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**Department of Defense
Fiscal Year (FY) 2023 Budget Estimates**

April 2022



Missile Defense Agency

Defense-Wide Justification Book Volume 2a of 5

Research, Development, Test & Evaluation, Defense-Wide

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Missile Defense Agency • Budget Estimates FY 2023 • RDT&E Program

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Introduction & Explanation of Contents

The Department of Defense Fiscal Year (FY) 2023 Budget Estimate Submission RDT&E (Includes Procurement, O&M, and MILCON), Defense-wide Volume 2, Missile Defense Agency (MDA) justification materials consists of two books titled Volume 2a and 2b. Justification documents are provided in the books as listed below.

Volume 2a

- MDA FY 2023 Budget Estimate Overview
- MDA Appropriation Summary
- Acronyms
- RDT&E Exhibits in BA-03, BA-04, and BA-06

Volume 2b

- MDA Operation and Maintenance Exhibit
- MDA MILCON Exhibits
- MDA Procurement Exhibits

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Department of Defense
FY 2023 President's Budget
Exhibit R-1 FY 2023 President's Budget
Total Obligational Authority
(Dollars in Thousands)

15 Apr 2022

	FY 2021 (Base + OCO)	FY 2022 Less Supplementals Enactment	FY 2022 Division B Division C P.L.117-43 Enactment*	FY 2022 Division B P.L.117-70 Enactment**	FY 2022 Division A P.L. 117-86 Enactment***	FY 2022 Division N P.L. 117-103 Enactment****
Appropriation -----						
Research, Development, Test & Eval, DW	7,850,486	7,226,998				
Total Research, Development, Test & Evaluation	7,850,486	7,226,998				

R-123PBP: FY 2023 President's Budget (Total Base Published Version), as of April 15, 2022 at 11:14:30

*Includes enacted funding pursuant to the Extending Government Funding and Delivering Emergency Assistance Act (Public Law 117-43).

**Includes enacted funding pursuant to the Further Extending Government Funding Act (Public Law 117-70).

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Department of Defense
FY 2023 President's Budget
Exhibit R-1 FY 2023 President's Budget
Total Obligational Authority
(Dollars in Thousands)

15 Apr 2022

Appropriation -----	FY 2022 Total Supplemental Enactment -----	FY 2022 Total Enactment -----	FY 2023 Request -----
Research, Development, Test & Eval, DW		7,226,998	7,872,996
Total Research, Development, Test & Evaluation		7,226,998	7,872,996

R-123PBP: FY 2023 President's Budget (Total Base Published Version), as of April 15, 2022 at 11:14:30

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Department of Defense
FY 2023 President's Budget
Exhibit R-1 FY 2023 President's Budget
Total Obligational Authority
(Dollars in Thousands)

15 Apr 2022

	FY 2021 (Base + OCO)	FY 2022 Less Supplementals Enactment	FY 2022 Division B Division C P.L.117-43 Enactment*	FY 2022 Division B P.L.117-70 Enactment**	FY 2022 Division A P.L. 117-86 Enactment***	FY 2022 Division N P.L. 117-103 Enactment****
Summary Recap of Budget Activities						
Advanced Technology Development	89,483	87,966				
Advanced Component Development & Prototypes	7,619,468	7,114,930				
Management Support	141,535	24,102				
Total Research, Development, Test & Evaluation	7,850,486	7,226,998				
Summary Recap of FYDP Programs						
General Purpose Forces		2,323				
Intelligence and Communications	1,122	1,142				
Research and Development	7,627,839	6,891,444				
Administration and Associated Activities	26,902	24,102				
Space	194,623	307,987				
Total Research, Development, Test & Evaluation	7,850,486	7,226,998				

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Department of Defense
FY 2023 President's Budget
Exhibit R-1 FY 2023 President's Budget
Total Obligational Authority
(Dollars in Thousands)

15 Apr 2022

	FY 2022 Total Supplemental Enactment	FY 2022 Total Enactment	FY 2023 Request
Summary Recap of Budget Activities -----			
Advanced Technology Development		87,966	38,760
Advanced Component Development & Prototypes		7,114,930	7,808,977
Management Support		24,102	25,259
Total Research, Development, Test & Evaluation		7,226,998	7,872,996
Summary Recap of FYDP Programs -----			
General Purpose Forces		2,323	2,417
Intelligence and Communications		1,142	1,165
Research and Development		6,891,444	7,714,198
Administration and Associated Activities		24,102	25,259
Space		307,987	129,957
Total Research, Development, Test & Evaluation		7,226,998	7,872,996

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Defense-Wide
FY 2023 President's Budget
Exhibit R-1 FY 2023 President's Budget
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(Dollars in Thousands)

15 Apr 2022

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Summary Recap of Budget Activities						
Advanced Technology Development	89,483	87,966				
Advanced Component Development & Prototypes	7,619,468	7,114,930				
Management Support	141,535	24,102				
Total Research, Development, Test & Evaluation	7,850,486	7,226,998				
Summary Recap of FYDP Programs						
General Purpose Forces		2,323				
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Defense-Wide
FY 2023 President's Budget
Exhibit R-1 FY 2023 President's Budget
Total Obligational Authority
(Dollars in Thousands)

15 Apr 2022

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Summary Recap of Budget Activities -----			
Advanced Technology Development		87,966	38,760
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Total Research, Development, Test & Evaluation		7,226,998	7,872,996
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General Purpose Forces		2,323	2,417
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Defense-Wide
FY 2023 President's Budget
Exhibit R-1 FY 2023 President's Budget
Total Obligational Authority
(Dollars in Thousands)

15 Apr 2022

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Appropriation						

Missile Defense Agency	7,850,486	7,226,998				
Total Research, Development, Test & Evaluation	7,850,486	7,226,998				

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Defense-Wide
FY 2023 President's Budget
Exhibit R-1 FY 2023 President's Budget
Total Obligational Authority
(Dollars in Thousands)

15 Apr 2022

Appropriation -----	FY 2022 Total Supplemental Enactment -----	FY 2022 Total Enactment -----	FY 2023 Request -----
Missile Defense Agency		7,226,998	7,872,996
Total Research, Development, Test & Evaluation		7,226,998	7,872,996

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Defense-Wide
FY 2023 President's Budget
Exhibit R-1 FY 2023 President's Budget
Total Obligational Authority
(Dollars in Thousands)

15 Apr 2022

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

Line	Program Element	Item	Act	FY 2021 (Base + OCO)	FY 2022 Less Supplementals Enactment	FY 2022 Division B Division C P.L.117-43 Enactment*	FY 2022 Division B P.L.117-70 Enactment**	FY 2022 Division A P.L. 117-86 Enactment***	FY 2022 Division N P.L. 117-103 e Enactment**** c	S
--	-----	----	---	-----	-----	-----	-----	-----	-----	-
36	0603176C	Advanced Concepts and Performance Assessment	03	49,069	40,000					U
37	0603180C	Advanced Research	03	29,621	47,966					U
45	0603294C	Common Kill Vehicle Technology	03	10,793						U
		Advanced Technology Development		89,483	87,966					
77	0603881C	Ballistic Missile Defense Terminal Defense Segment	04	305,081	213,382					U
78	0603882C	Ballistic Missile Defense Midcourse Defense Segment	04	1,195,853	724,028					U
80	0603884C	Ballistic Missile Defense Sensors	04	259,605	254,962					U
81	0603890C	BMD Enabling Programs	04	607,167	623,644					U
82	0603891C	Special Programs - MDA	04	380,204	413,374					U
83	0603892C	AEGIS BMD	04	861,809	639,549					U
84	0603896C	Ballistic Missile Defense Command and Control, Battle Management and Communicati	04	639,027	564,946					U
85	0603898C	Ballistic Missile Defense Joint Warfighter Support	04	49,261	50,594					U
86	0603904C	Missile Defense Integration & Operations Center (MDIOC)	04	54,026	52,403					U
87	0603906C	Regarding Trench	04	10,213	11,952					U
88	0603907C	Sea Based X-Band Radar (SBX)	04	120,063	147,241					U

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Defense-Wide
FY 2023 President's Budget
Exhibit R-1 FY 2023 President's Budget
Total Obligational Authority
(Dollars in Thousands)

15 Apr 2022

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

Line No	Program Element Number	Item	Act	FY 2022 Total Supplemental Enactment	FY 2022 Total Enactment	FY 2023 Request	Se
--	-----	----	---	-----	-----	-----	-
36	0603176C	Advanced Concepts and Performance Assessment	03		40,000	16,737	U
37	0603180C	Advanced Research	03		47,966	22,023	U
45	0603294C	Common Kill Vehicle Technology	03				U
		Advanced Technology Development			87,966	38,760	
77	0603881C	Ballistic Missile Defense Terminal Defense Segment	04		213,382	190,216	U
78	0603882C	Ballistic Missile Defense Midcourse Defense Segment	04		724,028	667,524	U
80	0603884C	Ballistic Missile Defense Sensors	04		254,962	231,134	U
81	0603890C	BMD Enabling Programs	04		623,644	591,847	U
82	0603891C	Special Programs - MDA	04		413,374	316,977	U
83	0603892C	AEGIS BMD	04		639,549	600,072	U
84	0603896C	Ballistic Missile Defense Command and Control, Battle Management and Communicati	04		564,946	589,374	U
85	0603898C	Ballistic Missile Defense Joint Warfighter Support	04		50,594	50,269	U
86	0603904C	Missile Defense Integration & Operations Center (MDIOC)	04		52,403	49,367	U
87	0603906C	Regarding Trench	04		11,952	12,146	U
88	0603907C	Sea Based X-Band Radar (SBX)	04		147,241	164,668	U

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Defense-Wide
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(Dollars in Thousands)

15 Apr 2022

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Program Line Element No Number	Item -----	Act ---	FY 2021 (Base + OCO) -----	FY 2022 Less Supplementals Enactment -----	FY 2022 Division B Division C P.L.117-43 Enactment* -----	FY 2022 Division B P.L.117-70 Enactment** -----	FY 2022 Division A P.L. 117-86 Enactment*** -----	FY 2022 Division N P.L. 117-103 Enactment**** -----	S e c -
89 0603913C	Israeli Cooperative Programs	04	300,000	300,000					U
90 0603914C	Ballistic Missile Defense Test	04	364,994	389,156					U
91 0603915C	Ballistic Missile Defense Targets	04	534,348	560,478					U
95 0604102C	Guam Defense Development	04		112,400					U
96 0604115C	Technology Maturation Initiatives	04	105,895	39,200					U
99 0604181C	Hypersonic Defense	04	267,589	287,796					U
107 0604672C	Homeland Defense Radar - Hawaii (HDR-H)	04	133,000	75,000					U
110 0604873C	Long Range Discrimination Radar (LRDR)	04	135,088	133,335					U
111 0604874C	Improved Homeland Defense Interceptors	04	843,899	884,125					U
112 0604876C	Ballistic Missile Defense Terminal Defense Segment Test	04	1,000	32,697					U
113 0604878C	Aegis BMD Test	04	71,481	111,206					U
114 0604879C	Ballistic Missile Defense Sensor Test	04	64,245	77,428					U
115 0604880C	Land-Based SM-3 (LBSM3)	04	52,804	43,158					U
116 0604887C	Ballistic Missile Defense Midcourse Segment Test	04	67,071	61,424					U
117 0202057C	Safety Program Management	04		2,323					U

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(Dollars in Thousands)

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

Line	Program Element No Number	Item ----	Act ---	FY 2022 Total Supplemental Enactment -----	FY 2022 Total Enactment -----	FY 2023 Request -----	S e c -
89	0603913C	Israeli Cooperative Programs	04		300,000	300,000	U
90	0603914C	Ballistic Missile Defense Test	04		389,156	367,824	U
91	0603915C	Ballistic Missile Defense Targets	04		560,478	559,513	U
95	0604102C	Guam Defense Development	04		112,400	397,936	U
96	0604115C	Technology Maturation Initiatives	04		39,200		U
99	0604181C	Hypersonic Defense	04		287,796	225,477	U
107	0604672C	Homeland Defense Radar - Hawaii (HDR-H)	04		75,000		U
110	0604873C	Long Range Discrimination Radar (LRDR)	04		133,335	75,120	U
111	0604874C	Improved Homeland Defense Interceptors	04		884,125	1,833,357	U
112	0604876C	Ballistic Missile Defense Terminal Defense Segment Test	04		32,697	69,762	U
113	0604878C	Aegis BMD Test	04		111,206	182,776	U
114	0604879C	Ballistic Missile Defense Sensor Test	04		77,428	88,326	U
115	0604880C	Land-Based SM-3 (LBSM3)	04		43,158	27,678	U
116	0604887C	Ballistic Missile Defense Midcourse Segment Test	04		61,424	84,075	U
117	0202057C	Safety Program Management	04		2,323	2,417	U

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(Dollars in Thousands)

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Program ine Element No Number	Item -----	Act ---	FY 2021 (Base + OCO) -----	FY 2022 Less Supplementals Enactment -----	FY 2022 Division B Division C P.L.117-43 Enactment* -----	FY 2022 Division B P.L.117-70 Enactment** -----	FY 2022 Division A P.L. 117-86 Enactment*** -----	FY 2022 Division N S P.L. 117-103 e Enactment**** c -----
120 0305103C	Cyber Security Initiative	04	1,122	1,142				U
122 1206893C	Space Tracking & Surveillance System	04	33,356	15,176				U
123 1206895C	Ballistic Missile Defense System Space Programs	04	161,267	292,811				U
	Advanced Component Development & Prototypes		7,619,468	7,114,930				
160 0605502C	Small Business Innovation Research - MDA	06	114,633					U
194 0901598C	Management HQ - MDA	06	26,902	24,102				U
	Management Support		141,535	24,102				
	Total Research, Development, Test & Eval, DW		7,850,486	7,226,998				

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Defense-Wide
FY 2023 President's Budget
Exhibit R-1 FY 2023 President's Budget
Total Obligational Authority
(Dollars in Thousands)

15 Apr 2022

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

Line	Program Element	Item	Act	FY 2022 Total Supplemental Enactment	FY 2022 Total Enactment	FY 2023 Request	S e c
--	-----	----	---	-----	-----	-----	-
120	0305103C	Cyber Security Initiative	04		1,142	1,165	U
122	1206893C	Space Tracking & Surveillance System	04		15,176		U
123	1206895C	Ballistic Missile Defense System Space Programs	04		292,811	129,957	U
	Advanced Component Development & Prototypes			-----	7,114,930	7,808,977	
160	0605502C	Small Business Innovation Research - MDA	06				U
194	0901598C	Management HQ - MDA	06		24,102	25,259	U
	Management Support			-----	24,102	25,259	
	Total Research, Development, Test & Eval, DW			-----	7,226,998	7,872,996	

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Missile Defense Agency
FY 2023 President's Budget
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Total Obligational Authority
(Dollars in Thousands)

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Program ine Element No Number	Item	Act	FY 2021 (Base + OCO)	FY 2022 Less Supplementals Enactment	FY 2022 Division B Division C P.L.117-43 Enactment*	FY 2022 Division B P.L.117-70 Enactment**	FY 2022 Division A P.L. 117-86 Enactment***	FY 2022 Division N P.L. 117-103 Enactment****	S e c
36 0603176C	Advanced Concepts and Performance Assessment	03	49,069	40,000					U
37 0603180C	Advanced Research	03	29,621	47,966					U
45 0603294C	Common Kill Vehicle Technology	03	10,793						U
	Advanced Technology Development		89,483	87,966					
77 0603881C	Ballistic Missile Defense Terminal Defense Segment	04	305,081	213,382					U
78 0603882C	Ballistic Missile Defense Midcourse Defense Segment	04	1,195,853	724,028					U
80 0603884C	Ballistic Missile Defense Sensors	04	259,605	254,962					U
81 0603890C	BMD Enabling Programs	04	607,167	623,644					U
82 0603891C	Special Programs - MDA	04	380,204	413,374					U
83 0603892C	AEGIS BMD	04	861,809	639,549					U
84 0603896C	Ballistic Missile Defense Command and Control, Battle Management and Communicati	04	639,027	564,946					U
85 0603898C	Ballistic Missile Defense Joint Warfighter Support	04	49,261	50,594					U
86 0603904C	Missile Defense Integration & Operations Center (MDIOC)	04	54,026	52,403					U
87 0603906C	Regarding Trench	04	10,213	11,952					U
88 0603907C	Sea Based X-Band Radar (SBX)	04	120,063	147,241					U

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Missile Defense Agency
FY 2023 President's Budget
Exhibit R-1 FY 2023 President's Budget
Total Obligational Authority
(Dollars in Thousands)

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37	0603180C	Advanced Research	03		47,966	22,023	U
45	0603294C	Common Kill Vehicle Technology	03				U
		Advanced Technology Development			87,966	38,760	
77	0603881C	Ballistic Missile Defense Terminal Defense Segment	04		213,382	190,216	U
78	0603882C	Ballistic Missile Defense Midcourse Defense Segment	04		724,028	667,524	U
80	0603884C	Ballistic Missile Defense Sensors	04		254,962	231,134	U
81	0603890C	BMD Enabling Programs	04		623,644	591,847	U
82	0603891C	Special Programs - MDA	04		413,374	316,977	U
83	0603892C	AEGIS BMD	04		639,549	600,072	U
84	0603896C	Ballistic Missile Defense Command and Control, Battle Management and Communicati	04		564,946	589,374	U
85	0603898C	Ballistic Missile Defense Joint Warfighter Support	04		50,594	50,269	U
86	0603904C	Missile Defense Integration & Operations Center (MDIOC)	04		52,403	49,367	U
87	0603906C	Regarding Trench	04		11,952	12,146	U
88	0603907C	Sea Based X-Band Radar (SBX)	04		147,241	164,668	U

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Missile Defense Agency
FY 2023 President's Budget
Exhibit R-1 FY 2023 President's Budget
Total Obligational Authority
(Dollars in Thousands)

15 Apr 2022

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

Program ine Element No Number	Item -----	Act ---	FY 2021 (Base + OCO) -----	FY 2022 Less Supplementals Enactment -----	FY 2022 Division B Division C P.L.117-43 Enactment* -----	FY 2022 Division B P.L.117-70 Enactment** -----	FY 2022 Division A P.L. 117-86 Enactment*** -----	FY 2022 Division N P.L. 117-103 Enactment**** -----	S e c -
89 0603913C	Israeli Cooperative Programs	04	300,000	300,000					U
90 0603914C	Ballistic Missile Defense Test	04	364,994	389,156					U
91 0603915C	Ballistic Missile Defense Targets	04	534,348	560,478					U
95 0604102C	Guam Defense Development	04		112,400					U
96 0604115C	Technology Maturation Initiatives	04	105,895	39,200					U
99 0604181C	Hypersonic Defense	04	267,589	287,796					U
107 0604672C	Homeland Defense Radar - Hawaii (HDR-H)	04	133,000	75,000					U
110 0604873C	Long Range Discrimination Radar (LRDR)	04	135,088	133,335					U
111 0604874C	Improved Homeland Defense Interceptors	04	843,899	884,125					U
112 0604876C	Ballistic Missile Defense Terminal Defense Segment Test	04	1,000	32,697					U
113 0604878C	Aegis BMD Test	04	71,481	111,206					U
114 0604879C	Ballistic Missile Defense Sensor Test	04	64,245	77,428					U
115 0604880C	Land-Based SM-3 (LBSM3)	04	52,804	43,158					U
116 0604887C	Ballistic Missile Defense Midcourse Segment Test	04	67,071	61,424					U
117 0202057C	Safety Program Management	04		2,323					U

-123PBP: FY 2023 President's Budget (Total Base Published Version), as of April 15, 2022 at 11:14:30

Includes enacted funding pursuant to the Extending Government Funding and Delivering Emergency Assistance Act (Public Law 117-43).

