Critical Infrastructure Protection (CIP)</i>	Project (Number/Name) 125 / <i>CRITICAL INFRASTRUCTURE PROTECTION (CIP)</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<ul style="list-style-type: none"> - Directed DoD Mission-Based Critical Asset Identification Process as outlined in DoD Manual 3020.45 V1. - Issued 2012 Defense Critical Asset List - Managed DPG directed Joint Mission Assurance Assessment Pilot (JMAAP) - Prioritized highest mission critical risks and monitor actions by asset owners to remediate identified vulnerabilities. - Provided oversight of risk management process for identifying defense critical infrastructure including the analysis and tracking of remediation and mitigation efforts. - 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. <p>FY 2014 Plans:</p> <ul style="list-style-type: none"> - Provide DCIP Policy and Program Guidance. - Oversee DoD Mission-Based Critical Asset Identification Process as outlined in DoD Manual 3020.45 V1. - Provide oversight of risk management process for identifying defense critical infrastructure including the analysis and tracking of remediation and mitigation efforts. - 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. <p>FY 2015 Plans:</p> <ul style="list-style-type: none"> - Provide DCIP Policy and Program Guidance. - Oversee DoD Mission-Based Critical Asset Identification Process as outlined in DoD Manual 3020.45 V1. - Provide oversight of risk management process for identifying defense critical infrastructure including the analysis and tracking of remediation and mitigation efforts. - 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. 			
Accomplishments/Planned Programs Subtotals	9.339	9.728	8.846

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015</u> <u>Base</u>	<u>FY 2015</u> <u>OCO</u>	<u>FY 2015</u> <u>Total</u>	<u>FY 2016</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• 0902198D8Z: <i>Critical Infrastructure Protection</i>	7.582	7.582	7.582	-	7.582	7.582	7.582	-	-	7.582	7.582

Remarks

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 7	R-1 Program Element (Number/Name) PE 0305125D8Z / <i>Critical Infrastructure Protection (CIP)</i>	Project (Number/Name) 125 / <i>CRITICAL INFRASTRUCTURE PROTECTION (CIP)</i>

D. Acquisition Strategy

N/A

E. Performance Metrics

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.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0305186D8Z I <i>Policy R&D Programs</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
Total Program Element	6.718	5.414	4.210	7.065	-	7.065	5.213	4.257	4.494	4.776	Continuing	Continuing
186: <i>Policy R&D Programs</i>	6.718	5.414	4.210	7.065	-	7.065	5.213	4.257	4.494	4.776	Continuing	Continuing

The FY 2015 OCO Request will be submitted at a later date.

A. Mission Description and Budget Item Justification

Provide analysis to overcome military security challenges. Since the global environment is dynamic, research is necessary for continued understanding military structures, foreign cultures, and ethnic issues. Examines demographic data, investigates future global security challenges, provides insights to inform critical national security decisions, explores ways to build partnership capabilities to counter organizational warfare, develop foreign military infrastructure, and deny sanctuary to extremist groups. Program blends several disciplines including surveillance, operations, policy, information management, cyber policy, training and technology.

B. Program Change Summary (\$ in Millions)

	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015 Base</u>	<u>FY 2015 OCO</u>	<u>FY 2015 Total</u>
Previous President's Budget	6.360	3.210	8.042	-	8.042
Current President's Budget	5.414	4.210	7.065	-	7.065
Total Adjustments	-0.946	1.000	-0.977	-	-0.977
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-0.682	-			
• Congressional Rescissions	-0.008	-			
• Congressional Adds	-	1.000			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.254	-			
• Strategic Efficiency Reduction	-	-	-0.977	-	-0.977
• Other Program Adjustment	-0.002	-	-	-	-

Change Summary Explanation

FY 2014 program funding has been rephased to FY15 and FY16 to support Department higher priorities.
 FY 2014 Congressional add is in accordance with § 427 of the FY2014 NDAA. Funding supports the Conflict Records Research Center.
 FY 2015 efficiencies adjustment to support Department higher priorities.