*Includes enacted funding pursuant to the Further Extending Government Funding Act (Public Law 117-70).

**Includes enacted funding pursuant to the Further Additional Extending Government Funding Act (Public Law 117-86).

***Includes enacted funding pursuant to the Ukraine Supplemental Appropriations Act (Public Law 117-103).

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Missile Defense Agency
FY 2023 President's Budget
Exhibit R-1 FY 2023 President's Budget
Total Obligational Authority
(Dollars in Thousands)

15 Apr 2022

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

Program Line Element No Number	Item -----	Act ---	FY 2022 Total Supplemental Enactment -----	FY 2022 Total Enactment -----	FY 2023 Request -----	S e c -
89 0603913C	Israeli Cooperative Programs	04		300,000	300,000	U
90 0603914C	Ballistic Missile Defense Test	04		389,156	367,824	U
91 0603915C	Ballistic Missile Defense Targets	04		560,478	559,513	U
95 0604102C	Guam Defense Development	04		112,400	397,936	U
96 0604115C	Technology Maturation Initiatives	04		39,200		U
99 0604181C	Hypersonic Defense	04		287,796	225,477	U
107 0604672C	Homeland Defense Radar - Hawaii (HDR-H)	04		75,000		U
110 0604873C	Long Range Discrimination Radar (LRDR)	04		133,335	75,120	U
111 0604874C	Improved Homeland Defense Interceptors	04		884,125	1,833,357	U
112 0604876C	Ballistic Missile Defense Terminal Defense Segment Test	04		32,697	69,762	U
113 0604878C	Aegis BMD Test	04		111,206	182,776	U
114 0604879C	Ballistic Missile Defense Sensor Test	04		77,428	88,326	U
115 0604880C	Land-Based SM-3 (LBSM3)	04		43,158	27,678	U
116 0604887C	Ballistic Missile Defense Midcourse Segment Test	04		61,424	84,075	U
117 0202057C	Safety Program Management	04		2,323	2,417	U

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Missile Defense Agency
FY 2023 President's Budget
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Program Line Element No Number	Item Item	Act ---	FY 2021 (Base + OCO) -----	FY 2022 Less Supplementals Enactment -----	FY 2022 Division B Division C P.L.117-43 Enactment* -----	FY 2022 Division B P.L.117-70 Enactment** -----	FY 2022 Division A P.L. 117-86 Enactment*** -----	FY 2022 Division N S P.L. 117-103 e Enactment**** c -----
120 0305103C	Cyber Security Initiative	04	1,122	1,142				U
122 1206893C	Space Tracking & Surveillance System	04	33,356	15,176				U
123 1206895C	Ballistic Missile Defense System Space Programs	04	161,267	292,811				U
	Advanced Component Development & Prototypes		7,619,468	7,114,930				
160 0605502C	Small Business Innovation Research - MDA	06	114,633					U
194 0901598C	Management HQ - MDA	06	26,902	24,102				U
	Management Support		141,535	24,102				
	Total Missile Defense Agency		7,850,486	7,226,998				

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Includes enacted funding pursuant to the Extending Government Funding and Delivering Emergency Assistance Act (Public Law 117-43).

*Includes enacted funding pursuant to the Further Extending Government Funding Act (Public Law 117-70).

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15 Apr 2022

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Line No	Program Element Number	Item	Act	FY 2022 Total Supplemental Enactment	FY 2022 Total Enactment	FY 2023 Request	Se
--	-----	----	---	-----	-----	-----	-
120	0305103C	Cyber Security Initiative	04		1,142	1,165	U
122	1206893C	Space Tracking & Surveillance System	04		15,176		U
123	1206895C	Ballistic Missile Defense System Space Programs	04		292,811	129,957	U
	Advanced Component Development & Prototypes			-----	7,114,930	7,808,977	
160	0605502C	Small Business Innovation Research - MDA	06				U
194	0901598C	Management HQ - MDA	06		24,102	25,259	U
	Management Support			-----	24,102	25,259	
Total Missile Defense Agency				-----	7,226,998	7,872,996	

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37	03	0603180C	Advanced Research.....	Volume 2a - 9
45	03	0603294C	Common Kill Vehicle Technology.....	Volume 2a - 17

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78	04	0603882C	Ballistic Missile Defense Midcourse Defense Segment.....	Volume 2a - 59
80	04	0603884C	Ballistic Missile Defense Sensors.....	Volume 2a - 103
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86	04	0603904C	Missile Defense Integration and Operations Center (MDIOC).....	Volume 2a - 435
87	04	0603906C	Regarding Trench.....	Volume 2a - 465
88	04	0603907C	Sea Based X-Band Radar (SBX).....	Volume 2a - 467
89	04	0603913C	Israeli Cooperative Programs.....	Volume 2a - 483
90	04	0603914C	Ballistic Missile Defense Test.....	Volume 2a - 499
91	04	0603915C	Ballistic Missile Defense Targets.....	Volume 2a - 537
95	04	0604102C	Guam Defense Development.....	Volume 2a - 581
96	04	0604115C	Technology Maturation Initiatives.....	Volume 2a - 601
99	04	0604181C	Hypersonic Defense.....	Volume 2a - 631
107	04	0604672C	Homeland Defense Radar-Hawaii.....	Volume 2a - 655
110	04	0604873C	Long Range Discrimination Radar (LRDR).....	Volume 2a - 665
111	04	0604874C	Improved Homeland Defense Interceptors.....	Volume 2a - 683
112	04	0604876C	Ballistic Missile Defense Terminal Defense Segment Test.....	Volume 2a - 705
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122	04	1206893C	Space Tracking and Surveillance System.....	Volume 2a - 821
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Advanced Research	0603180C	37	03.....	Volume 2a - 9
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Ballistic Missile Defense Sensors	0603884C	80	04.....	Volume 2a - 103
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Homeland Defense Radar-Hawaii	0604672C	107	04.....	Volume 2a - 655
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Regarding Trench	0603906C	87	04.....	Volume 2a - 465
Safety Program Management	0202057C	117	04.....	Volume 2a - 809
Sea Based X-Band Radar (SBX)	0603907C	88	04.....	Volume 2a - 467
Small Business Innovation Research - MDA	0605502C	160	06.....	Volume 2a - 873
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Missile Defense Agency

Fiscal Year 2023

Budget Estimates

OVERVIEW



Approved for Public Release

MDA Overview 22-C-0593

Volume 2a 22-C-0650

Volume 2b 22-C-0640

Mission

The Missile Defense Agency (MDA) mission is to develop and deploy a layered Missile Defense System (MDS) to defend the United States, its deployed forces, allies, and friends from missile attacks in all phases of flight. The MDA designs, develops, delivers to the Warfighter, and sustains advanced missile defense systems as part of the fully integrated and layered MDS.

MDA's budget request for Fiscal Year (FY) 2023 is \$9.628 billion. The FY2023 budget will continue the development, rigorous testing and fielding of reliable, increasingly capable, advanced missile defenses. The Agency's priorities for missile defense are:

- 1) Operations and Readiness,
- 2) Technology and Development, and
- 3) Production and Fielding

MDA will continue to collaborate closely with Combatant Commanders (CCMDs) and the Services to support current and future needs for missile defense capabilities. MDA and these key stakeholders are leveraging the existing all-domain MDS to develop integrated architectures and capabilities to counter the evolving missile threat from ballistic, hypersonic and cruise missiles. This budget request maintains operational missile defense capacity and capabilities for existing homeland and regional defense forces; increases interceptor inventory and maturation of defensive technologies; and improves existing sensors, and the Command and Control, Battle Management and Communications (C2BMC) system.

In accordance with the FY2023 Defense Planning Guidance and U.S. missile defense policy, MDA's budget includes funding for improving homeland ballistic missile defense architectures to protect against rogue state intercontinental ballistic missile (ICBM) threats, continued investment in regional Integrated Air and Missile Defense (IAMD) and homeland cruise missile defense activities.

In the regional context, U.S. missile defense policy promotes the development and deployment of missile defense capabilities to counter the full range of regional missile threats (e.g., advanced ballistic, hypersonic, and cruise missiles) from any source, to include advanced regional missile threats from the People’s Republic of China and Russia. In response to increasing threats in the Indo-Pacific region, MDA is supporting efforts to improve the Warfighter's capability to defend Guam against regional cruise, ballistic, and hypersonic missiles. FY2023 funding will support activities to develop and deploy an effective defensive architecture solution.

MDA continues to make significant progress in cybersecurity by incorporating threat-informed requirements for cyber resiliency and survivability into system specifications and then implementing rigorous evaluation-based testing and assessments early in the development to find and fix problems before releasing systems for integrated testing. MDA is building cybersecurity into next-generation software processes by leveraging proven secure software development, security, and operations, and establishing continuous integration. MDA established a Defensive Cyberspace Operations organization, which uses certified cyber teams to evaluate cyber capabilities to enhance our cybersecurity posture.

Missile Threat

Missile threats continue to increase and grow more numerous and complex. Adversary missile systems are becoming more mobile, survivable, reliable, and accurate while also achieving longer ranges. Hypersonic glide vehicles delivered by missile boosters are an emerging threat that pose new challenges to missile defense systems. Adversary missile pre-launch survivability is likely to increase as potential adversaries strengthen their denial and deception measures and increasingly base missiles on mobile platforms. Increasing technical and operational countermeasures continue to challenge defensive systems in missiles. New missile systems feature multiple independently targetable reentry vehicles and maneuverable reentry vehicles, along with decoys and jamming devices. The ballistic and cruise missile threats continue to increase with the advancement and proliferation of missile technology.

As demonstrated recently by Russia in Ukraine and recent attacks on both the Kingdom of Saudi Arabia and the United Arab Emirates, missiles will continue to be a primary tool for adversaries in times of conflicts. Russia and China are developing advanced

cruise missiles that can be launched from aircraft, ground launchers, and ships or submarines, along with hypersonic missile capabilities. Cruise and hypersonic missiles provide a challenge to existing defensive systems because they can travel on unpredictable flight paths at low altitudes making them difficult to track using standard terrestrial radar systems. Consequently, the continued investment in development of long range sensor technologies and capabilities, to include those that could support a space sensor network is essential for tracking and engaging cruise and hypersonic missiles. North Korea is developing long-range ballistic missile systems that can reach the United States and its allies in the Indo-Pacific region. It has also tested shorter range missiles that maneuver within the atmosphere. Iran continues to develop more sophisticated missiles with improved accuracy, range, and lethality, and it is fielding an array of increasingly accurate short- and medium-range ballistic missile systems capable of threatening deployed U.S. forces, allies, and partners in the Middle East. It has combined ballistic or cruise missiles and unmanned aerial vehicles in complex attacks

The cruise missile threat to U.S. forces is increasing. While the majority of Land Attack Cruise Missiles (LACMs) are still subsonic, potential adversaries are developing new supersonic and hypersonic missiles that can be deployed in the future. U.S. strategic competitors and regional adversaries are also increasing the survivability of their LACMs with new countermeasures such as radar signature reduction. Moreover, strategic competitors and regional U.S. adversaries will increasingly use cyber capabilities to seek political, economic, and military advantage over the United States and its allies and partners, including intelligence gathering on and disruption of U.S. missile defense systems.

Major Program Element Highlights

The following discussion summarizes the highlights of major Program Elements (PE) aligned to five broad categories: 1) Detect and Control, 2) Engage, 3) Technology, 4) MDS Testing, and 5) International. First, MDS sensors (radars and satellites) detect the launch of threat missiles and track them in flight, maintaining birth to death custody of the threats. Based on these tracks, the Command and Control system, or C2BMC, tasks the sensors for fire control accuracy to support the appropriate weapon systems in engagement of

the threats. The weapon systems develop fire control solutions enabling their interceptors to engage and negate the threats. MDA's C2BMC is the all-domain backbone that enables detect, control, engage sequence.

Note: The following discussion does not necessarily examine all funding or activities included within each Program Element (PE).

I. Detect and Control

MDA supports and upgrades C2BMC capability across 19 time zones with hardened networks supporting U.S. Northern Command (USNORTHCOM), U.S. Indo-Pacific Command (USINDOPACOM), U.S. European Command (USEUCOM), U.S. Central Command (USCENTCOM), U.S. Space Command (USSPACECOM) and Missile Defense Radars for missile defense and space domain awareness mission support. The C2BMC System operates in a Joint, multi-domain environment, connected to land, air, sea, and space sensors and shooters and provides continuous, real-time Missile Defense Command and Control, and Battle Management operations. The budget request includes:

- **Command and Control, Battle Management and Communication (C2BMC) (PE 0603896C).** MDA is requesting \$589.4 million in FY2023 for C2BMC. C2BMC provides persistent acquisition, tracking, cueing, discrimination, and fire-control quality data to Aegis, Ground Based Midcourse Defense (GMD), Terminal High Altitude Area Defense (THAAD), Patriot, Space C2 and coalition partners to support homeland and regional defense. MDA's C2BMC capabilities support Warfighter needs across the globe by providing the Combatant Commander with management and user nodes, the Ballistic Missile Defense (BMD) planner, situational awareness tools, and battle management capability. These tools support global missile defense situational awareness, coalition operations, weapons release authority for homeland defense, and control and tasking to a variety of MDS radars. C2BMC operators and maintainers deploy to some of the world's most threatening regions and continue to provide around-the-clock support to the local commanders.
 - In FY2023, MDA will sustain the C2BMC fielded capability (Spiral 8.2-3 initially and transition to Spiral 8.2-5) in USNORTHCOM, USINDOPACOM, USEUCOM, USCENTCOM, USSTRATCOM, and USSPACECOM Areas of Responsibilities, which includes the following capability: Mobile Sensor Phase 1 and BMDS Overhead Persistent Infrared

Architecture (BOA) 6.1 track data to the MDS (BOA 6.1 initially and transition to BOA 7.0); support for Space Domain Awareness (SDA) with Hardened Army Navy/Transportable Radar Surveillance (AN/TPY-2) radars; Aegis Engage-on-Remote, which can provide a seven-fold increase in defended area coverage when compared to individual weapon system organic capability; and Protected Anti-Scintillation Anti-Jam Net-Centric support for continued communications between sites and CCMDs.

- MDA will field Spiral 8.2-5, which integrates Long Range Discrimination Radar (LRDR) and BOA 7.0 into the MDS for support of homeland defense. This spiral provides initial situational awareness and tracking capability for hypersonic threats based primarily on BOA 7.0; significantly expands Homeland Defense against rogue state ballistic missiles for USNORTHCOM and SDA capabilities for USSPACECOM with LRDR; provides additional SDA coverage via the Aegis SPY-1 radar; integrates the U.S. Army's IAMD Battle Command System into the MDS; integrates on-orbit Space-based Kill Assessment sensors providing initial hit assessment capability for homeland defense; and develops initial MDS System Track for homeland defense.
- MDA continues to improve the MDS capability to address advancing threats worldwide by investing in the development, integration, and testing of advanced algorithms to improve track and discrimination capabilities and enhance the use of space-based sensor data, using BOA.
- Finally, MDA will continue to update its architecture to increase cybersecurity by assessing the risk of C2BMC architecture against possible attack. C2BMC capabilities will be involved in multi-agency cyber-focused tests and assessments planned in FY 2023 to identify and correct cyber vulnerabilities.
- **Sea-Based X-band (SBX) Radar (*PE 0603907C*).** MDA is requesting \$164.7 million in FY 2023 for the SBX. SBX is an advanced sea-mobile radar that provides precision midcourse tracking and discrimination capabilities. The SBX participates in flight tests to demonstrate discrimination and debris mitigation improvements, as well as operations for homeland defense. The budget request includes funds to continue extended deployments to conduct operations for defense of the homeland. MDA plans an

average of 300 days at sea annually from FY 2023-2027. The budget request also continues fabrication of a replacement radome for the SBX. The new radome will be installed in FY 2025.

- **Long Range Discrimination Radar (LRDR) (PE 0604873C).** MDA is requesting \$75.1 million in FY 2023 for the LRDR, which will provide persistent long-range midcourse discrimination, precision tracking and hit assessment to support the GMD capability against long-range missile threats from the Pacific theater. LRDR's improved discrimination capability in the Pacific architecture increases the defensive capacity of the homeland defense interceptor inventory by enabling conservation of Ground Based Interceptor (GBIs). LRDR includes threat discrimination improvements to enhance MDS effectiveness against the evolving threat. LRDR also supports other mission areas, including Space Domain Awareness and Space Object Identification. Initial fielding of the LRDR was completed in FY2022, and addition to the MDS Operational Capability Baseline is planned to be complete in FY 2023. MDA's request includes funding for software Independent Verification and Validation, Modeling and Simulation (M&S) efforts, and development of software for tracking and discrimination improvements and refined space intelligence data.
- **Radar Program Maintenance and Sustainment** supports both homeland and regional defense missions. MDA is requesting \$200.2 million in FY2023 to sustain AN/TPY-2 radars, Cobra Dane, and Upgraded Early Warning Radars (UEWR). The Services and CCMDs, with logistical support from MDA, operate AN/TPY-2 (Forward Based Mode) radars in Japan (two radars), Israel, Turkey, and USCENTCOM. MDA continues to support the AN/TPY-2 radar (Terminal Mode) as part of seven THAAD batteries both home-based and in the USINDOPACOM area of responsibility.
- **Radar Procurement.** MDA is requesting \$4.6 million to procure initial Digital Receiver/Exciter kits to upgrade from the current analog Receiver/Exciter technology to a modern digital capability, increasing reliability and spares availability for the AN/TPY-2 radar fleet.
- **Sensors (PE 0603884C).** MDA is requesting \$231.1 million in FY 2023 to provide software updates for the AN/TPY-2, COBRA DANE, SBX, and UEWR radars to counter evolving threats, develop M&S, and to develop future radar capabilities through system engineering, software development, and testing. MDA is investing in a robust sensor architecture that supports MDS weapons

systems by providing highly accurate midcourse tracking, discrimination and battle damage assessment for homeland missile defense. The request includes funding for the development of advanced discrimination algorithms for the AN/TPY-2 and SBX radars to counter advancing threats. These improvements support integrated capabilities to improve the MDS ability to identify lethal and non-lethal objects.

- **Sensors Test (PE 0604879C).** MDA is requesting \$88.3 million in FY2023 for Sensors testing. This includes planning, analysis and execution of MDS flight test events, including pre- and post-test efforts such as Digital and Hardware-in-the-Loop (HWIL) System Pre-Mission Tests and System Post-Flight Reconstruction. Sensor tests also provide planning, analysis and execution in accordance with the ground test Concept of Operations for MDS-level ground tests identified in the Integrated Master Test Plan (IMTP), as well as support to HWIL infrastructure.
- **Space Program (PE 1206895C).** MDA is requesting \$130.0 million in FY2023 for Missile Defense Space Programs. This request funds the Hypersonic and Ballistic Tracking Space Sensor (HBTSS) development. MDA is collaborating with the U.S. Space Force, under the leadership of the Chief of Space Operations, and the Space Development Agency to deploy HBTSS as an element within the larger Overhead Persistent Infrared Enterprise Architecture. In FY2023, HBTSS will deliver the Space Vehicles for launch vehicle integration, supporting a planned second quarter FY2023 launch, and initiation of on orbit testing. Development and implementation of the HBTSS Ground System to support satellite operations and testing will complete as well in FY2023 to meet the planned FY2023 launch. This request also funds the Spacebased Kill Assessment (SKA) project, which uses a network of fast-rate infrared sensors hosted on commercial satellites to deliver a hit and kill assessment capability for homeland defense. SKA sensors on orbit today have participated successfully in a variety of MDA flight tests and engineering activities. FY2023 will have SKA Hit Assessment continue integration into the MDS Operational Capability Baseline as part of MDS Increment 6b.2. Space Applications for Missile Defense will continue efforts previously funded through the Space Tracking and Surveillance System program to provide strategic planning, program integration, contracting, acquisition, engineering, financial management, internal reviews and audits, and program assessments for development and acquisition of missile defense space applications.

II. Engage

MDA remains committed to developing, delivering, sustaining, and improving the nation's missile defenses. The FY2023 budget request continues to resource and improve U.S. homeland missile defenses designed to counter ballistic missile threats from rogue states. In addition, the FY2023 budget request continues to resource and build integrated missile defenses that are interoperable with systems deployed by international partners to protect our deployed forces, allies and international partners against ballistic, cruise, and hypersonic missile threats.

The **Ground-Based Midcourse Defense (GMD) system** currently defends the U.S. against long-range ballistic missile threats from rogue states. Initially fielded in the early 2000s, the GMD system is undergoing a service life extension and will be improved with the addition of the Next Generation Interceptor (NGI) starting in 2028. For regional defense of our deployed forces, allies, partners, and friends, the Aegis Sea-Based Weapon System, and THAAD continue to be key components. The budget request includes:

- **Ground-Based Midcourse Defense (GMD) (PE 0603882C).** MDA is requesting \$667.5 million in FY2023 for GMD. The GMD element of the MDS provides CCMDs with a continuously available (24 hours a day, 7 days a week, 365 days a year) capability to defend the homeland against limited ICBM attacks during the midcourse phase of flight. The GMD capability consists of GBI, GMD Fire Control system (GFC), GMD Communication Network (GCN), In-Flight Interceptor Communications System Data Terminals (IDTs) and ground Launch Support Systems (LSS). MDA continues to upgrade and replace ground system infrastructure and fire control/kill vehicle software to improve the reliability, capability, and cybersecurity resiliency of the GMD weapon system. MDA will continue developing, testing and fielding of a Ground System 8 software build that provides a selectable 2/3 stage capability for employment of GBIs, improves discrimination, integrates LRDR with GMD Fire Control, improves the system Cybersecurity posture, and supports GCN and IDT modernization. In addition to Ground System 8, MDA

will be developing Ground System 9 and 10. Ground System 9 will integrated the BMDS System Track into the GFC. Ground System 10 will include software re-architecture to support accelerated processing and expansion to accept the Next Generation Interceptor; Phased Array IDT to support on demand, two-way data transmissions to the Next Generation Interceptor; as well as the addition of emerging threats and discrimination improvements. MDA will complete the delivery of five boosters which will ensure the number of fielded GBIs does not decrease through the Future Years Defense Plan (FYDP). MDA will continue development, testing and integration of the Fort Greely, Alaska Missile Field 4 and a new LSS with GMD Ground Systems to increase silo capacity and modernize Silo Interface Vault equipment in existing silos. Phased Array (PA) IDT Software Development, PA IDT Antenna Development, and Test PA IDT Asset will also be funded. With the addition of the Next Generation Interceptor, the existing GBI fleet service life will be extended beyond 2030. MDA will continue the GBI Service Life Extension Program to support the existing GBI fleet.

- **Improved Homeland Defense Interceptors (PE 0604874C).** MDA is requesting \$1.833 billion in FY2023 for the NGI. The NGI development will provide a more capable, robust, All-Up-round solution to meet the emerging threat and will allow trades between boost vehicle and payload, improve system survivability, and increases performance against projected threats from rogue states. MDA has implemented lessons learned and intends to leverage the valuable technical information developed under Redesigned Kill Vehicle and Multi-Object Kill Vehicle to positively influence future designs. On March 24, 2021, the Department of Defense (DoD) awarded two contracts in support of the NGI program. The request will continue to fund requirements analysis, design, development, prototyping, integration and relevant environmental testing to mature the booster, payload, sensor(s), and design-specific critical technologies, and technology elements to reduce technical risk. Retaining a competitive environment throughout early design development activities will promote competitive production pricing and support the Department's ability to field a system capable of negating the expanded threat.
- **Ground-Based Midcourse Defense Test (PE 0604887C).** MDA is requesting \$84.1 million in FY2023 for the GMD test program, which supports the IMTP. Although no flight tests will be executed for the NGI until the 2027 timeframe, continued

ground testing and cyber testing is an essential requirement to support this critical MDS capability. Additionally, MDA will execute an intercept flight test to demonstrate an engagement firing a 2-/3-Stage Selectable GBI in 2-stage mode with a Capability Enhanced (CE)-II Block 1 Exo-atmospheric Kill Vehicle against an IRBM with countermeasures.

- **Ground-Based Midcourse Defense Procurement.** MDA is requesting \$11.3 million to procure 4 processors and operating system upgrade kits for IDT at Fort Drum, Fort Greely, and Eareckson Air Station.
- **GMD Maintenance and Sustainment.** MDA is requesting \$185.6 million in FY2023 for the Operation and Maintenance (O&M) of the GMD weapon system. In addition to operation, maintenance and sustainment of the GMD weapon system and operational and support facilities at Fort Greely, Alaska; Vandenberg AFB, California; Fort Drum, New York; Schreiver AFB, Colorado; and Eareckson Air Station, Alaska, this request includes Warfighter training, wargames, and exercises to maintain readiness. Finally, this request includes funding to repair and maintain the administrative, storage and supply facilities at Fort Greely, Alaska. These buildings were constructed in the mid-1950s with a planned useful life of 50 years and require significant repairs to avoid an adverse impact on the homeland defense mission.

Aegis capitalizes on and evolves the existing United States Navy **Aegis Weapon System and Standard Missile** infrastructures. Aegis provides a forward-deployable, mobile capability to detect and track ballistic missiles of all ranges, and has the ability to destroy short-range ballistic missiles and medium-range ballistic missiles (MRBMs) in both the midcourse and terminal phases of flight and intermediate-range ballistic missiles in the midcourse phase of flight. The FY2023 budget request supports continued advancement of the Aegis Weapon System to counter growing and more complex threats, including improvements in system and missile reliability as well as increases in Aegis engagement capacity and lethality. MDA continues to support protection of NATO's European territory and forces against the ballistic missile threat from outside the Euro-Atlantic area. Aegis Ashore in Romania is operational, and we plan to complete construction on Aegis Ashore Poland in 2023. Both sites are designed to launch the SM-3 Block IB and Block IIA missiles.

- **Aegis (PE 0603892C).** MDA requests \$600.1 million in FY2023 for Aegis Missile Defense. MDA continues to provide additional software capability development to upgrade IAMD performance in Baseline 9.2 (BMD 5.1) and Baseline 10 (BMD 6.0). BMD 4.2 is a multi-mission Joint baseline effort with the U.S. Navy that refurbishes existing ship AN/SPY-1 radar arrays with the installation of antenna Low Noise Amplifiers to provide increased radar sensitivity, discrimination improvements, and an increased threat set. MDA will continue radar sensitivity improvements by beginning Digital Low Noise Amplifier technology maturation and prototyping that will further improve AN/SPY-1 sensitivity, tracking performance, and resource utilization, which increases capability and performance against longer range and more sophisticated threats. MDA also continues software development for the IAMD Baseline 10 (BMD 6.0). BMD 6.0 will continue development and integration of missile defense capability with the Air and Missile Defense Radar, also known as the AN/SPY-6, for enhanced engagement capability and increased raid capacity. Additionally, MDA continues upgrading the SM-3 Block IB hardware and software to leverage the capability of the SM-3 Block IIA.
- **Land Based SM-3 (0604880C).** MDA is requesting \$27.7 million in FY2023 to modernize, develop, and test Aegis Ashore capability improvements at the Aegis Ashore Missile Defense Test Complex in Hawaii for implementation at operational sites. The funding also supports operations at the site in Romania and completion of construction at the site in Poland. In FY2023 MDA will continue High-Altitude Electromagnetic Pulse Combat System hardening in Romania. Land Based SM-3 provides an Aegis Ashore exo-atmospheric defense against short to intermediate-range ballistic missile threats in the later stages of flight.
- **Aegis Testing (PE 0604878C).** MDA is requesting \$182.8 million in FY2023 for the Aegis test program, which supports the IMTP. The Aegis Flight Test Program supports comprehensive testing of Aegis components and demonstrates their interoperability with the MDS. Using accredited M&S, the ground test program provides the evidence required to transition the capability to the Operational Capability Baseline.
- **Aegis Procurement.** MDA requests a total of \$848.4 million in FY 2023 for Aegis procurement. This includes \$740.2 million for procuring Aegis SM-3 missiles. MDA will procure 47 Aegis SM-3 Block IB missiles and 10 Aegis SM-3 Block IIA missiles in FY

2023. The request continues a five-year Multiyear Procurement for Aegis SM-3 Block IB missiles ending in FY 2023. The procurement budget also requests \$78.2 million for Aegis Weapon Systems consisting of Aegis shipset equipment, software, and installation materials. The budget requests \$30.1 million for completing combat system installation and combat structure adaptation at the Aegis Ashore site in Poland. Appropriately configured Aegis ships and the Aegis Ashore sites in Romania and Poland can launch both missile variants.

- **Aegis Maintenance and Sustainment.** MDA is requesting \$69.1 million in FY 2023 in O&M funding. The Aegis program will perform missile recertification, repair efforts, and Ordnance Assessment/Surveillance. This funding also supports sustainment of BMD Computer Programs, Ship Equipment, and Aegis Ashore, as well as Fleet integration support.
- **Defense of Guam (PE 0604102C).** MDA requests \$397.9 million in FY2023 to develop a missile defense system for Guam defense against a range of missile threats. The DoD has undertaken studies on a range of missile defense architecture options, emphasizing effectiveness, survivability, and flexibility against an evolving threat. The final architecture design includes integration efforts between MDA, U.S. Army, and U.S. Navy systems. This Program supports the Pacific Deterrence Initiative. The FY2023 program leverages the results of FY2022 analysis, architecture development and siting results to begin developing and fielding four land-based radars, distributed sensors, and integrated communications across strategic assets on Guam. The architecture acquisition process also provides environmental, engineering, and interoperability activities to balance costs and associated risks. The inter-Department partnership will plan appropriate flight tests to validate Defense of Guam MDS capabilities.
- **Defense of Guam Procurement.** MDA requests \$26.5 million in FY2023 to procure long lead weapon system components needed to support the Defense of Guam Architecture. This includes Fire Control System and Common Display and processing equipment.
- **Defense of Guam MILCON.** MDA is requesting \$39 million of Planning and Design (P&D) military construction (MILCON) funds in FY 2023 to support design and planning for MILCON Projects at multiple sites on Guam. The MILCON effort supports deployment of an IAMD system for the Defense of Guam from emerging threats in the INDOPACOM region. This request funds

the acquisition of architectural and engineering services for site investigations, surveys, mapping, designs, preparation of construction cost estimates, preparation of plans and specifications, special studies, and A/E construction contract documents.

Note: MDA is requesting a total of \$539M for the Defense of Guam in FY 2023. This includes \$473.5M in RDT&E (multiple PE's), \$26.5M in Procurement and, \$39M in MILCON (Planning and Design).

Also key to missile defense capability is the THAAD weapon system. THAAD is a globally-transportable, ground-based missile defense system that is highly effective against short-, medium-, and limited intermediate-range ballistic missile threats inside and outside the atmosphere in the terminal phase of flight. THAAD provides unique, cost-effective, and rapidly deployable capability to the Combatant Commanders. MDA currently supports forward-deployment of two batteries stationed in the USINDOPACOM area of responsibility. Specific to THAAD, MDA's request includes:

- **Terminal Defense (PE 0603881C).** MDA is requesting \$190.2 million for THAAD development efforts in FY2023. MDA will continue the development and integration of multiple, independent THAAD software upgrades to improve reliability, availability and readiness, defense planning, and improved the capability to engage Short Range Ballistic Missile, MRBM, and limited IRBM threats. These development efforts will enhance THAAD's capability against global operational threats.
- **Terminal Defense Testing (PE 0604876C).** MDA requests \$69.8 million for Terminal Defense Testing in FY2023, which supports the IMTP. This includes flight and ground testing, test operations and infrastructure, wargames, and exercises.
- **THAAD Procurement.** MDA is requesting \$75 million for THAAD procurement in FY2023 for 3 THAAD Interceptors, Interceptor obsolescence mitigation, and the Stockpile Reliability Program. Procurement of 3 THAAD Interceptors in FY 2023 supports the minimum quantity required to maintain continuous production at the Prime and supplier level.
- **THAAD Operations and Maintenance.** MDA is requesting \$86.9 million for O&M in FY 2023 to support the maintenance and upkeep of all MDS-unique items of the fielded U.S. THAAD batteries and for all THAAD training devices. In FY2023, MDA will provide support to seven THAAD batteries, including the two forward-based batteries stationed in the USINDOPACOM area of responsibility, and is prepared to support the U.S. Army in any future deployments around the world.