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400 / 7					R-1 Program Element (Number/Name) PE 0305186D8Z / Policy R&D Programs				Project (Number/Name) 186 / Policy R&D Programs			
COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
186: Policy R&D Programs	6.718	5.414	4.210	7.065	-	7.065	5.213	4.257	4.494	4.776	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

The FY 2015 OCO Request will be submitted at a later date.

A. Mission Description and Budget Item Justification

Provide analysis to overcome military security challenges. Since the global environment is dynamic, research is necessary for continued understanding military structures, foreign cultures, and ethnic issues. Examines demographic data, investigates future global security challenges, provides insights to inform critical national security decisions, explores ways to build partnership capabilities to counter organizational warfare, develop foreign military infrastructure, and deny sanctuary to extremist groups. Program blends several disciplines including surveillance, operations, policy, information management, cyber policy, training and technology.

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

	FY 2013	FY 2014	FY 2015
Title: Future Security Challenges	2.447	2.420	3.590
<p>Description: Provides program management oversight and technical support to identify current and emerging future security challenges to the Department, and for international cooperation activities to understand and confront with Allies and partners with international partners to confront these challenges. Anticipates exploitation of technology, including available and advanced capabilities, and works with the international commercial sector and academia concerning adversary's application of technology. Program explores processes and policy to integrate international capabilities across the spectrum of security challenges.</p> <p>FY 2013 Accomplishments:</p> <ul style="list-style-type: none"> • Researched and analyzed 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. • Continued 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. • Researched efforts within the Services and Combatant Commands to better analyze and demonstrate enduring counterinsurgency operational capabilities. • Researched 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"> • FY 2014 Congressional add is in accordance with § 427 of the FY2014 NDAA. Funding will support the establishment of the Conflict Records Research Center. The purposes of which are to establish a digital research database including translations and to facilitate research and analysis of records captured from countries, organizations, and individuals, now or once hostile to the United States, with rigid adherence to academic freedom and integrity. • Perform trend analysis and develop mitigation options for addressing program risks. 			

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400 / 7	R-1 Program Element (Number/Name) PE 0305186D8Z / Policy R&D Programs	Project (Number/Name) 186 / Policy R&D Programs
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
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- | | | | |
|---|--|--|--|
| <ul style="list-style-type: none"> • 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>FY 2015 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. | | | |
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Title: Long Term Competitions (LTC) Program	1.590	0.940	1.815
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<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</p>			
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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense	Date: March 2014
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Appropriation/Budget Activity 0400 / 7	R-1 Program Element (Number/Name) PE 0305186D8Z / Policy R&D Programs	Project (Number/Name) 186 / Policy R&D Programs
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
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.			
FY 2013 Accomplishments: Specific efforts are classified.			
FY 2014 Plans: Specific efforts are classified.			
FY 2015 Plans: Specific efforts are classified.			
Title: Defense Planning Scenarios Activities Description: This program is classified.	1.377	0.850	1.660
FY 2013 Accomplishments: Specific efforts are classified.			
FY 2014 Plans: Specific efforts are classified.			
FY 2015 Plans: Specific efforts are classified.			
Accomplishments/Planned Programs Subtotals	5.414	4.210	7.065

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

N/A

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0305199D8Z / <i>Net Centricity</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
Total Program Element	14.528	18.849	16.490	23.984	-	23.984	17.446	18.060	18.992	20.174	Continuing	Continuing
199: <i>GIG Evaluation Facilities (GIG-EF) and GIG Enterprise-Wide Systems Engineering Advisory Activities</i>	14.528	18.849	16.490	23.984	-	23.984	17.446	18.060	18.992	20.174	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

The FY 2015 OCO Request will be submitted at a later date.

A. Mission Description and Budget Item Justification

Funds will be used to provide technical analysis, systems engineering and capability management oversight of programs, projects, initiatives 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, network and spectrum management, command and control (C2) applications, systems 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 (C4II) 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 C4II 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 and information infrastructure 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), C2 mission application, and information sharing capabilities. These funds provide the capability for the warfighter to manage and deconflict radio frequencies through ground, air, and space 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

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense	Date: March 2014
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Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0305199D8Z / <i>Net Centricity</i>
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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.