III. Technology

With mission focus on warfighting outcomes, MDA is investing in innovative and disruptive technologies to provide leap-ahead capabilities to address the emergence of new and more advanced threats. This budget request will continue development of technology improvements for the current MDS, along with breakthrough technologies for integration into future missile defense architectures. These efforts include:

- **Hypersonic Defense (PE 0604181C).** MDA requests \$225.5 million for FY2023 for Hypersonic Defense to develop and demonstrate a Glide Phase Intercept (GPI) defensive capability with Industry that is built on the existing Aegis Weapon System. The GPI will provide a new layered defense architecture to counter hypersonic threats and help increase the effectiveness of existing terminal defense systems. This request provides for Federally Funded Research and Development Centers, University Affiliated Research Centers, and National Labs to analyze, prototype, and test key technology areas for reducing risk on countering hypersonic threats for both kinetic and non-kinetic defenses. Efforts include development and maturation of new technologies that could be applied in future counter hypersonic threat architectures. Cost sharing activities with offensive hypersonic strike systems are funded to jointly conduct flight testing using inexpensive sounding rockets to collect flight test data in a hypersonic environment.
- **Cruise Missile Defense Homeland Architecture and Demonstration (PE 0603890C, Budget Project MD21).** MDA is requesting \$10.9 million to continue development of the system architecture for cruise missile defense of the homeland. In response to USNORTHCOM's requirements for cruise missile defense of the homeland, MDA will develop the systems architecture and conduct a demonstration of cruise missile defense capabilities using the Joint Tactical Integrated Fire Control capability. The effort includes developing systems engineering requirements, software modifications, models and simulations, and integration of joint sensors and shooters into a fire control network for the demonstration of cruise missile defense capability.
- **Advanced Research Program (PE 0603180C).** MDA is requesting \$22.0 million in FY2023, to conduct innovative, state of the art, research and development with small and large businesses, universities, national laboratories, and allied nations to create and

enable future missile defense capabilities aligned to the MDA Science and Technology Strategy. Key investments include development, characterization, and risk mitigation testing of advanced materials, seeker windows, power, controls and propulsion systems, and maturation of kill vehicle and satellite communication and processing technology for engagement management of the MDS. In accordance with identified Agency gaps and Warfighter needs, the program assesses and demonstrates the utility of emerging component technologies, then facilitates transition of the technologies into the MDS. The program also manages the selection process and administers the Missile Defense Small Business Innovation Research (SBIR) program.

- **Advanced Concepts & Performance Assessment (PE 0603176C).** MDA is requesting \$16.7 million in FY2023 to centralize advanced technology concept modeling, simulation, and performance analysis. Advanced Concepts & Performance Assessments focus on the exploration of novel and emerging capabilities that may have the potential to enhance missile defense. The request will fund independent government assessments of industry sensor, directed energy, and weapon system technology concepts and mature related tracking, discrimination, and sensor fusion algorithms. Assessment activities include development of Hypersonic Defense, Artificial Intelligence and Machine Learning Initiatives, and Left-through-Right Integration key technology areas. The innovative structured concept definition and assessment methodology enables MDA to validate focus areas, verify contractor technology solutions, and evaluate promising concepts for use in future missile defense architectures. This program element supports the monitoring and tracking of cybersecurity mitigations, as well as the exploration of cyber effects on emerging technology.

IV. Missile Defense Testing

MDA plans and executes a fully integrated test program that synchronizes the system under test with the Warfighters trained to operate the system under varying wartime conditions against current and emerging threats.

- **MDS Testing (PE 0603914C).** MDA is requesting \$367.8 million in FY2023. MDA conducts regular intercept flight tests. These tests provide data to anchor models and simulations that can then be used to verify performance and confirm the technological progress of the Missile Defense System against missile threats. MDA also conducts regular, rigorous non-intercept tests, including sensor characterization flight tests, ground tests, cybersecurity and resiliency tests, wargames, and exercises. Developed in collaboration with stakeholders, the IMTP identifies and incorporates all testing requirements into a comprehensive, highly integrated, cost-effective series of flight tests, ground tests, cybersecurity tests, exercises, and wargames. IMTP Stakeholders, who are also signatories, include: Director, Operational Test & Evaluation (DOT&E); Director, Developmental Test, Evaluation and Assessments (DTE&A); Commander, Joint Functional Component Command for Integrated Missile Defense (JFCC IMD) representing CCMDs; Commander, Army Test and Evaluation Command (ATEC); Commander, Air Force Operational Test and Evaluation Center (AFOTEC); Commander, Operational Test and Evaluation Force (COMOPTEVFOR); and Commander, Joint Interoperability Test Command (JITC). For flight testing, the Agency incorporates nine operational realism criteria. For system-level ground testing, all tests culminate in operational testing with Warfighters on console and independent operational assessments by the MDS Operational Test Agency Team. This ensures that MDS capabilities are credibly demonstrated and validated prior to delivery to the Warfighter.

The IMTP supports MDA's programming strategy and test priorities. This test program captures:

- Ground-based Midcourse Defense flight test to support Increment 6C/7 capabilities to demonstrate Limited Mid-Term Discrimination Content, BMD System Track, 2-/3-Stage Selectable GBI in 2-Stage Mode, and Hit Assessment.
- Sea-Based Terminal Increment 3 simulated Aegis BL9.2.4/SM-6 engagement against a hypersonic glide vehicle.
- THAAD intercept flight test to demonstrate concurrent control of a THAAD interceptor and two Patriot Missile Segment Enhancements interceptors in an engagement of two MRBMs targets.
- Supports for annual interoperability and integration flight testing with Patriot.
- Increases flight test integration and interoperability testing with Allies.

- Refinements on test planning for system-level ground testing.
- Updates on planning for cybersecurity testing through the FYDP.
- **MDS Targets (*PE 0603915C*).** MDA is requesting \$559.5 million in FY2023 to develop, produce, and launch an economical and reliable inventory of targets based on engineering assessments of threat intelligence data. This funding enables the test, verification, and validation of the performance of the MDS against threats in support of the IMTP, and includes funding for the continued development of Advanced Targets, and development and production of more reliable and capable MRBM Target motors with enhanced maneuverability and range.
- **Ground Test Facility Infrastructure (GTFI).** MDA is requesting \$8.1 million of MILCON P&D to support the relocation of critical MDS assets from off-post lease space to the Von Braun Complex. The request will provide funding to complete the design of the GTFI MILCON project.

V. Israeli Programs

MDA is requesting \$500 million for **Israeli programs** in FY2023. This funding level remains consistent with the Memorandum of Understanding between the United States and Israel that spans FY2019 – FY2028. This budget continues MDA's longstanding support of U.S.-Israeli Cooperative Programs, to include the co-development and co-production of the David's Sling Weapon System and the Arrow Weapon System. The Department continues to support co-production efforts for the Iron Dome Defensive System program to provide critical defense against short-range rockets and missiles, mortars, and artillery shells, as well as new capabilities against Unmanned Aerial Vehicles.

Summary

MDA requests \$9.628 billion in FY2023 for missile defense development efforts to build Warfighter confidence by focusing on readiness and sustainment, increasing capability and capacity of fielded homeland and regional defense systems, and increasing the speed of delivery of advanced technology to counter the advanced missile threat.

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**Missile Defense Agency
PB 2023 Missile Defense Agency
FY 2023- FY 2027 Appropriation Summary
R-1 Exhibit
(\$ Thousands)**

Fiscal Year Amount Based on Business Rule CPS Version:

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Line Number	Program Element	Budget Project	Program	Budget Activity	FY21 Actual	FY22	FY23	FY24	FY25	FY26	FY27	FY23-27
O&M												
11A	0208866C		O&M	NA	573,190	502,418	541,787	595,230	602,681	628,741	634,352	3,002,791
		MD08	Ground Base Midcourse	NA	148,741	156,623	185,564	199,248	204,864	188,486	186,647	964,809
		MD07	THAAD	NA	89,706	86,828	86,945	89,297	91,789	93,995	96,024	458,050
		MD09	AEGIS	NA	77,499	68,293	69,071	70,303	75,240	87,513	91,726	393,853
		MD11	BMDS Radars Program	NA	257,244	190,674	200,207	236,382	230,788	258,747	259,955	1,186,079
Budget Activity 00 Total				NA	573,190	502,418	541,787	595,230	602,681	628,741	634,352	3,002,791
O&M Total				NA	573,190	502,418	541,787	595,230	602,681	628,741	634,352	3,002,791
Procurement												
XX	0208866C		PROCUREMENT	01	2,027,594	2,531,253	1,139,347	1,375,561	1,619,793	1,961,806	2,177,757	8,274,264
		MD07	THAAD	01	578,335	380,722	74,994	211,524	435,682	464,343	643,513	1,830,056
		MD80	Advanced Procurement NGI	01	0	0	0	0	0	222,283	260,482	482,765
		MD08	Ground Based Midcourse	01	150,000	0	11,300	0	18,403	42,725	48,866	121,294
		MD09	AEGIS BMD	01	398,797	352,114	402,235	378,685	362,834	496,857	506,794	2,147,405
		MD11	BMDS Sensors	01	243,270	2,738	4,606	8,962	6,682	13,382	27,475	61,107
		MD14	SM-3 Block IIA	01	318,322	488,022	337,975	458,224	479,190	460,468	457,932	2,193,789
		MD26	Arrow 3 Upper Tier System	01	77,000	62,000	80,000	80,000	80,000	80,000	80,000	400,000
		MD34	Short Range Ballistic Missile Defense (SRBMD)(David's Sling Weapon	01	50,000	30,000	40,000	40,000	40,000	40,000	40,000	200,000
		MD73	Aegis Ashore Phase III	01	34,629	25,866	30,056	2,390	976	0	0	33,422
		MD83	Iron Dome	01	73,000	1,108,000	80,000	80,000	80,000	80,000	80,000	400,000
		MD90	Aegis BMD Hardware and Software	01	104,241	81,791	78,181	115,776	116,026	61,748	32,695	404,426
38	50000000000000		Guam Defense Acquisition	01	0	80,000	26,514	43,227	35,493	35,374	80,434	221,042
		MD65	Defense of Guam Procurement	01	0	80,000	26,514	43,227	35,493	35,374	80,434	221,042
Budget Activity 01 Total				01	2,027,594	2,611,253	1,165,861	1,418,788	1,655,286	1,997,180	2,258,191	8,495,306
Procurement Total				01	2,027,594	2,611,253	1,165,861	1,418,788	1,655,286	1,997,180	2,258,191	8,495,306
RDT&E												
36	0603176C		Advanced Concepts and Performance Assessment	03	49,069	40,000	16,737	17,265	17,693	18,109	18,477	88,281
		MD71	Advanced Concepts and Performance Assessments	03	20,866	22,250	12,446	12,852	13,178	13,442	13,711	65,629
		MD40	Program-Wide Support	03	592	607	608	608	605	680	699	3,200
		MC71	Cyber Operations	03	27,611	17,143	3,683	3,805	3,910	3,987	4,067	19,452
37	0603180C		Advanced Research	03	29,621	47,966	22,023	22,758	23,296	23,851	24,335	116,263
		MD25	Advanced Technology Development	03	28,879	47,135	21,223	21,957	22,500	22,955	23,415	112,050
		MD40	Program-Wide Support	03	742	831	800	801	796	896	920	4,213
45	0603294C		Common Kill Vehicle Technology	03	10,793	0	0	0	0	0	0	0
		MD85	Common Kill Vehicle Technology	03	10,354	0	0	0	0	0	0	0
		MD40	Program Wide Support	03	439	0	0	0	0	0	0	0
Budget Activity 03 Total				03	89,483	87,966	38,760	40,023	40,989	41,960	42,812	204,544
117	0202057C		Safety Program Management	04	0	2,323	2,417	2,477	2,531	2,579	2,630	12,634
		MDSH	Safety Program Management	04	0	2,323	2,417	2,477	2,531	2,579	2,630	12,634
120	0305103C		Cyber Security Initiative	04	1,122	1,142	1,165	1,207	1,236	1,262	1,287	6,157
		MDCS	Cyber Security Initiative	04	1,122	1,142	1,165	1,207	1,236	1,262	1,287	6,157
77	0603881C		Ballistic Missile Defense Terminal Defense Segment	04	305,081	213,382	190,216	196,279	213,945	224,146	238,269	1,062,855
		MD07	THAAD	04	251,710	186,625	171,543	179,505	196,404	203,144	215,392	965,988
		MC07	Cyber Operations	04	10,720	11,977	10,555	7,160	7,996	9,775	10,478	45,964
		MD06	Patriot Advanced Capability-3 (PAC-3)	04	26,261	1,226	1,211	1,239	1,271	1,297	1,323	6,341
		MD40	Program-Wide Support	04	16,390	13,554	6,907	8,375	8,274	9,930	11,076	44,562
78	0603882C		Ballistic Missile Defense Midcourse Defense Segment	04	1,195,853	724,028	667,524	870,817	802,617	781,973	765,733	3,888,664
		MD08	Ground Based Midcourse	04	1,108,120	669,813	616,461	811,895	750,058	727,176	706,512	3,612,102
		MC08	Cyber Operations	04	47,814	24,800	27,795	28,553	24,908	25,407	30,271	136,934
		MD40	Program-Wide Support	04	39,919	29,415	23,268	30,369	27,651	29,390	28,950	139,628

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Line Number	Program Element	Budget Project	Program	Budget Activity	FY21 Actual	FY22	FY23	FY24	FY25	FY26	FY27	FY23-27
80	0603884C		Ballistic Missile Defense Sensors	04	259,605	254,962	231,134	250,028	274,705	276,254	257,575	1,289,696
		MD11	BMDs Radars	04	234,250	225,016	201,402	220,505	246,437	244,188	227,133	1,139,665
		MC11	Cyber Operations	04	11,255	20,215	21,339	20,724	20,416	21,689	20,704	104,872
		MD40	Program-Wide Support	04	14,100	9,731	8,393	8,799	7,852	10,377	9,738	45,159
81	0603890C		BMD Enabling Programs	04	607,167	623,644	591,847	613,589	625,761	635,633	640,374	3,107,204
		MD24	System Engineering & Integration	04	172,650	155,478	176,122	182,501	181,596	178,066	180,298	898,583
		MD21	Homeland Cruise Missile Defense Architecture	04	3,050	13,921	10,852	7,067	4,246	4,342	4,429	30,936
		MT23	Enabling - Test	04	48,554	41,520	44,245	44,122	47,282	48,477	49,627	233,753
		MD28	Intelligence & Security	04	42,890	39,550	42,036	45,880	56,409	54,428	53,161	251,914
		MD30	BMD Information Management Systems	04	83,053	92,729	87,822	92,382	92,318	96,775	95,478	464,775
		MC30	Cyber Operations	04	62,539	103,565	81,519	89,048	91,568	95,843	97,761	455,739
		MD31	Modeling & Simulation	04	103,029	82,277	72,045	74,020	71,968	73,626	73,910	365,569
		MC31	Engineering Cyber Operations	04	34,252	41,975	24,978	25,209	26,661	27,193	27,745	131,786
		MD32	Quality, Safety, and Mission Assurance	04	29,926	29,527	30,737	31,767	32,494	33,120	33,782	161,900
		MD40	Program-Wide Support	04	27,224	23,102	21,491	21,593	21,219	23,763	24,183	112,249
82	0603891C		Special Programs - MDA	04	380,204	413,374	316,977	276,846	281,065	286,880	292,589	1,454,357
		MD27	Special Programs	04	380,204	413,374	316,977	276,846	281,065	286,880	292,589	1,454,357
83	0603892C		AEGIS BMD	04	861,809	639,549	600,072	658,798	574,014	570,018	580,496	2,983,398
		MD09	Aegis BMD	04	360,367	344,490	344,239	405,239	333,068	302,775	295,098	1,680,419
		MM09	Aegis BMD SM-3 Development	04	303,832	124,708	86,633	66,010	48,265	70,835	85,089	356,832
		MC09	Cyber Operations	04	8,544	3,750	4,431	4,682	4,882	4,842	4,938	23,775
		MX09	Aegis BMD Development Support	04	158,251	136,506	142,980	160,210	165,334	169,313	172,442	810,279
		MD40	Program-Wide Support	04	30,815	30,095	21,789	22,657	22,465	22,253	22,929	112,093
84	0603896C		Ballistic Missile Defense Command and Control, Battle Management	04	639,027	564,946	589,374	575,883	588,824	612,853	605,801	2,972,735
		MD01	Command & Control, Battle Management, Communications (C2BMC)	04	405,836	339,716	368,950	351,786	355,998	372,510	364,903	1,814,147
		MC01	Cyber Operations	04	17,132	12,537	8,504	8,255	8,664	8,839	42,766	
		MT01	C2BMC Test	04	60,345	65,341	58,616	56,453	64,671	66,276	63,637	309,653
		MX01	Command & Control, Battle Management, Communications (C2BMC)	04	129,960	125,086	131,903	138,665	139,480	142,259	145,342	697,649
		MD40	Program-Wide Support	04	25,754	22,266	21,401	20,724	20,171	23,144	23,080	108,520
85	0603898C		Ballistic Missile Defense Joint Warfighter Support	04	49,261	50,594	50,269	51,849	55,960	56,488	54,980	269,546
		MD03	Joint Warfighter Support	04	15,743	18,490	17,537	18,107	21,846	21,504	19,282	98,276
		MT03	Joint Warfighter Support Test	04	31,549	29,990	30,748	31,753	32,146	32,789	33,445	160,881
		MC03	Cyber Operations	04	0	155	159	164	168	171	174	836
		MD40	Program-Wide Support	04	1,969	1,959	1,825	1,825	1,800	2,024	2,079	9,553
86	0603904C		Missile Defense Integration and Operations Center (MDIOC)	04	54,026	52,403	49,367	51,744	56,502	57,833	59,006	274,452
		MD22	Missile Defense Integration and Operations Center (MDIOC)	04	51,206	49,740	46,926	49,252	53,882	54,958	56,058	261,076
		MC22	Cyber Operations	04	621	638	648	671	689	703	717	3,428
		MD40	Program-Wide Support	04	2,199	2,025	1,793	1,821	1,931	2,172	2,231	9,948
87	0603906C		Regarding Trench	04	10,213	11,952	12,146	12,564	12,902	13,155	13,418	64,185
		MD35	Regarding Trench	04	10,213	11,952	12,146	12,564	12,902	13,155	13,418	64,185
88	0603907C		Sea Based X-Band Radar (SBX)	04	120,063	147,241	164,668	174,934	215,367	198,956	179,622	933,547
		MX46	Sea Based X-Band Radar Development Support	04	115,363	141,567	158,689	168,779	208,689	192,046	173,020	901,223
		MD40	Program-Wide Support	04	4,700	5,674	5,979	6,155	6,678	6,910	6,602	32,324
89	0603913C		Israeli Cooperative Programs	04	300,000	300,000	300,000	300,000	300,000	300,000	300,000	1,500,000
		MD26	Arrow Weapon System	04	173,000	173,000	173,000	173,000	173,000	173,000	173,000	865,000
		MD34	Short Range Ballistic Missile Defense (SRBMD)(David's Sling Weapon	04	127,000	127,000	127,000	127,000	127,000	127,000	127,000	635,000
90	0603914C		Ballistic Missile Defense Test	04	364,994	389,156	367,824	363,963	421,261	476,991	490,176	2,120,215
		MT04	BMDs Test Program	04	343,376	363,674	346,263	342,656	398,141	450,183	462,576	1,999,819
		MC04	Cyber Operations	04	6,591	8,254	8,205	8,498	8,720	8,891	9,068	43,382
		MD40	Program Wide Support	04	15,027	17,228	13,356	12,809	14,400	17,917	18,532	77,014

**Missile Defense Agency
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(\$ Thousands)**

Fiscal Year Amount Based on Business Rule CPS Version:					OFFLINE PB23 FY23 FY27 R15	OFFLINE PB23 FY23 FY27 R15	OFFLINE PB23 FY23 FY27 R15	OFFLINE PB23 FY23 FY27 R15	OFFLINE PB23 FY23 FY27 R15	OFFLINE PB23 FY23 FY27 R15	OFFLINE PB23 FY23 FY27 R15	
Line Number	Program Element	Budget Project	Program	Budget Activity	FY21 Actual	FY22	FY23	FY24	FY25	FY26	FY27	FY23-27
91	0603915C		Ballistic Missile Defense Targets	04	534,348	560,478	559,513	555,341	623,995	628,146	632,072	2,999,067
		MC05	Cyber Operations	04	1,677	1,484	1,512	1,548	1,585	1,616	1,648	7,909
		MT05	BMDS Targets Program	04	511,375	539,834	537,368	534,486	601,080	602,935	606,528	2,882,397
		MD40	Program Wide Support	04	21,296	19,160	20,633	19,307	21,330	23,595	23,896	108,761
95	0604102C		Guam Defense Development	04	0	112,400	397,936	343,875	329,780	215,729	146,089	1,433,409
		MD65	Defense of Guam Development	04	0	112,400	383,486	331,773	318,507	207,626	140,566	1,381,958
		MD40	Program Wide Support	04	0	0	14,450	12,102	11,273	8,103	5,523	51,451
96	0604115C		Technology Maturation Initiatives	04	105,895	39,200	0	0	0	0	0	0
		MD98	Directed Energy Demonstrator Development	04	42,300	39,200	0	0	0	0	0	0
		MD99	Discrimination Sensor Demonstrator Development	04	60,750	0	0	0	0	0	0	0
		MC98	Cyber Operations	04	168	0	0	0	0	0	0	0
		MD40	Program Wide Support	04	2,677	0	0	0	0	0	0	0
99	0604181C		Hypersonic Defense	04	267,589	287,796	225,477	108,540	110,220	287,535	449,590	1,181,362
		MD29	Hypersonic Defense	04	257,506	279,016	217,617	104,720	106,452	276,734	432,593	1,138,116
		MD40	Program Wide Support	04	10,083	8,780	7,860	3,820	3,768	10,801	16,997	43,246
107	0604672C		Homeland Defense Radar-Hawaii	04	133,000	75,000	0	0	0	0	0	0
		MD41	Homeland Defense Radar-Hawaii (HDR-H)	04	133,000	75,000	0	0	0	0	0	0
110	0604873C		Long Range Discrimination Radar (LRDR)	04	135,088	133,335	75,120	103,451	95,712	71,715	76,316	422,314
		MD96	Long Range Discrim Radar (LRDR)	04	129,636	128,192	72,392	99,810	92,440	69,021	73,431	407,094
		MD40	Program Wide Support	04	5,452	5,143	2,728	3,641	3,272	2,694	2,885	15,220
111	0604874C		Improved Homeland Defense Interceptors	04	843,899	884,125	1,833,357	2,104,382	2,232,025	1,448,632	1,358,561	8,976,957
		MD15	Risk Reduction	04	200,000	0	0	0	0	0	0	0
		MD80	Next Generation Interceptor Development (NGI)	04	617,520	848,206	1,766,786	2,030,625	2,156,053	1,394,502	1,307,197	8,655,163
		MD40	Program Wide Support	04	26,379	35,919	66,571	73,757	75,972	54,130	51,364	321,794
112	0604876C		Ballistic Missile Defense Terminal Defense Segment Test	04	1,000	32,697	69,762	43,602	34,063	153,853	133,524	434,804
		MT07	THAAD Test	04	676	30,174	67,229	42,419	33,070	148,262	128,476	419,456
		MD40	Program Wide Support	04	324	2,523	2,533	1,183	993	5,591	5,048	15,348
113	0604878C		Aegis BMD Test	04	71,481	111,206	182,776	173,492	159,125	203,851	187,494	906,738
		MT09	AEGIS BMD Test	04	64,693	106,147	176,139	167,502	154,072	196,586	181,162	875,461
		MD40	Program Wide Support	04	6,788	5,059	6,637	5,990	5,053	7,265	6,332	31,277
114	0604879C		Ballistic Missile Defense Sensor Test	04	64,245	77,428	88,326	91,495	98,146	103,010	145,810	526,787
		MT11	BMDS Radars Test	04	61,208	74,272	85,119	88,275	95,133	99,441	141,243	509,211
		MD40	Program Wide Support	04	3,037	3,156	3,207	3,220	3,013	3,569	4,567	17,576
115	0604880C		Land Based SM-3 (LBSM3)	04	52,804	43,158	27,678	26,896	26,021	26,842	27,385	134,822
		MD68	AEGIS Ashore	04	49,545	39,594	25,448	24,716	23,891	24,569	25,060	123,684
		MC68	Cyber Operations	04	1,010	944	1,225	1,233	1,241	1,265	1,290	6,254
		MD40	Program-Wide Support	04	2,249	2,620	1,005	947	889	1,008	1,035	4,884
116	0604887C		Ballistic Missile Defense Midcourse Defense Segment Test	04	67,071	61,424	84,075	73,920	68,490	95,223	191,476	513,184
		MT08	Midcourse Test	04	64,407	59,503	80,114	71,565	66,320	92,022	185,371	495,392
		MD40	Program Wide Support	04	2,664	1,921	3,961	2,355	2,170	3,201	6,105	17,792
122	1206893C		Space Tracking and Surveillance System	04	33,356	15,176	0	0	0	0	0	0
		MD12	Space Tracking and Surveillance System (STSS)	04	31,271	14,437	0	0	0	0	0	0
		MC12	Cyber Operations	04	729	156	0	0	0	0	0	0
		MD40	Program-Wide Support	04	1,356	583	0	0	0	0	0	0
123	1206895C		Ballistic Missile Defense System Space Programs	04	161,267	292,811	129,957	120,392	124,652	48,055	49,029	472,085
		MD33	MD Space Exp Center (MDSEC)	04	29,617	30,066	34,512	40,139	42,823	40,715	41,888	200,077
		MD42	Hypersonic & Ballistic Tracking Space Sensor (HBTSS) Prototyping	04	130,000	256,222	89,220	74,328	75,827	3,755	3,470	246,600
		MC33	MD Space Exp Center (MDSEC)	04	376	1,358	1,506	1,688	1,741	1,780	1,817	8,532
		MD40	Program-Wide Support	04	1,274	5,165	4,719	4,237	4,261	1,805	1,854	16,876
Budget Activity 04 Total				04	7,619,468	7,114,930	7,808,977	8,146,364	8,328,919	7,777,612	7,879,302	39,941,174

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Fiscal Year Amount Based on Business Rule CPS Version:					OFFLINE PB23 FY23 FY27 R15	OFFLINE PB23 FY23 FY27 R15	OFFLINE PB23 FY23 FY27 R15	OFFLINE PB23 FY23 FY27 R15	OFFLINE PB23 FY23 FY27 R15	OFFLINE PB23 FY23 FY27 R15	OFFLINE PB23 FY23 FY27 R15	
Line Number	Program Element	Budget Project	Program	Budget Activity	FY21 Actual	FY22	FY23	FY24	FY25	FY26	FY27	FY23-27
160	0605502C		Small Business Innovation Research - MDA	06	114,633	0	0	0	0	0	0	0
		MD45	Small Business Innovation Research	06	114,633	0	0	0	0	0	0	0
194	0901598C		Management HQ - MDA	06	26,902	24,102	25,259	25,836	26,438	26,984	27,524	132,041
		MD38	Management Headquarters	06	26,902	24,102	25,259	25,836	26,438	26,984	27,524	132,041
Budget Activity 06 Total				06	141,535	24,102	25,259	25,836	26,438	26,984	27,524	132,041
RDT&E Total				06	7,850,486	7,226,998	7,872,996	8,212,223	8,396,346	7,846,556	7,949,638	40,277,759
MILCON												
	0603882C		MID-COURSE MILCON	NA	48,000	0	0	0	0	0	0	0
		MM08	Missile Defense Complex, Ft. Greely, AK	NA	48,000	0	0	0	0	0	0	0
	0603888C		BMD TEST and TARG MILCON	NA	0	0	0	144,100	0	0	0	144,100
		MM44	BMDs Test Infrastructure Building (BTB)	NA	0	0	0	144,100	0	0	0	144,100
	22299902		MINOR MILCON	NA	4,922	4,435	0	5,858	4,879	4,976	5,075	20,788
		MM14	Minor MILCON	NA	4,922	4,435	0	5,858	4,879	4,976	5,075	20,788
	31299903		MILCON PLANNING and DESIGN	NA	0	19,000	47,063	0	0	0	0	47,063
		MM32	MILCON Planning Design	NA	0	19,000	47,063	0	0	0	0	47,063
	33399903		MILCON PLANNING AND DESIGN	NA	0	0	0	351,000	0	0	0	351,000
		MM65	Guam Defense Major MILCON	NA	0	0	0	351,000	0	0	0	351,000
Budget Activity 00 Total				NA	52,922	23,435	47,063	500,958	4,879	4,976	5,075	562,951
MILCON Total				NA	52,922	23,435	47,063	500,958	4,879	4,976	5,075	562,951
Program Total					10,504,192	10,364,104	9,627,707	10,727,199	10,659,192	10,477,453	10,847,256	52,338,807

Reporting Requirement Reference	Reporting Requirement Language	Budget Documentation Location
<i>FY22 National Defense Authorization Act (S. 1605), Public Law 117-81, pp. 566</i>	<p>NEXT GENERATION INTERCEPTORS FOR MISSILE DEFENSE OF THE UNITED STATES HOMELAND</p> <p>The Director of the Missile Defense Agency shall develop a funding plan that includes funding lines across the future-years defense program under section 221 of title 10, United States Code, for the next generation interceptor that – (1) while applying lessons learned from the redesigned kill vehicle program, incorporating recommendations from the Comptroller General of the United States, and implementing “fly-before-you-buy” principles, produces and begins deployment of the next generation interceptor as early as practicable; (2) includes acquiring at least 20 operational next generation interceptors; and (3) includes transition plans to replace the current inventory of silo-based boosters with follow-on systems prior to the end of the useful lifecycle of the boosters.</p>	Submitted in the FY2023 Budget Justification Materials in PE 0604874C (Improved Homeland Defense Interceptors)
<i>FY19 National Defense Authorization Act (H.R. 5515), Report 115-863, pp. 257-258; FY20 National Defense Authorization Act (S. 1790), Report 116-333, p. 338</i>	<p>CONSOLIDATED BUDGET DISPLAY FOR THE DEPARTMENT OF DEFENSE SMALL BUSINESS INNOVATION RESEARCH PROGRAM AND SMALL BUSINESS TECHNOLOGY TRANSFER PROGRAM</p> <p>The Secretary of Defense, acting through the Under Secretary of Defense for Research and Engineering, shall include in the materials submitted to Congress by the Secretary of Defense in support of the budget of the President for each fiscal year (as submitted to Congress under section 1105 of title 31, United States Code), a budget display for the funds assessed for the Small Business Innovation Research Program or the Small Business Technology Transfer Program (as such terms are defined, respectively, in section 9(e) of the Small Business Act (15 U.S.C. 638(e))) of the Department of Defense during the previous fiscal year.</p> <p>MODIFICATIONS TO BUDGET DISPLAY REQUIREMENTS FOR THE DEPARTMENT OF DEFENSE SMALL BUSINESS INNOVATION RESEARCH PROGRAM AND SMALL BUSINESS TECHNOLOGY TRANSFER PROGRAM</p> <p>Section 857 of the John S. McCain National Defense Authorization Act for Fiscal Year 2019 (Public Law 115-232; 132 Stat. 1891) is amended - (1) in subsection (a)— (A) by inserting “Under Secretary of Defense (Comptroller) and the” before “Under Secretary of Defense for Research and Engineering”; and (B) by striking “a budget display” and inserting “one or more budget displays”; (2) in subsection (b), by striking “The budget display” and inserting “The budget displays”; and (3) in subsection (d), by striking “The budget display” and inserting “The budget displays”.</p>	Submitted in the FY2023 Budget Justification Materials in PE 0605502C (Small Business Innovation Research – MDA)
<i>FY04 National Defense Authorization Act (H.R. 1588) Report 108-354, pp. 30-31</i>	<p>BUDGET JUSTIFICATION MATERIALS</p> <p>In the budget justification materials submitted to Congress in support of the Department of Defense budget for any fiscal year (as submitted with the budget of the President under section 1105(a) of title 31), the Secretary of Defense shall specify, for each ballistic missile defense system element for which the Missile Defense Agency is engaged in planning for production and initial fielding, the following information: (1) The production rate capabilities of the production facilities planned to be used for production of that element. (2) The potential date of availability of that element for initial fielding. (3) The estimated date on which the administration of the acquisition of that element is to be transferred from the Director of the Missile Defense Agency to the Secretary of a military department.</p>	MDA to provide Missile Defense Accountability Report (MDAR) to Congressional Defense Committees. The MDAR partially satisfies the requirement through its schedule baseline. Exhibit P-21 – Budget Production Schedule
<i>FY04 National Defense Authorization Act (H.R. 1588), Report 108-354, pp. 30-31</i>	<p>FUTURE-YEARS DEFENSE PROGRAM</p> <p>The Secretary of Defense shall include in the future-years defense program submitted to Congress each year under section 221 of this title an estimate of the amount necessary for procurement for each ballistic missile defense system element, together with a discussion of the underlying factors and reasoning justifying the estimate.</p>	Exhibit P-21 – Budget Production Schedule

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ACRONYMS	DEFINITION
A	
A&A	Assessment and Authorization
A&AS	Advisory and Assistance Services
AA	Adversarial Assessment
AAEA	Aegis Ashore Engineering Agent
AAMDS	Aegis Ashore Missile Defense System
AAMDTC	Aegis Ashore Missile Defense Test Complex
AAW	Anti-Air Warfare
ABEWS	Airborne Early Warning System
ABMA	Automated Battle Management Aides
ACAS	Assured Compliance Assessment Solution
ACB	Advanced Capability Build
ACD	Advance Capability Development; Adversarial Cybersecurity Developmental Test and Evaluation
ACD&P	Advanced Component Development & Prototypes
ACL	Achievable Capabilities List
ACPA	Advanced Concepts and Performance Assessment
ACS	Aegis Combat System
ADP	Adversary Data Package
ADPE	Automatic Data Processing Equipment
AEDC	Arnold Engineering Development Center
AEU	Antenna Equipment Unit
AFB	Air Force Base
AGB	Alternate Glide Body
AI/ML	Artificial Intelligence/Machine Learning
AI&T	Assembly, Integration and Test
AIDPMO	Army Intermodal and Distribution Platform Management Office
AIE	Annual Integration Event
ALC	Army Logistics Center
ALO	Aegis Light-Off
AMCOM	Army Aviation and Missile Command
AMDR	Air and Missile Defense Radar
AMRDEC	Aviation and Missile Research, Development and Engineering Center
AN/SPY-1	Joint Army-Navy equipment nomenclature: S -Water (surface ship), P - Radar, Y - Surveillance (target detecting and tracking) and Control (fire control and/or air control), 1 - model number [AN/SPY-1 is an equipment nomenclature, not an Acronym]
AN/TPY-2	Joint Army-Navy equipment nomenclature: T - Transportable (ground), P - Radar, Y - Surveillance (target detecting and tracking) and Control (fire control and/or air control), 2 - model number [AN/TPY-2 is an equipment nomenclature, not an Acronym]
AO	Authorizing Official
AOA	Analysis of Alternatives
AOR	Area of Responsibility
APLITS	Approved Products List Integrated Tracking System
APNT	Assured Position Navigation and Timing
ARAV	Aegis Readiness Assessment Vehicles
ARE	Aegis Remote Engagement
ARSTRST	(US) Army Forces Strategic Command
ASD(R&E)	Assistant Secretary of Defense Research and Engineering
ASP	Advanced Signal Processor
ASUW	Anti-Surface Warfare
AT&L	Acquisition, Technology and Logistics
ATD	Advanced Technology Development; Assistant to the Director; Assistant Test Directors
ATEC	Army Test and Evaluation Command
ATK	Alliant Techsystems, Inc.
ATO	Authorization to Operation; Authority to Operate
AUPP	Average Unit Production Price
AUR	All Up Round
AVMC	Aviation and Missile Center
AWS	Arrow Weapon System; AEGIS Weapon System
B	