B. Program Change Summary (\$ in Millions)	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO	FY 2015 Total
Previous President's Budget	21.190	21.602	21.610	-	21.610
Current President's Budget	18.849	16.490	23.984	-	23.984
Total Adjustments	-2.341	-5.112	2.374	-	2.374
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-0.045	-			
• SBIR/STTR Transfer	-	-			
• Sequestration Reduction	-1.756	-	-	-	-
• Efficiency Reduction	-	-	-2.626	-	-2.626
• SIBR/STTR Reduction	-0.532	-	-	-	-
• Program Adjustment	-0.008	-	-	-	-
• Congressional Reduction	-	-5.000	-	-	-
• FFRDC Reduction	-	-0.112	-	-	-
• Department Increase Classified Program	-	-	5.000	-	5.000

Change Summary Explanation

Program Change Explanation:

FY 2013: Sequestration Reduction -1.756 million, Reprogramming -0.045 million, SIBR/STTR reduction -0.532 million, Program Adjustment -0.008 million .

FY 2014: Congressional Reduction -5.000 million, FFRDC Reduction -0.112 million.

FY 2015: Efficiency Reduction -2.626 million, Department increase classified program 5.000 million - This Department is one piece of the classified program other funding associated with this effort can be found under PE 0605170D8Z, BA 4, 12.5 million, and PE 0605170D8Z, BA6, 22.5 million.

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
Title: Net Centricity Plans and Accomplishments	18.849	16.490	23.984
FY 2013 Accomplishments:			

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense	Date: March 2014
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Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0305199D8Z / <i>Net Centricity</i>
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
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<p>Determined strengths, weaknesses, and uses of waveforms; identified gaps not satisfied by currently planned waveforms; investigated how new technologies will result in improved waveforms; and supported Waveform Roadmap effort;</p> <ul style="list-style-type: none"> - Supported 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; identified how cloud services can be extended to the mission networks; - Assessed tactical communications systems' ability to support IPv6. - Conducted analyses and performed modeling and simulation to address issues with communications systems and networks; - Conducted cyber vulnerability analyses of communications systems and networks; - Conducted analyses and performed modeling and simulation to address SATCOM issues; - Conducted analyses of technical insertion options to support refresh and migration of Defense Information Systems Network services. - Supported analysis of security architectures and provided recommendations on policy for commercial mobile devices in the DoD to include support for secret and top secret data and voice communications, addressed interim solutions, route to final architecture, and technical options for integration - Conducted analysis and developed the initial Radio and Communications Security (COMSEC) modernization strategy; leveraged the radio strategy working group with the Military Services to facilitate POM development and Component planning for FY15 and out years. - Updated existing SATCOM synch matrices to reflect changes in POM 14 funding, emerging systems/technology, and JALN AOA recommendations. - Analyzed PACOM gateway system requirements and proposed equipment suites including the number and types of equipment needed to meet the operational requirements. - Analyzed DoD tactical radios to determine which radios are suitable for Suite B implementation - Conducted technical studies to investigate the feasibility of implementing legacy narrowband SATCOM solutions on the MUOS payload - Developed implementation guidance to support crypto modernization initiatives and address crypto modernization integration issues - Developed transition plans for the Military Services and NSA to support migration from the Electronic Key Management System (EKMS) to Key Management Infrastructure (KMI) - Provided analysis and oversight for Crypto-solution management, policy development, and enforcement, and Crypto modernization for the general force. - Supported development of the Terms of Reference to guide and inform the Protected SATCOM AoA. - Developed and coordinated JIPM evolution and deployment strategy to support video dissemination and two-way GBS capabilities to inform follow on implementation across the Department. 			
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Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0305199D8Z / <i>Net Centricity</i>
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<ul style="list-style-type: none"> - Conducted 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) - Conducted technical analysis of selected joint and military Service C2 programs and initiatives to promote net-centric approaches for data, services and enterprise deployments and support integrated sustainment and modernization planning. - Provided technical analysis and support for C4II related policies, plans, studies, governance and management, roadmaps, assessment reports, capabilities and numerous other initiatives. - Provided technical assessments to inform and influence Mission Partner Environment (MPE) development and implementation activities. - Provided technical analysis and support for the development of Common Mission Network Transport (CMNT) capability. - Conducted Joint Network modeling and Network design applicable to tactical US Army and USMC units. - Provided analysis of the 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; investigated plausible Radio Access Facility (RAF) modifications, ground terminal modifications, waveform options, cost, and schedule impacts - Conducted analysis to determine requirements and feasibility of hand held MUOS terminals. - Provided technical analysis on network management to include cyber and spectrum issues. - Conducted wireless architecture and advanced technologies analysis. Developed recommendations and reports to inform updates to Department-wide communications policies applicable to commercial mobile devices - Conducted technical analysis to support waveform policy development and oversight - Conducted spectrum technology radar analysis to support implementation of the Spectrum Technology Radar Roadmap - Provided technical development and analysis to support the evolution of Multi-National Information Sharing programs, related acquisition strategies, and functional requirements to enable continued development of C2 Information Sharing metrics and mechanisms to enhance capability strategies. - Conducted follow-on JALN analysis with Joint Service JALN Council, oversaw Service implementation efforts, and initiated JALN capability Non-Recurring Engineering (NRE) development. - Expanded IEP beyond Link 16 to incorporate VMF, MADL, and CDL - Finalized Joint TDL Migration Plan (JTMP) and initiated development of DoD policy instruction to guide TDL migration across the Department - Drafted MIL-STDs for MADL and CDL to enhance interoperability and oversight of the communication systems - Conducted 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; Developed a MADL waveform standard specification; analyze MADL and Link-16 gateway capabilities 			

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Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0305199D8Z / <i>Net Centricity</i>
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C. Accomplishments/Planned Programs (\$ in Millions)

	FY 2013	FY 2014	FY 2015
<ul style="list-style-type: none"> - Conducted technical analysis to inform updates to Joint C2 technical and architectural artifacts to guide transition of Global Command and Control Family of Systems to a network enabled, joint information enterprise. Analyzed Component approaches, potential costs and schedules to establish net-centric C2 capabilities consistent with Department objectives. - Provided technical analysis to support the Joint Technology Synchronization Office (JTSO) Integrated Design Team (IDT) efforts to establish technical artifacts for Joint Information Enterprise (JIE) Increment 1 implementation. - Developed initial technical architectures to promote efficiency in network dissemination of Intelligence, Surveillance and Reconnaissance (ISR) data captured Airborne ISR (AISR) requirements in a draft Initial Capabilities Document (ICD), and documented existing systems/capabilities to support follow-on material/non-material recommendations. - Established the SATCOM Systems Engineering Group (SSEG) to address SATCOM end-to-end issues in the Narrowband, Wideband, and Protected domains - Developed an alternative approach for closing out the Joint Tactical Networking Center (JTNC) and worked with the Army and external key stakeholders to develop the transition plan. <p>FY 2014 Plans: 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 to support waveform roadmap efforts;</p> <ul style="list-style-type: none"> - 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 C2 and mobile solution capabilities; identify how cloud services can be extended to the mission networks; - Develop policy guidance and implementation strategies to promote IPV6 use in tactical systems. - Conduct follow-on analyses and perform modeling and simulation to address capability and interoperability issues with command and control systems, communications systems and networks - Continue cyber vulnerability analyses of communications systems and networks - Conduct analyses to address SATCOM synchronization issues, consistent with SATCOM Synchronization Engineering Group (SSEG) objectives - Conduct analyses to address DoD organizational messaging modernization as a candidate enterprise service for the Joint Information Enterprise (JIE). - Continue analysis of security architectures and provide recommendations to enable implementation of DoD-wide policies for commercial mobile devices to include support for secret and top secret data and voice communications, address interim solutions, route to final architecture, and technical options for integration of mission applications - Refine the DoD radio and communications security strategy implementation plans to facilitate Component planning and POM development for POM 16 (FY16-20). 			