ACRONYMS	DEFINITION
BAA	Broad Agency Announcement
BAM	BMDS Asset Management
BBR	BOA Baseline Release
BCM	BMDS C2BMC Model
BCN	BMDS Communications Network
BL	Baseline
BM	Battle Management; Ballistic Missile
BMC	Battle Management Center
BMD	Ballistic Missile Defense
BMDQ	Ballistic Missile Defense Qualification
BMS	Building Management System
BMDS	Ballistic Missile Defense System
BMDCCS CS	BMDS Computing Suite, Computing Suite Upgrade
BNOSC	BMDS Network Operations and Security Center
BOA	BMDS Overhead Persistent Infrared Architecture
BoD	Boards of Director; Beneficial Occupancy Date
BORRS	BMDS Operational Readiness Reporting System
BSC	Battlespace Characterization
BSO	BMDS Safety Officers
BST	BMDS System Track
BTS	BMDS Test Site
BVT	Boost Vehicle Test
BWO	BMDS Watch Officers
C	
C-UAS	Counter-Unmanned Aerial Systems
C&A	Certification and Accreditation
C/FFP	Cost Fixed Firm Price
C2	Command and Control
C2BMC	Command and Control, Battle Management, and Communications
C2P	Command and Control Processor
C4I	Command, Control, Communications, Computers and Intelligence
CA	Certification Authority
CANES	Consolidated Afloat Networks and Enterprise Services
CAPE	Cost Assessment and Program Evaluation
CARD	Cost Analysis and Requirements Document
CBAU	Consolidated Booster Avionics Upgrade
CCA	Circuit Card Assemblies
CCaR	Comprehensive Cost and Requirements
CCC	C2BMC Command Center
CCDC	Capabilities Development Command
CCM	Counter Counter-Measures
CCMD	Combatant Commander; Combatant Commands
CD	Concept Descriptions; Cobra Dane
CDA	Continuous Digital Assessment
CDI	Continuous Development and Integration
CDR	Critical Design Review
CDS	Cross Domain Solution
CEC	Critical Engagement Condition; Cooperative Engagement Capability
CECOM	Communications Electronics Command
CENAU	Corps of Engineers North Atlantic Union
CENTCOM	Central Command
CERT	Computer Emergency Response Team
CEU	Cooling Equipment Unit
CFBLNet	Combined Federated Battle Laboratories Network
CFTE	Combined Flying Training Event
CG	US Navy ship hull classification symbol for - Guided Missile Cruiser [CG is not an Acronym]
CI	Counterintelligence
CI/CAT	Continuous Integration/Continuous Agile Testing
CIC	Counterintelligence in Cyberspace

ACRONYMS	DEFINITION
CID	Critical Item Development; Combat Identification
CIDS	Critical Items Description Specifications
CIL	Computer in the Loop
CIO	Chief Information Officer
CIP	Capability Insertion Packages
CKV	Common Kill Vehicle
CLAN	Classified Local Area Network
CLE	Command and Launch Equipment
Cloud ECART	Electronic Content and Records Tool
Cloud LMS	Electronic Learning Management System
CLS	Contractor Logistics Support
CMD-H	Cruise Missile Defense of the Homeland
CND	Computer Network Defense
CNDSP	Computer Network Defense Service Provider
CNET	Classified Network
COCOM	Combatant Command
COE	Common Operating Environment
COMNET	Communications Network
COMSEC	Communication Security
CONOPS	Concept of Operations
CONPLANS	Contingency Plans
CONUS	Continental United States
COOP	Calibrated Orbiting Objects Program ; Cyber Continuity of Operations
CoS	Colorado Springs
COTS	Commercial Off The Shelf
CP	Capability Packages
CPU	Congressional Plus Up
CPAF	Cost Plus Award Fee
CPCR	Computer Program Change Request
CPFF	Cost Plus Fixed Fee
CPI	Critical Program Information
CPIF	Cost Plus Incentive Fee
CPTS	Computer Program Test Site
CS	Combat System
CSCS	Center for Surface Combat Systems
CSFS	Clear Space Force Station
CSS	Contractor Support Services
CSSC	C2BMC System Support Center
CSSP	Cyber Security Service Provider
CSTB	Combat System Test Bed
CTB	C2BMC Test Bed
CTM	Core Truth Models
CTTO	Concurrent Test, Training and Operations
CTV	Control Test Vehicle
CTV-01	Controlled Test Vehicle-01
CU	Capability Upgrade
CUI	Controlled Unclassified Information
CVI	Cooperative Vulnerability Identification
CVPA	Cyber Vulnerability Penetration Assessment
CVT	Controls Validation Testing
CY	Calendar Year
D	
DA	Defend Area
DAA	Defense Appropriations Act; Designated Approving Authority
DAC	Divert Attitude Control
DACS	Divert and Attitude Control System
DARPA	Defense Advanced Research Projects Agency
DASD(DT&E)	Deputy Assistant Secretary of Defense, Developmental Test and Evaluation
DAU	Defense Acquisition University

ACRONYMS	DEFINITION
DCD	Defense Courier Division
DDG	US Navy ship hull classification symbol for - Guided Missile Destroyer [DDG is not an Acronym]
DDL	Dual-band Data Link; Digital Data Link
DECC	Defense Enterprise Computing Center
DEDD	Directed Energy Demonstrator Development
DESH	MDA/DESH - Missile Defense Agency (MDA)/Modeling & Simulation Huntsville (DESH) [office symbol within MDA Engineering Directorate, not an Acronym]
DETSIM	Detection Simulation
DEVSECOPS	Development, Security and Operations
DFAR	Defense Federal Acquisition Regulation
DHP	Data Handling Plan
DIA	Defense Intelligence Agency
DIACAP	DoD Information Assurance Certification and Accreditation Process; DoD Information Assurance Certification and Accreditation Program
DIB	Defense Industrial Base
DISA	Defense Information Systems Agency
DISN	Defense Information System Network
DL	Data Link
DLA	Defense Logistics Agency
dLNA	Digital Low Noise Amplifier
DMS	Diminishing Manufacturing Sources
DMSMS	Diminishing Manufacturing Sources and Material Shortages
DNOSC	Directorate Network Operations Security Center
DO	Delivery Order
DoD	Department of Defense
DODIC	DoD Identification Code
DODIN	DoD Information Network
DoG	Defense of Guam
DOT&E	Director of Operational Test and Evaluation
DOTMLPF	Doctrine, Organization, Training, Material, Leadership and Education, and Personnel and Facilities
DPALS	Diode Pumped Alkali Laser System
DPAS	Defense Property Accountability System
DREN	Defense Research Engineering Network
DREX	Digital Receiver/Exciter
DRSN	Defense Red Switch Network
DSC	Development and Sustainment Contract
DSCS	Defense Satellite Communication System
DSDD	Discrimination Sensor Demonstrator Development
DSS	Defense Security Service
DSWS	David's Sling Weapon System
DT&E	Developmental Test and Evaluation
DTRA	Defense Threat Reduction Agency
DTS	Distributed Training System
DTSS	Directorate of Test Support System
DVSG	DISN Video Services Global
DW	Defense Wide
DWCF	Defense Working Capital Fund
E	
ET-17	Engineering Topic 17
ET&E	Engineering Test and Evaluation
E/CCA	Element/Component Characteristics for Analysis
EA	Executing Agent; Engineering Assessment
EA/EP	Electronic Attack/Electronic Protection
EADSIM	Extended Air Defense Simulation
EAL	Evaluated Assurance Level
EAS	Eareckson Air Station
ECART	Electronic Content and Records Tool
ECE	Element Cybersecurity Experiments
ECP	Engineering Change Proposal

ACRONYMS	DEFINITION
ECS	Element Capability Specification; Engineering Change Summary
EDISS	End to end Digital Integrated System-level Simulation
EDISS	Enterprise Digital Integrated System Simulation
EDP	Early Digital Product
EE	Engineering Evaluation
EEU	Electronics Equipment Unit
EHF	Extremely High Frequency
EIS	Environmental Impact Statement
EKV	Exoatmospheric Kill Vehicle
eMASS	Enterprise Mission Assurance Support Service
EMD	Engineering Manufacturing Development
EME	Electromagnetic Environment
EMRL	Engineering and Manufacturing Readiness Level
EO/IR	Electro-Optical/Infrared
EOC	Engagement Operations Center
EOQ	Economic Order Quantity
EOQ AP	Economic Order Quantity Advance Procurement
EoR	Engage-on-Remote
EP	Electronic Protection
EPAA	European Phased Adaptive Approach
EPFR	Element Post Flight Reconstructions
EQLB	Executive Quick Look Briefing
ERB	Engineering Review Board
ERT	Element Review Team
ES	Elevated Sensor; Element Specification
ESI	External System Interface; Enterprise Software Initiative
ESL	External Sensors Lab; Enterprise Sensors Laboratory
ESOH	Environmental, Safety and Occupational Health
ESPN	Enterprise Sensor Processing Node
ESS	Electronic Security System; Endpoint Security Services
ET	Embedded Test
ETEDDS	End to End Distributed Development System
EUCOM	European Command
EVMS	Earned Value Management System
EWR	Early Warning Radar
EWS	Enterprise Work Stations
F	
FAR	Federal Acquisition Regulation
FBI	Federal Bureau of Investigation
FBM	Forward Base Mode
FCL	Fiber Combined Laser
FCS	Fire Control Section; Fire Control System (SPY/FCS - AN/SPY radar Fire Control System)
FDE	Force Developers Evaluation
FENSR	Force Engagement and Sensor Coordination - Raid
FFP	Firm Fixed Price
FFPLOE	Firm Fixed Prices Level of Effort
FFRDC	Federally Funded Research and Development Center
FGA	Fort Greely, Alaska
FGACC	Fort Greely, Alaska Communication Center
FILEMAN	File Manager
FISMA	Federal Information Security Management Act
FMA	Foreign Material Acquisition; Foreign Military Asset
FMS	Foreign Military Sales
FOC	Full Operational Capability
FOIA	Freedom of Information Act
FPA	Focal Plane Array
FPAF	Fixed Price Award Fee
FPEPA	Fixed Price with Economic Price Adjustment
FPIF	Fixed Price Incentive Firm

ACRONYMS	DEFINITION
FPIS	Fixed Price Incentive Successive
FQT	Formal Qualification Testing
FRACAS	Failure Reporting, Analysis, and Corrective Action System
FRCS	Facility-related control systems
FSRM	Facilities, Sustainment, Restoration, and Modernization
FT	Flight Test
FTCN	Flight Test Communication Network
FTG	Flight Test GMD
FTM	Flight Test Mission
FTT	Flight Test - THAAD
FY	Fiscal Year
FYDP	Future Years Defense Program; Fiscal Year Defense Plan
G	
GBI	Ground Based Interceptor
GBR-P	Ground Based Radar Prototype
GCC	Geographic Combatant Commands
GCN	Global Command Network; GMD Communications Network
GDIL	GMD Development Integration Lab
GDS	Guam Defense System
GEM	Global Engagement Manager; Guidance Enhancement Missiles (PATRIOT)
GEO	Geosynchronous Earth Orbits
GEP	Ground Entry Point
GEU	Guidance Electronics Unit
GFC	GMD Fire Control
GFC / C	GMD Fire Control and Communications
GFE	Government Furnished Equipment
GFI	Government Furnished Information
GFS	Government Furnished Services
GM	Ground-based Midcourse
GMD	Ground-based Midcourse Defense
GNC	Guidance, Navigation and Control
GNOSC	Global Network Operations and Security Center
GOTS	Government Off-The-Shelf
GP	Green Pine
GPI	Glide Phase Intercept
GPS	Global Positioning System
GS	Ground Systems; Guidance Section
GSA	General Service Administration
GSIL	GMD Software Integration Lab
GSS	Global Combatant Command
GT	Ground Test
GTD	Ground Test Distributed
GTI	Ground Test Integrated
GTISS	Ground Test Integrated System-level Simulation
GTRI	Georgia Tech Research Institute
GTX	Ground Test (Element to Element)
GWS	GMD Weapon System
H	
HA	Hit Assessment
HALO	High Altitude Observatory
HARRT	HMD Risk Reduction and Testing
HBTS	Hypersonic and Ballistic Tracking Space Sensor
HD	Hypersonic Defense
HDAWG	Homeland Defense Architecture Working Group
HDR-H	Homeland Defense Radar - Hawaii
HEMP	High Altitude Electromagnetic Pulse
HEMTT	Heavy Expanded Mobility Tactical Truck
HEO	Highly Elliptical Orbits
HES	Homeland Defense Radar - Hawaii Equipment Shelter

ACRONYMS	DEFINITION
HGV	Hypersonic Glide Vehicle
HIL	Human-in-the-Loop; Hardware-in-the-Loop
HLD	Homeland Defense
HMD	Hypersonic Missile Defense
HMI	Human Machine Interface
HRTS	Human Resource Tracking System
HRTS/PTS	Human Resource Tracking System/Personnel Tracking System
HTT	Hardened Transportable Terminal
HVAC	Heating, Ventilation, and Air Conditioning
HWIL	Hardware-in-the-loop
I	
I&T	Integration & Test
IA	Information Assurance
IAI	Israel Aircraft Industries; Israel Aerospace Industries
IAM	Information Assurance Manager
IAMD	Integrated Air and Missile Defense
IAR	Intra-agency Acquisition Review
IAVA	Information Assurance Vulnerability Alerts
IAW	In Accordance With
IBCS	Integrated Battle Command System
IBR	Integrated Baseline Review
IC	Intelligence Community
ICBM	Intercontinental Ballistic Missiles
ICD	Interface Control Document
ICP	Interface Change Proposal
ICS	Industrial Control System
ICTA	Information Technology Networks and Systems
IDDE	Integrated Digital Data Environment
IDIQ	Indefinite Delivery Indefinite Quantity
IDMP	Integrated Data Management Plan
IDS	Interface Description Specifications
IDT	In-Flight Interceptor Communications System Data Terminal
IEP	Integrated Engagement Plan
IESS	Integrated Electrical Security System
IFICS	In-Flight Interceptor Communications System
IFC	Integrated Fire Controls
IFCN	Integrated Fire Control Network
IHLD	Improved Homeland Defense Interceptors
ILP	Initial Lot Production
ILS	Integrated Logistics Support
IM	Insensitive Munitions
IMAP	Integrated Master Assessment Plan
IMD	Integrated Missile Defense
IMDO	Israeli Missile Defense Organization
IMoD	Israeli Ministry of Defense
IMPACT	Information Management Program Activity Control Tool
IMTP	Integrated Master Test Plan
IMU	Inertial Measurement Unit
INFOSEC	Information Security
INSURV	Inspection and Survey
IOC	Initial Operational Capability
IPR	In-Process Review
IPT	Integrated Product Team
IR	Infra-red
IRBM	Intermediate-Range Ballistic Missiles
IRES	Integrated Research & Development for Enterprise Solutions
IRD	Initial Requirement Documents
IRM	Information Resources Management
ISA	Installation Support Agreements

ACRONYMS	DEFINITION
ISA&I	Israeli System Architecture and Integration
ISCM	Information System Continuous Monitoring
ISF	In-service fleet
ISIM	International Simulation
ISSM	Information Systems Security Manager
ISSO	Information System Security Officer
ISSAM	Information Assurance System Security Manager
IST BAA	Innovation, Science, and Technology Broad Agency Announcement
ISTC	Integrated Software Test Center
IT	Integrated Test; Information Technology
ITB	Institutional Training Base; Israeli Test Bed
ITC	Integration and Test Contract
IV&V	Independent Verification and Validation
IWS	Indications and Warning System; Integrated Warfare Systems
J	
JADC2	Joint All Domain Command and Control
JEON	Joint Emergent Operational Need
JEWL	Joint Early Warning Laboratory
JFCC	Joint Functional Component Command
JFCC-IMD	Joint Functional Component Command - Integrated Missile Defense
JHU	John Hopkins University
JHU/APL	John's Hopkins University/Applied Physics Laboratory
JIAMDO	Joint integrated Air and Missile Defense Organization
JIE	Joint Information Environment
JITC	Joint Interoperability Test Command
JLVC	Joint Live Virtual Constructive
JMAC	Joint Multi-Platform Advanced Combat Identification
JNIC	Joint National Integration Center, Schriever AFB, CO
JRDC	JNIC Research and Development Contract
JRMET	Joint Reliability and Maintainability Evaluation Team
JSP	Joint Service Provider
JTIDS	Joint Tactical Information Distribution System
JTIFC	Joint Tactical integrated Fire Control
JTMC	Joint Track Management Capability
JWSP	Joint Warfighter Support Program
K	
KIDD	Kinetic Intercept Debris Distribution
KP	Knowledge Points
KTF	Kauai Test Facility
KV	Kill Vehicle
KW	Kinetic Warhead
L	
LBSM3	Land Based SM-3 (early name for Aegis Ashore)
LCC	Launcher Control Center; Local Control Center
LES	LRDR Equipment Shelter
LHCT	Long Haul Communications Transport
LHD	Layered Homeland Defense
LLNL	Lawrence Livermore National Laboratory
LM	Lockheed Martin
LMMT	Link Monitoring and Management Tool
LM-RMS	Lockheed Martin Rotary and Mission Systems
LMSSC	Lockheed Martin Space Systems Company
LNA	Low Noise Amplifiers
LNO	Liaison Officer
LoR	Launch on Remote
LRDR	Long Range Discrimination Radar
LRDS	Long Range Detection Suite
LRS&T	Long Range Surveillance and Track