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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<ul style="list-style-type: none"> - Update existing SATCOM synch matrices to reflect changes in POM 15 funding, emerging systems/technologies, and implementation of JALN AOA recommendations to promote synchronized development and delivery of end-to-end communications capabilities. - Refine PACOM gateway system requirements and proposed equipment suites including the number and types of equipment needed to meet the operational requirements to support implementation in the PACOM area of operations. - Conduct technical analysis to identify network gaps and address implementation of command and control capabilities and associated communications networks needed to control and provide information support (e.g., intelligence, logistics, other mission data) for cluster basing related to adversary anti-access/area-denial (A2/AD). - Continue analysis of tactical radios to determine which radios are suitable for Suite B implementation - Provide analysis and oversight for continued development and implementation of Crypto-solution management, policy guidance and enforcement, and Crypto modernization for the general force. - Conduct technical analysis and modeling and simulation to support for the Protected SATCOM AoA - Conduct follow-on analysis to formalize JIPM evolution and deployment strategies to support video dissemination and two-way GBS capabilities to inform follow on implementation across the Department. - Continue 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) to inform and guide Mission Partner Environment (MPE) development and implementation. - Conduct technical analysis of selected joint and military Service C2 programs and initiatives to promote net-centric approaches for data, services and enterprise deployments, consistent with joint C2 sustainment and modernization plans. - Provide technical analysis and support for C4II related policies, plans, studies, governance and management, roadmaps, assessment reports, capabilities and numerous other initiatives. - Provide technical analysis and support for the development and implementation of the Common Mission Network Transport (CMNT) capability. - Continue joint network modeling and network design applicable to Army Brigade Combat Team (BCT), USMC Expeditionary Brigade (MEB), and USAF Wing. - Provide analysis of the SATCOM systems in support of the SATCOM Synchronization Engineering Group (SSEG) objectives. - Continue analysis efforts to address the feasibility of implementing legacy narrowband SATCOM solutions on the MUOS End to End consistent with multi-service operational test and evaluation configuration. - Continue follow-on analysis of the MUOS alternative study to refine technical solutions for getting the most out of the MUOS WCDMA payload side of the satellite considering RAF modifications, ground terminal modifications, waveform options. Assessment to include cost, and schedule impacts. - Continue analysis to refine requirements, feasibility to develop hand held terminals for MUOS. 			

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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<ul style="list-style-type: none"> - Conduct assessments to investigate feasibility, and availability of COTS high efficiency WCDMA power amplifiers to ramp up production of MUOS radios. - Develop an implementation plan and process for MUOS specific Test and interoperability Certification test bed capability to support COTS vendor terminals to support MUOS system. - Provide technical analysis on network management to include cyber and spectrum issues. - Continue wireless architecture and advanced technologies analysis to inform Department-wide policies and implementation of mobility solutions. - Conduct technical analysis to support compliance oversight of waveform policies and technical profile specifications - Conduct spectrum technology radar analysis to support implementation of the Spectrum Technology Radar Roadmap - Provide technical analysis of Multi-National Information Sharing programs and initiatives, related acquisition and implementation strategies, and functional requirements to ensure continued development of C2 information sharing metrics and mechanisms consistent with capability strategies - Continue follow-on JALN analysis with Joint Service JALN Council, oversee Service implementation efforts, and continue 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 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 MADL waveform standard specification; analyze MADL and Link-16 gateway capabilities - Conduct analysis to refine the joint C2 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 C2 capability gaps to inform investment strategies to inform Component planning and POM development for POM16 (FY16-20). Analyze approaches, potential costs and schedules to establish net-centric C2 capabilities. - Conduct technical analysis to support the Joint Technology Synchronization Office (JTSO) Integrated Design Team (IDT) efforts related to implementation of Joint Information Enterprise (JIE) Increment 1 capability upgrades, and support JIE Increment 2 technical planning. - Continue development and refine technical architectures to support implementation of networking capabilities that enable efficient dissemination of Intelligence, Surveillance and Reconnaissance (ISR) data. Provide analysis to facilitate material and non-material recommendations in support of the USSOCOM-sponsored AISR ICD, and the Joint Requirements Oversight Council (JROC) process. - Conduct comprehensive analysis on the Narrowband SATCOM environment to help inform the pending AoA that will likely begin in late FY14 			

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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<p>- Complete the extensive Commercial SATCOM (COMSAT) analysis in conjunction with USD AT&L and DISA to answer the Defense Business Board (DBB) recommendations on how to better acquire, manage, and use commercial SATCOM</p> <p>FY 2015 Plans: \$5.000 supports classified program, Details provided at a higher classification under separate cover. This is one piece of this classified program, other funding can be found under PE 0605170D8Z, BA 4, 12.5 million, and PE 0605170D8Z, BA6, 22.5 million.</p> <p>\$18,984 supports:</p> <p>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 to support waveform roadmap implementation efforts;</p> <ul style="list-style-type: none"> - 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 C2 and mobile solution capabilities; identify how cloud services can be extended to the mission networks; - Refine policy guidance and strategies to address technical IPV6 implementation issues in tactical systems. - Conduct follow-on analyses and perform modeling and simulation to address capability and interoperability issues with command and control systems, communications systems and networks - Continue cyber vulnerability analyses of communications systems and networks - Conduct analyses and perform modeling and simulation to address SATCOM synchronization issues, consistent with SATCOM Synchronization Engineering Group (SSEG) objectives - Conduct analyses and perform modeling and simulation to address implementation issues for DoD organizational messaging capabilities in the Joint Information Enterprise (JIE). - Continue analysis of security architectures and provide recommendations to enable expanded implementation of DoD-wide policies for commercial mobile devices to include support for secret and top secret data and voice communications, address interim solutions, refine technical architectures and technical options for integration of additional mission applications - Refine the DoD radio and communications security strategy implementation plans to facilitate Component planning and POM development for POM17 (FY17-21). - Update existing SATCOM synch matrices to reflect changes in POM16 funding, emerging systems/technologies, and implementation of JALN AOA recommendations to promote synchronized development and delivery of end-to-end communications capabilities. - Refine PACOM gateway system requirements and proposed equipment suites including the number and types of equipment needed to meet the operational requirements to support implementation in the PACOM area of operations. - Continue analysis of tactical radios to determine which radios are suitable for Suite B implementation 			

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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<ul style="list-style-type: none"> - Provide analysis and oversight for continued development and implementation of Crypto-solution management, policy guidance and enforcement, and Crypto modernization for the general force. - Conduct follow-on technical analysis and modeling and simulation to support implementation of Protected SATCOM AoA recommendations - Conduct follow-on analysis to finalize JIPM evolution and deployment strategies to support video dissemination and two-way GBS capabilities to drive implementation across the Department. - Continue 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) to guide Mission Partner Environment (MPE) development and implementation. - Conduct technical analysis of selected joint and military Service C2 programs and initiatives to promote net-centric approaches for data, services and enterprise deployments, consistent with joint C2 sustainment and modernization plans. - Provide technical analysis and support for C4II related policies, plans, studies, governance and management, roadmaps, assessment reports, capabilities and numerous other initiatives. - Provide technical analysis and support for the implementation of the Common Mission Network Transport (CMNT) capability. - Continue joint network modeling and network design applicable to Army Brigade Combat Team (BCT), USMC Expeditionary Brigade (MEB), and USAF Wing. - Provide analysis of the SATCOM systems in support of the SATCOM Synchronization Engineering Group (SSEG) objectives. - Continue analysis efforts to address the feasibility of implementing coalition wave form modifications on the MUOS payload for NATO interoperability. - Conduct assessments to shape Future Narrow band satellite communication system to replace MUOS constellation in 2025-2030 time frame. - Continue follow-on analysis of the MUOS alternative study to refine technical solutions for getting the most out of the MUOS payload side of the satellite, RAF modifications, ground terminal modifications, waveform options, cost, and schedule impacts - Continue analysis to refine requirements, feasibility, and availability of hand held MUOS terminals. - Conduct assessments to investigate feasibility, and availability of COTS high efficiency WCDMA power amplifiers for MUOS hand held radios. - Develop an implementation plan for MUOS specific Test and Certification test bed capability to support COTS vendor terminals to support MUOS system. - Provide technical analysis on network management to include cyber and spectrum issues. - Continue wireless architecture and advanced technologies analysis to inform Department-wide policies and implementation of mobility solutions. - Conduct technical analysis to support compliance oversight of waveform policies and implementation of technical profile specifications 			