ACRONYMS	DEFINITION
LRU	Line Replaceable Unit'
LSC	Launch Site Controller
LSE	Launch Support Equipment
LSS	Launch Support Systems
LTPO	Lower Tier Project Office
LVC	Live, Virtual, Constructive
M	
M&S	Materials and Structure; Modeling and Simulation
MAIDIQ	Multi-Awarded IDIQ
MAIS	Major Automated Information System
MAJCOM	Major Command
MAP	MDA Assurance Plan; MDA Assurance Provisions
MAR	MDA Assurance Representative
MARAD	Maritime Administration
MARS	Modular Analysis and Reporting Suite
MBIT	Missile Built in Tests
MBRV	Modified Ballistic Reentry Vehicle
MBSE	Model Based Systems Engineering
MCC-T	Mission Control Center - Targets
MCF	Mission Control Facility
MCS	Mobile Communications Suite
MD	Missile Defense
MDA	Missile Defense Agency
MDACNET	Missile Defense Agency Classified Net
MDAHQ	Missile Defense Agency Headquarters
MDAP	Major Defense Acquisition Program
MDAR	Missile Defense System Accountability Report
MDDC	Missile Defense Data Center
MDDE	Missile Defeat and Enhancements
MDEB	Missile Defense Executive Board
MDIOC	Missile Defense Integration Operations Center
MDOC	Missile Defense Operations Centers
MDR	Mission Data Review
MDS	Missile Defense System
MDSC	Missile Defense Space Center
MDSEA	Missile Defense Space Enterprise Architecture
MDSEC	Missile Defense Space Experimentation Center
MDST	Missile Defense Space Warning Tool
MEDDS	Mission Execution and Display Distribution System
MEDIC	Multi-band Electronic attack Digital Injection Capability
MEIT	Multi-Element Integration and Test
MFRL	Modification and Fielding Requirements List
MFU	Missile Firing Unit
MHA	Management Headquarters Activity
MICS	MDA Integrated Communications Services
MiDAESS	Missile Defense Agency Engineering and Support Services
MILCON	Military Construction; Military Construction funding (type of Appropriation)
MILSATCOM	Military Satellite Communications
MIL-STD	Military Standards
MIP	Master Integration Plan
MIPR	Military Interdepartmental Purchase Request
MIS	MDSDC Interchange System; MDSEC Interchange System
MISL	Missile Intelligence Secure Link
MIT	Miniature Interceptor Technology; Massachusetts Institute of Technology
MIT/LL	Massachusetts Institute of Technology, Lincoln Laboratory, Lexington, MA
MMR	Multi-Mission Radar
MMU	Mass Modal Unit
MOC	Missile Defense Agency Operations Center
MOKV	Multi Object Kill Vehicle

ACRONYMS	DEFINITION
MOU	Memorandum of Understanding
MPAN	Missile Power Application Non-Launch
MPG	Mission Processing Group
MPL	ManPower Loading
MRBM	Medium-Range Ballistic Missiles
MRP	Missile Reprogramming
MRP-T	Missile Round Pallet-Transportable
MS	Mobile Sensor
MSC	Military Sealift Command; Mission Support Center
MSCT	Multi-Source Correlator Tracker
MSE	Missile Segment Enhancement
MSI	Mobile Sensor Integration
MSVP	Missions Specific Vendor Plug-in
MTC2	Maritime Command and Control
MTOE	Modified Table of Organization and Equipment
MVC	Mission Voice Communications
MW/MD	Missile Warning/Missile Defense
MW/SS	Missile Warning/Space Surveillance
MYP	Multi-Year Procurement
N	
NATO	North Atlantic Treaty Organization
NAVFAC	Naval Facilities Engineering Command
NAVSEA	Naval Sea Systems Command
NAWC	Naval Air Warfare Center
NCR	National Capital Region
NDAA	National Defense Authorization Act
NEPA	National Environmental Policy Act
NGI	Next Generation Interceptors
NGAS	Northrop Grumman Aerospace Systems
NGSS	Northrop Grumman Space Systems
NICE	National Initiative for Cybersecurity Education
NIPRNET	Non secure Internet Protocol Router Network
NIST	National Institute of Standards and Technology
NORAD	North American Aerospace Defense Command
NORTHCOM	Northern Command
NOSC	Network Operations Security Center
NRL	Naval Research Laboratory, Washington, DC
NSA	National Security Agency
NSWC	Naval Surface Warfare Center
O	
O&M	Operations and Maintenance
O&S	Operations and Sustainment
OA	Open Architecture: Operational Acceptance
OCB	Operational Capability Baseline
OCL	OPIR Laboratories
OCO	Overseas Contingency Operations
OCONUS	Outside of CONUS
OEM	Original Equipment Manufacturer
OGA	Other Government Agency
OMB	Office of Management and Budget
OPIR	Overhead Persistent Infrared
OPLAN	Operations Plan
OPSEC	Operations Security
OPTISIG	Optical Signatures In-Line Generator
OQE	Objective Qualitative Evidence
ORNL	Oak Ridge National Laboratory
OSC	Operations Support Center; Optical Signatures Code
OSC/OPTISIG	Optical Signatures Code/Optical Signature Inline Generator
OSD	Office of the Secretary of Defense

ACRONYMS	DEFINITION
OSF	Objective Simulation Framework
OSH	Occupational Safety and Health
OSI	Open Systems Architecture Signal Injectors
OSM	Object Sighting Message; Open Systems Architecture Sensor Models
OSPT	Operations Support Planning Team
OTA	Operational Test Agencies
OUSD/AT&L	Office of Under Secretary of Defense/Acquisitions, Technology and Logistics
P	
P&P	Policy and Procurement
PA	Performance Assessments; Project Arrangement
PAA	Phased Adaptive Approach
PAAWNS	Protected Anti-Jam/Anti-Scintillation Wideband Net-Centric System
PAC-3	Patriot Advanced Capability-3
PACOM	Pacific Command
PA IDT	Phased Array IDT
PATRIOT	Phased Array Tracking Radar Intercept on Target
PAV	Performance Assessment and Verification
PB	President's Budget
PCIL	Prime Consolidated Integration Lab
PCL	Prioritized Capabilities List
PCO	Procurement Contracting Office
PCRSS	Pacific Collector Range Safety System
PDC	Power Distribution Centers
PDI	Pacific Deterrence Initiative
PDR	Preliminary Design Review
PDS	Power Distribution System
PE	Program Element
PEELS	Parametric Endo/Exo-atmospheric Lethality Simulation
PEO IWS	Program Executive Office - Integrated Warfare Systems
PFR	Post Flight Reconstruction
PIA	Post Intercept Assessment
PID	Post Intercept Debris
PIDS	Prime Item Development Specifications
PLET	Phenomenology, Lethality, Environment, Threat
PM	Program Manager
PM/IAM	Program Manager/Information Assurance Manager
PMAP	Process Mission Assurance Plan
PMDCATS	Program Manager - Communications and Transmission Systems
PME	Primary Mission Equipment
PMI	Preventative Maintenance Inspection
PMP	Parts, Materials and Processes
PMPCB	Parts, Materials, and Process Board Requirements
PMRF	Pacific Missile Range Facility, Barking Sands, Kauai, HI
PM SHIELD	Project Manager for Short and Intermediate Effectors for Layered Defense
PMT	Pre-Mission Test
PNT	Positioning, Navigation and Timing
POA&M	Plan of Action and Milestones
POC	Point of Contact
PoP	Period of Performance
PPU	Prime Power Unit
PRIDE	Program Resource Internet Database Environment
PRR	Production Readiness Review
PWS	Program-Wide Support
PY	Prior Year
Q	
QLIK Sense	Missile Defense Agency Enterprise Data Visualization Tool
QRT	Quick Response Team
QSMA	Quality Safety and Mission Assurance

ACRONYMS	DEFINITION
R	
R&C	Readiness and Control
RAFU	Radar Field Upgrade
RAM-T	Reliability, Availability, and Maintainability and Testability
RAR	Risk Assessment Report
RASP	Rapid Scenario Prototype
RCCTO	Rapid Capabilities and Critical Technologies Office
RCS	Radar Cross Section
RDC	Radar Development Contract
RDEC	Research, Development, and Engineering Center
RDT&E	Research, Development, Test & Evaluation/Engineering
RECS	Research and Development Enterprise Collaboration Services
RF	Radio Frequency
RFA	Requests for Analyses
RFI	Requests for Information
RFP	Request for Proposal
RFT	Requests for Allied Participations in Tests
RKV	Redesigned Kill Vehicle
RMF	Risk Management Framework
RTS	Ronald Reagan Test Site, Kwajalein, Marshall Islands
RV	Reentry Vehicle
S	
SAF	Secretary of the Air Force
SAMD	Space Applications for Missile Defense
SAP	Special Access Programs
SAS	Sub-array suites
SATCOM	Satellite Communications
SBIR	Small Business Innovative Research;
SBIR/STTR	Small Business Innovative Research/Small Business Technology Transfer
SBIRS	Space Based Infrared System; Space-Based Infrared Sensors
SBOM	Software bill of materials
SBS	Sea Based Systems
SBT	Sea Based Terminal
SBX	Sea Based Test X-Band Radar
SC2RM	System-level Supply Chain and Cyber Risk Management
SCA	Security Controls Assessment (or Assessor)
SCADA	Supervisory Control And Data Acquisition
SCARE	Software Change Analysis Review Environment
SCG	Security Classification Guides
SCIF	Sensitive Compartmented Information Facility
SCMS	Site Control Monitoring System
SCN	Specification Change Notices; System Change Notices
SCOUT	Simultaneous Correlation of Unambiguous Tracks
SCR	SM-3 Cooperative Development; System Capability Review
SCRM	Supply Chain Risk Management
SCTM	Security Controls Traceability Matrix
SDA	Space Domain Awareness
SDR	System Design Review; Software Design Review
SE&I	Systems Engineering and Integration
SECDEF	Secretary of Defense
SEI	Systems Engineering & Integration
SGP	Super Green Pine
SI	Special Instruction
SIAO	Senior Information Assurance Officer
SIAO/CA	Senior Information Assurance Officer (SIAO)/Certification Authority (CA)
SIEM	System Information and Event Management
SIGNIT	Signal Intelligence
SIPRNET	Secret Internet Protocol Router Network
SISO	Senior Information Security Officer

ACRONYMS	DEFINITION
SITR	System Engineering, Integration, Test, and Readiness
SIU	Simulation Interface Units
SIV	Silo Interface Vault
SKA	Space-based Kill Assessment
SLD	System Level Integrated Discrimination
SLEP	Service Life Extension Program
SM	Standard Missile
SM-3	Standard Missile -3
SMAC	Shot Management Analysis Cell
SMDC	Space and Missile Defense Command, U.S. Army
SMDC/ARSTRST	Space and Missile Defense Command/Army Forces Strategic Command
SME	Subject Matter Expert
SNL	Sandia National Lab
SOC	Space Object Catalog
SOI	Space Object Identification
SP	Special Publication
SPAWAR	Naval Space and Warfare Command; Space and Naval Warfare Systems Command
SPFR	System Post Flight Reconstruction
SPMT	System Pre Mission Test
SpOC	Space Operations Command
SPPN	Special Purpose Processing Node
SPS	Standard Procurement System
SRBM	Short-Range Ballistic Missiles
SRBMD	Short Range Ballistic Missile Defense
SRD	Systems Requirements Document
SRP	Stockpile Reliability Program
SRR	System Requirements Review; Software Readiness Review
SS/CPAF	Soul Source/ Cost Plus Award Fee
SS/CPFF	Soul Source/ Cost Plus Fixed Fee
SSA	Space Situational Awareness
SSC	System Security Concept
SSF	Single Stimulation Framework
SSL	Space Sensor Layer
SSN	Space Surveillance Network
SSO	Special Security Office
STEM	Science, Technology, Engineering, and Mathematics
STOC	System Test and Operations Center
STRATCOM	Strategic Command
STSS	Satellite Tracking and Surveillance System; Space Tracking and Surveillance System
STTR	Small Business Technology Transfer
SWDC	Specialized Warfighter Development Contract
SWES	Software Evaluation Station
SWIR	Software Increment Reviews
SWUP	Software Upgrade
SYMP	Symposium
SysML	Systems Modeling Language
T	
T&E	Test and Evaluation
TACAIR	Technical Authority; Tactical Air
TALSS	THAAD Active Leak Sensor System
TC	Targets and Countermeasures

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Missile Defense Agency **Date:** April 2022

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 0603176C / <i>Advanced Concepts and Performance Assessment</i>
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COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
Total Program Element	115.886	49.069	40.000	16.737	-	16.737	17.265	17.693	18.109	18.477	Continuing	Continuing
MD71: <i>Advanced Concepts and Performance Assessments</i>	78.266	20.866	22.250	12.446	-	12.446	12.852	13.178	13.442	13.711	Continuing	Continuing
MD40: <i>Program-Wide Support</i>	3.629	0.592	0.607	0.608	-	0.608	0.608	0.605	0.680	0.699	Continuing	Continuing
MC71: <i>Cyber Operations</i>	33.991	27.611	17.143	3.683	-	3.683	3.805	3.910	3.987	4.067	Continuing	Continuing

Program MDAP/MAIS Code: 362

Note

Decrease from FY 2022 to FY 2023 reflects the FY 2022 Congressional add for improvements to Missile Defense System (MDS) cybersecurity, cyber operations, and hypersonic kill vehicles hardware in the loop upgrades.

A. Mission Description and Budget Item Justification

The Advanced Concepts and Performance Assessment (ACPA) Program Element delivers an integrated government concept definition, simulation, analysis, and testbed capability. ACPA's focus is on the exploration of novel and/or emerging capabilities that may have the potential to enhance the Missile Defense System (MDS). ACPA centralizes assessment of advanced missile defense technology and delivers insight into the performance of proposed concepts extending the Missile Defense Agency's (MDA) ability to address evolving threats for the Warfighter. Working with National Laboratories and Industry, MDA will invest in the analysis and assessment of directed energy system components to determine their effectiveness and capability for missile defense.

Subject Matter Experts (SMEs) provide independent assessments of government, university, and industry technology concepts, used in concert with systems engineering requirements, to support acquisition strategy decisions and define technology focus areas. The innovative structured concept definition and assessment methodology enables MDA to quickly validate focus areas, verify contractor technology solutions, and evaluate promising concepts in future MDS architectures. This methodology significantly enhances MDA's ability to assess technology concepts while decreasing the cost of development by:

- Delivering Independent model-based simulations of industry technology concepts to inform the systems engineering process
- Quantifying expectations through algorithms, digital simulation, hardware-in-the-loop, and/or demonstration events prior to expensive live fire test events
- Executing end-to-end testing of technology concepts integrated with weapon systems through Command and Control (C2) network architectures

Performance assessment of advanced concepts is the key enabler for Government evaluation of concepts in the earliest stages of technology development and maximizes the efficiency of technology investments. Performance assessment is used to quantify capability expectations of innovative concepts to counter the expanding regional and homeland missile threats, including ballistic and cruise missiles, and hypersonic vehicles.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Missile Defense Agency	Date: April 2022
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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 0603176C / <i>Advanced Concepts and Performance Assessment</i>
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B. Program Change Summary (\$ in Millions)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Previous President's Budget	49.410	15.800	0.000	-	0.000
Current President's Budget	49.069	40.000	16.737	-	16.737
Total Adjustments	-0.341	24.200	16.737	-	16.737
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	24.200			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	-0.341	0.000			
• Missile Defeat and Defense Enhancement	0.000	0.000	0.000	-	0.000
• Other Adjustment	0.000	0.000	16.737	-	16.737

Change Summary Explanation

Increase of \$24.2 million in FY 2022 provides the Congressional Plus-up for improvements to Missile Defense System (MDS) cybersecurity, cyber operations, and hypersonic kill vehicle hardware-in-the-loop test and assessment capability.

FY 2023 funding increase reflects the fact that the FY 2022 President's Budget request did not include out-year funding.

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency										Date: April 2022		
Appropriation/Budget Activity 0400 / 3					R-1 Program Element (Number/Name) PE 0603176C / Advanced Concepts and Performance Assessment				Project (Number/Name) MD71 / Advanced Concepts and Performance Assessments			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
MD71: Advanced Concepts and Performance Assessments	78.266	20.866	22.250	12.446	-	12.446	12.852	13.178	13.442	13.711	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Decrease from FY 2022 to FY 2023 reflects the FY 2022 Congressional add for hypersonic kill vehicles hardware in the loop upgrades.

A. Mission Description and Budget Item Justification

Advanced Concepts and Performance Assessments (ACPA) centralizes advanced technology concept modeling, simulation, software, and analysis. Integrating models of promising disruptive technical solutions into Missile Defense System (MDS) system-level simulations enables leadership to make data driven acquisition and technology investment decisions. Concepts that improve or adapt existing systems, that incorporate mobile sensors and interceptors that can be surged into zones of crisis or conflict are also deemed disruptive. Examples of efforts required to quantify the contribution of disruptive technologies may include, but not be limited to environmental experimentation and phenomenological characterization required for new sensor concepts, advanced weapon technologies, and emerging directed energy concepts. Using a technology development testbed approach, ACPA enables assessment and characterization of incremental technology improvements to inform requirements and evaluate missile defense elements, components, and/or sub-component technologies.

Coupled with characterization efforts, ACPA develops innovative left-through-right-of-launch modeling capabilities including physics-based representations in the areas of cyber, sensor technologies, lethality and survivability, communications, and sensor support. ACPA is focusing on Science and Technology initiatives which increase interoperability and leverages expertise with Allied and Service partners.