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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<ul style="list-style-type: none"> - Conduct spectrum technology radar analysis support implementation of Spectrum Technology Radar Roadmap - Provide technical analysis of Multi-National Information Sharing programs and initiatives, related acquisition and implementation strategies, and functional requirements to ensure continued development of C2 information sharing metrics and mechanisms that support implementation of capability strategies - Continue follow-on JALN analysis with Joint Service JALN Council, oversee Service implementation efforts, and implementation of 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 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 MADL waveform standard specification; analyze MADL and Link-16 gateway capabilities - Conduct analysis to update joint C2 technical and architectural artifacts to support continued migration of Global Command and Control Family of Systems to a network enabled, joint information enterprise - Provide studies and analysis of the C2 capability gaps to inform investment strategies to inform Component planning and POM development for POM17 (FY17-21). Analyze approaches, potential costs and schedules to establish net-centric C2 capabilities. - Conduct technical analysis to support the Joint Technology Synchronization Office (JTSO) Integrated Design Team (IDT) efforts to implement Joint Information Enterprise (JIE) Increment 1 capability upgrades, and support initial JIE Increment 2 implementation. - Continue development and refine technical architectures to support implementation of networking capabilities that enable efficient dissemination of Intelligence, Surveillance and Reconnaissance (ISR) data. 			
Accomplishments/Planned Programs Subtotals	18.849	16.490	23.984

D. Other Program Funding Summary (\$ in Millions)
N/A

Remarks

E. Acquisition Strategy
N/A

F. Performance Metrics

- PPBE related issue development and approval
- 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

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0305387D8Z I <i>Homeland Defense Technology Transfer Program</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
Total Program Element	2.630	2.158	2.327	2.110	-	2.110	2.133	2.215	2.339	2.485	Continuing	Continuing
387: <i>Homeland Defense Technology Transfer Program</i>	2.630	2.158	2.327	2.110	-	2.110	2.133	2.215	2.339	2.485	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

The FY 2015 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)

	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015 Base</u>	<u>FY 2015 OCO</u>	<u>FY 2015 Total</u>
Previous President's Budget	2.303	2.338	2.404	-	2.404
Current President's Budget	2.158	2.327	2.110	-	2.110
Total Adjustments	-0.145	-0.011	-0.294	-	-0.294
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-0.130	-			
• Congressional Rescissions	-0.003	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.011	-			
• Strategic Efficiency Reduction	-	-	-0.294	-	-0.294
• Other Program Adjustment	-0.001	-	-	-	-
• FFRDC	-	-0.011	-	-	-

Change Summary Explanation

FY 2015 efficiencies adjustment to support Department higher priorities.

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Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0305387D8Z / <i>Homeland Defense Technology Transfer Program</i>
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<p>Title: Homeland Defense Technology Transfer Program</p> <p>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.</p> <p>FY 2013 Accomplishments:</p> <ul style="list-style-type: none"> • Implemented efficiencies. • Used a 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. • Developed and revised metrics. <p>FY 2014 Plans:</p> <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. <p>FY 2015 Plans:</p> <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. 	2.158	2.327	2.110
Accomplishments/Planned Programs Subtotals	2.158	2.327	2.110

D. Other Program Funding Summary (\$ in Millions)
N/A

Remarks

E. Acquisition Strategy
N/A

F. Performance Metrics
As stated.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0305600D8Z / <i>International Intelligence Technology and Architectures</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
Total Program Element	4.236	1.357	4.363	-	-	-	-	-	-	-	Continuing	Continuing
997: <i>International Intelligence Technology and Architectures</i>	4.236	1.357	4.363	-	-	-	-	-	-	-	Continuing	Continuing

The FY 2015 OCO Request will be submitted at a later date.

Note

Funding transfers to Air Force beginning in FY 2015.

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, 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 Extended (US BICES-X) 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's (Intelligence) mission to ensure necessary intelligence information is being acquired, analyzed, and disseminated rapidly among our allies and coalition partners. Develops US BICES-X 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, tests, and integrates intelligence mission applications that interface with and support the development of the DoD/CIO Coalition Partner Network (CPN).

Funding transfers to Air Force starting in FY 2015.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Office of Secretary Of Defense	Date: March 2014
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B. Program Change Summary (\$ in Millions)	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO	FY 2015 Total
Previous President's Budget	1.478	4.372	-	-	-
Current President's Budget	1.357	4.363	-	-	-
Total Adjustments	-0.121	-0.009	-	-	-
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-0.120	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Departmental Adjustments	-0.001	-	-	-	-
• FFRDC	-	-0.009	-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense										Date: March 2014		
Appropriation/Budget Activity 0400 / 7					R-1 Program Element (Number/Name) PE 0305600D8Z / <i>International Intelligence Technology and Architectures</i>				Project (Number/Name) 997 / <i>International Intelligence Technology and Architectures</i>			
COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
997: <i>International Intelligence Technology and Architectures</i>	4.236	1.357	4.363	-	-	-	-	-	-	-	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

The FY 2015 OCO Request will be submitted at a later date.

Note

Funding transfers to Air Force beginning in FY 2015.

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. Develops US BICES as the "enduring" coalition intelligence component of the DI2E. Continues 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 2013	FY 2014	FY 2015
	1.357	4.363	-
FY 2013 Accomplishments: Migrated several 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 Special Operations Forces (SOF) and conventional operational intelligence needs. Incorporated designs of several DI2E capabilities for US BICES. Integrated a number of US BICES applications.			
FY 2014 Plans: Continue migration of other 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. Further incorporate design of DI2E capabilities for US BICES. Continue US BICES application integration. Provide additional funding to develop and migrate critical mission applications to run within the TNE multi-level security boundary. Allow 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 partner to be exchanged. Provide research and development of the software applications necessary to ensure the PL-4 level security			

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense **Date:** March 2014

Appropriation/Budget Activity 0400 / 7	R-1 Program Element (Number/Name) PE 0305600D8Z / <i>International Intelligence Technology and Architectures</i>	Project (Number/Name) 997 / <i>International Intelligence Technology and Architectures</i>
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
certification remains intact and will allow multi-level security between the secret, secret releasable, and NATO secret levels. Provide research into whether the unclassified level can be connected in conjunction with higher level security levels. Provide research and development to allow for US intelligence analysts to view not only US SIPRNET, but multiple bi-laterals and multi-lateral windows on a single workstation. FY 2015 Plans: Funding transfers to Air Force starting in FY 2015.			
Accomplishments/Planned Programs Subtotals	1.357	4.363	-

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
• 0305600D8Z Proc DW: <i>International Intelligence Technology and Architectures</i>	16.206	16.678	-	-	-	-	-	-	-	-	Continuing Continuing
• 0305600D8Z O&M DW: <i>International Intelligence Technology and Architectures</i>	61.298	66.523	-	-	-	-	-	-	-	-	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. Provides an increase in intelligence disciplines (Imagery Intelligence, Signal Intelligence, and potential Human Intelligence) 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-IT and DI2E developments and will significantly increase the timeliness of intelligence and bring US BICES/NATO Special Operations Forces Headquarters/NATO Intelligence Fusion Center capabilities into the current technology baselines. Develops and provides a federated TNE that incorporates the Asian Pacific Intelligence Information Network being developed to support the National Defense Strategy as we transition 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 for SOUTHCOM, and the Coalition Partner Network for EUCOM and AFRICOM. Develops the US BICES connections with these bi-lateral and multi-lateral federated TNEs that make up the 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.

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Office of Secretary Of Defense		Date: March 2014
Appropriation/Budget Activity 0400 / 7	R-1 Program Element (Number/Name) PE 0305600D8Z / <i>International Intelligence Technology and Architectures</i>	Project (Number/Name) 997 / <i>International Intelligence Technology and Architectures</i>

E. Performance Metrics

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.

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.

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.

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.

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