ACPA capitalizes on the innovation of small businesses, universities, Federally Funded Research and Development Centers (FFRDCs), and University Affiliated Research Centers (UARCs) to pursue a broad range of hardware, software, models, algorithms, trade studies, and analysis. These innovations bring together government developed models representing existing and future missile defense architectures, technology concepts, and advanced algorithms to provide detailed assessments of concept performance and inform investment decisions. These innovations, combined with a robust high performance computing infrastructure, provide a unique in-house government capability to demonstrate and assess technology concepts for emerging technology risk reduction, to mature concepts with laboratory, ground, and flight test data, and where possible, apply concepts in simulated exercises with weapon systems across representative communication architectures.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2021	FY 2022	FY 2023
Title: Advanced Concepts and Performance Assessment	11.366	12.250	12.446
Articles:	-	-	-
Description: Provide quantitative assessments that define the benefits of technology investments and inform requirements using an integrated concept definition, simulation, and performance analysis capability. A staff of diverse Subject Matter Experts			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency		Date: April 2022		
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603176C / Advanced Concepts and Performance Assessment	Project (Number/Name) MD71 / Advanced Concepts and Performance Assessments		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2021	FY 2022	FY 2023
<p>(SMEs) delivers independent government performance evaluations which exercise kinetic and non-kinetic missile defense concept representations against the broad spectrum of evolving threats.</p> <p>- Assess electro-optical infrared and advanced sensor technologies and quantify impacts on MDS</p> <p>- Provide independent government assessments of industry sensor, directed energy and weapon system technology concepts</p> <p>- Evaluate lethality impacts and weapons effectiveness of emerging concepts</p> <p>- Examine pathfinder solutions and demonstrate the utility of directed energy for missile defense</p> <p>- Study on-orbit satellite capabilities and contribution to defense against advanced threats</p> <p>- Assess and identify promising intercept capabilities across all phases of flight</p> <p>- Perform concept performance against emerging advanced threats including hypersonic threat testing scenarios</p> <p>- Mature advanced technology concepts in a testbed environment and through lab, ground, and flight demonstrations</p> <p>- Apply concepts in simulated exercises with weapon systems</p> <p>- Work with the MDS Architect and Missile Defense Agency (MDA) Systems Engineer to design concepts, build models and assess technology concepts' contributions to future MDS architectures</p> <p>- Develop and extend modeling techniques, including incorporation of artificial intelligence</p> <p>- Focus research and engineering activities from university and small business partners to identify suitable technology and concepts that improve MDS performance through a rapid innovation model based on an engineering test bed</p> <p>- Assess multi-domain data fusion concept for current or future weapon systems.</p> <p>Specific and/or unique accomplishments to each FY are as follows:</p> <p>FY 2022 Plans:</p> <p>- SEE ABOVE</p> <p>FY 2023 Plans:</p> <p>- SEE ABOVE</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement:</p> <p>N/A</p>				
Title: Hypersonic Hardware-in-the-Loop		9.500	10.000	0.000
Articles:		-	-	-
Description: Develop an independent government hypersonic testbed supporting assessment and maturation of industry and/or government technology approaches. Leverage existing facilities and extend ballistic/hypersonic kill vehicle hardware-in-the-loop (HWIL) by integrating with evolving hypersonic sensor HWIL capabilities. Provide a prototype platform consisting of technologies				

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency										Date: April 2022	
Appropriation/Budget Activity 0400 / 3				R-1 Program Element (Number/Name) PE 0603176C / Advanced Concepts and Performance Assessment				Project (Number/Name) MD71 / Advanced Concepts and Performance Assessments			
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)								FY 2021	FY 2022	FY 2023	
<p>necessary to evaluate the potential of new kill vehicle concepts to identify, track, and engage emerging threats; including vehicles with dynamically changing aerothermal signatures. Assess, mature, and integrate high-fidelity environmental truth models and/or representations for aerothermal, aero-optics and/or jet interaction for hypersonic flight environments to provide accurate simulations for digital scene injections into kill vehicle concept representations in HWIL facilities. Bolster prototype development and maturation by upgrading hypersonic HWIL capabilities through pathfinder process integrating agile continuous integration/continuous delivery capabilities.</p> <p>FY 2022 Plans: - SEE ABOVE</p> <p>FY 2023 Plans: N/A</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: Decrease from FY 2022 to FY 2023 reflects the FY 2022 Congressional add.</p>											
Accomplishments/Planned Programs Subtotals								20.866	22.250	12.446	
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• 0603180C: Advanced Research	29.621	47.966	22.023	-	22.023	22.758	23.296	23.851	24.335	Continuing	Continuing
Remarks											
D. Acquisition Strategy											
Employ various contracting strategies in a flexible manner to maximize the contribution to MDA. Execute through utilization of small businesses, leverage the Nation's engineering centers of excellence (FFRDCs and UARCs); generate cooperatives with other Government Agencies to provide concept modeling and assessment capability. This strategy uses agency and partner SMEs and government model-based assessments to inform Better Buying Power acquisition decisions.											

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency										Date: April 2022		
Appropriation/Budget Activity 0400 / 3					R-1 Program Element (Number/Name) PE 0603176C / Advanced Concepts and Performance Assessment				Project (Number/Name) MD40 / Program-Wide Support			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
MD40: Program-Wide Support	3.629	0.592	0.607	0.608	-	0.608	0.608	0.605	0.680	0.699	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

PWS contains non-headquarters management costs in support of MDA functions and activities across the entire MDS. These functions include Government Civilians and Contract Support Services. This effort provides integrity and oversight of the MDS as well as supports MDA in the development and evaluation of technologies that will respond to the changing threat. Additionally, PWS includes personnel to support global deployments performing deployment site preparation and activation, and provides facility capabilities for MDA Executing Agent locations worldwide. Other MDA wide costs include: physical and technical security; civilian drug testing; audit readiness; the Science, Technology, Engineering, and Mathematics (STEM) program; legal services and settlements; travel and agency training; office, equipment, vehicle, and warehouse leases; utilities and base operations across multiple geographic locations; commercial and ancillary facility services; management of all facility aspects regardless of lifecycle stage; supplies and maintenance; compliance with statutory environmental requirements; data and unified communications support; materiel and readiness and central property management of equipment; Facilities Sustainment, Restoration and Modernization (FSRM) program, (formerly Real Property Maintenance) to keep the Department's inventory of facilities in good working order; and similar operating expenses. PWS is allocated on a pro-rata basis across most Agency PEs and therefore fluctuates per PE by fiscal year based on the total Agency budget in that fiscal year.

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency										Date: April 2022		
Appropriation/Budget Activity 0400 / 3					R-1 Program Element (Number/Name) PE 0603176C / Advanced Concepts and Performance Assessment				Project (Number/Name) MC71 / Cyber Operations			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
MC71: Cyber Operations	33.991	27.611	17.143	3.683	-	3.683	3.805	3.910	3.987	4.067	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Decrease from FY 2022 to FY 2023 reflects the FY 2022 Congressional add for improvements to Missile Defense System (MDS) cybersecurity, and cyber operations.

A. Mission Description and Budget Item Justification

This project supports the monitoring and tracking of Cybersecurity mitigations as required in the Department of Defense (DoD) Instruction Number 8510.01, as amended which establishes Risk Management Framework (RMF) requirements for DoD IT. Funds in this project implement and sustain DoD-required RMF and associated Controls Validation Testing (CVT) activities, analysis of validation results, risk assessments and reviews of proposed Program Manager/Information Assurance System Security Manager (ISSAM) Plans of Action and Milestones for enabling modeling and simulation mission systems. This project captures the RMF documentation (artifacts, validation results, Information Assurance (IA) risk assessment results, and MDA authorizing official and chief information officer accreditation decisions) into the Defense Information Systems Agency's Enterprise Mission Assurance Support Service system. Hardware and software upgrades required to meet DoD standards are supported by funding in this project. Independent verification and validation team actions ensure the availability, integrity, authentication, confidentiality and non-repudiation of the MDA mission, test and administrative systems. Activities in the project are necessary to comply with the Federal Information Security Management Act.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2021	FY 2022	FY 2023
Title: Information Assurance / Cyber Network Defense	27.611	17.143	3.683
Articles:	-	-	-
Description: Funds Risk Management Framework (RMF), network defense, and information technology requirements including: <ul style="list-style-type: none"> - Conduct cybersecurity/IA engineering and architecture planning - Maintain hardware/software currency to meet DoD-mandated cybersecurity requirements - Support monitoring and tracking of Cybersecurity mitigations detailed in IT security plan of action and milestones (POAM) - Develop DoD RMF certification and accreditation packages - Conduct controls validation testing of systems and to provide POAM to mitigate IA deficiencies - Conduct annual IA reviews to assess compliance in implementing and maintaining IA controls 			
Specific and/or unique accomplishments to each FY are as follows:			
FY 2022 Plans:			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency		Date: April 2022	
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603176C / <i>Advanced Concepts and Performance Assessment</i>	Project (Number/Name) MC71 / <i>Cyber Operations</i>	
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2021	FY 2022
-Develop advanced cyber operations capabilities of the cyber secure information system architecture effort to support battle management and kill-chain optimization efforts. This work includes development and deployment activities maturing automation, security features, and integration of software. -Complete DOD cybersecurity discipline implementation plan to protect IT systems in a highly contested cybersecurity threat environment. <i>FY 2023 Plans:</i> - SEE ABOVE <i>FY 2022 to FY 2023 Increase/Decrease Statement:</i> Decrease from FY 2022 to FY 2023 reflects the FY 2022 Congressional add for improvements to Missile Defense System (MDS) cybersecurity, and cyber operations.			
Accomplishments/Planned Programs Subtotals		27.611	17.143
C. Other Program Funding Summary (\$ in Millions)			
N/A			
Remarks			
D. Acquisition Strategy			
N/A			

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Missile Defense Agency										Date: April 2022		
Appropriation/Budget Activity 0400: Research, Development, Test & Evaluation, Defense-Wide I BA 3: Advanced Technology Development (ATD)					R-1 Program Element (Number/Name) PE 0603180C I Advanced Research							
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
Total Program Element	178.208	29.621	47.966	22.023	-	22.023	22.758	23.296	23.851	24.335	Continuing	Continuing
MD25: Advanced Technology Development	173.808	28.879	47.135	21.223	-	21.223	21.957	22.500	22.955	23.415	Continuing	Continuing
MD40: Program-Wide Support	4.400	0.742	0.831	0.800	-	0.800	0.801	0.796	0.896	0.920	Continuing	Continuing
Program MDAP/MAIS Code: 362												

Note

Decrease from FY 2022 to FY 2023 reflects the FY 2022 Congressional adds for high-speed flight experiment testing, 3D printed high temperature nickel based alloys for hypersonic applications, Benzoxazine for high-mach system thermal protection and laser weapons optics technical risk mitigation. FY 2023 is a return to baseline funding levels.

A. Mission Description and Budget Item Justification

The Advanced Research program conducts leading edge advanced research and development to create and enable future missile defense capabilities. The Missile Defense Agency (MDA) executes this mission by capitalizing on the creativity and innovation of the brightest minds in our Nation's universities; small and large businesses; national laboratories; and collaborative research partnerships between allied countries, academic institutions, and industry. In accordance with identified Agency requirements and Warfighter needs, the program assesses and demonstrates the utility of emerging component technologies. After successful maturation and demonstration activities, the program facilitates transition of the technologies to the Missile Defense System through a Commercialization and Transition Office and other MDA programs.

B. Program Change Summary (\$ in Millions)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Previous President's Budget	35.024	21.466	0.000	-	0.000
Current President's Budget	29.621	47.966	22.023	-	22.023
Total Adjustments	-5.403	26.500	22.023	-	22.023
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	26.500			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	-5.000	0.000			
• SBIR/STTR Transfer	-0.403	0.000			
• Missile Defeat and Defense Enhancement	0.000	0.000	0.000	-	0.000
• Other Adjustment	0.000	0.000	22.023	-	22.023

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Missile Defense Agency		Date: April 2022
Appropriation/Budget Activity 0400: Research, Development, Test & Evaluation, Defense-Wide / BA 3: Advanced Technology Development (ATD)	R-1 Program Element (Number/Name) PE 0603180C / Advanced Research	
<p>Change Summary Explanation</p> <p>FY 2021 funding decrease reflects the reprogramming of a \$5.0 million Congressional Plus-up to the Defense Logistics Agency (DLA) for domestic supply of strategic metals. DLA was the intended recipient of the plus-up.</p> <p>Increase of \$26.5 million in FY 2022 provides the Congressional Plus-up for high-speed flight experiment testing, 3D printed high temperature nickel based alloys for hypersonic applications, Benzoxazine for high-mach system thermal protection and laser weapons optics technical risk mitigation.</p> <p>FY 2023 funding increase reflects the fact that the FY 2022 President's Budget request did not include out-year funding.</p>		

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency										Date: April 2022		
Appropriation/Budget Activity 0400 / 3					R-1 Program Element (Number/Name) PE 0603180C / <i>Advanced Research</i>				Project (Number/Name) MD25 / <i>Advanced Technology Development</i>			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
MD25: <i>Advanced Technology Development</i>	173.808	28.879	47.135	21.223	-	21.223	21.957	22.500	22.955	23.415	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Decrease from FY 2022 to FY 2023 reflects the FY 2022 Congressional adds for high-speed flight experiment testing, 3D printed high temperature nickel based alloys for hypersonic applications, Benzoxazine for high-mach system thermal protection and laser weapons optics technical risk mitigation. FY 2023 is a return to baseline funding levels.

A. Mission Description and Budget Item Justification

The Missile Defense Agency's (MDA) Advanced Technology Development Project pursues a broad range of emerging technologies targeted for application and insertion into the Missile Defense System (MDS). MDA explores potential new MDS capabilities by leveraging the creativity and innovation of the Nation's industry, universities, and national laboratories to conduct advanced technology development. MDA also pursues advanced technology development through cooperative international research agreements between U.S. and foreign universities of allied nations. The program manages the selection process and administers the Missile Defense Small Business Innovation Research (SBIR) program element (PE), 0605502C. SBIR topics and projects are selected annually based on needs across the MDS and executed in partnership with sponsoring intra-agency organizations. These mechanisms foster a cooperative environment between small businesses, prime contractors, and MDA elements to yield reduced cost and increased returns on investment for successful technology integration efforts.

MDA's Advanced Technology Development Project assesses the feasibility and technical performance of the advanced research and development efforts through in-house means and partnerships with Department of Defense and other government agency laboratories. MDA provides independent assessments, demonstration and experimentation environments, and other concept assessment capabilities. The output of the experimentation, demonstration, and laboratory efforts provide risk, transition feasibility, and performance assessments, concept assessment data and analysis, and an overall improvement in the state-of-the-art of advanced technology evaluation. The culmination of research, development, and assessment is the commercialization and transition of promising technologies into the MDS.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2021	FY 2022	FY 2023
Title: Advanced Research	28.879	47.135	21.223
Articles:	-	-	-
Description: This activity funds technology and research initiatives executed through continuous cycles of development, maturation, and assessment of component technologies identified by emerging weapon and sensor system concepts.			
Recurring tasks include:			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency		Date: April 2022	
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603180C / <i>Advanced Research</i>	Project (Number/Name) MD25 / <i>Advanced Technology Development</i>	
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2021	FY 2022
<ul style="list-style-type: none"> - Conduct systems engineering, integration, research, and materiel solution analysis to identify initiatives and technology to include missiles, sensors, and command and control components in the defense against current and future threats - Pursue advanced technology investments for defense against ballistic and non-ballistic hypersonic threats - Develop breakthrough technology and innovative solutions from private industry, qualified accredited educational institutions, and non-profit organizations to include: <ul style="list-style-type: none"> -- Additive manufacturing technology initiatives for interceptor propulsion and structural components -- Materials development, assessment, and processing techniques -- Advanced threat component technologies -- Electro-optical and infrared sensor and communication systems -- Radar and radio frequency communication systems -- Interceptor and space systems component technologies -- Left through right of launch integration - Assess and evaluate advanced technology investments to extract risk-reduction information and determine transition feasibility - Execute the Broad Agency Announcement addressing breakthrough technologies and innovative solutions from private industry, qualified accredited educational institutions, and non-profit organizations to include: <ul style="list-style-type: none"> -- Artificial intelligence related to machine learning, big data, and Decision Theory -- Computer Science, Signal and Data Processing -- Directed energy technology -- Future MDS concept development -- Kill Web Algorithms, Probability and Decision Theory -- Modeling and simulation -- Radar and radio frequency sensor systems -- Phenomenology - Utilize NanoSat technology demonstrations to conduct testing and reduce risk for new and advanced technologies for the MDS - Continue to assess incoming innovative technology whitepapers and pursue awards for those that align with Agency priorities and budget, emphasizing component technologies that address advanced threat challenges - Leverage university research opportunities including allied nations to enhance MDS advanced technology initiatives and build stronger relationships with allies and partners - Manage the selection process of SBIR and technology application programs to assist MDA funded technology developers in finding and entering technology transfer opportunities to missile defense applications <p>Specific and/or unique accomplishment to each FY are as follows:</p> <p>FY 2022 Plans:</p> <ul style="list-style-type: none"> - Assess incoming innovative technology whitepapers and pursue awards for those that align with Agency priorities and budget 			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency		Date: April 2022	
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603180C / <i>Advanced Research</i>	Project (Number/Name) MD25 / <i>Advanced Technology Development</i>	
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2021	FY 2022
<ul style="list-style-type: none"> - NanoSat Testbed Initiative: collect and analyze on-orbit mission data from communication architectures experiments, initiate next series of experimentation focused on improved engagement management techniques - High Temperature Seeker Window Assessment: Mature and evaluate seeker windows that support existing and future missions - Develop process for producing Ni powders and printing Ni-based alloys for hypersonics. Integrate production process that spans powder production through finished product in single machine. - Create new domestic production capacity for composite resin precursors chemicals. Become merchant-supplier of critical hypersonic material to the defense industrial base. - Develop design tools, processes, and assembly prototypes. Expand the current industrial supply base, reduce lead times, and costs of adaptive optic systems. - Develop and test new booster phase vehicle capable of hosting weapon system component technologies applicable to future interceptor systems and flying extended duration experiments in the hypersonic domain. Improved rocket technology for boost phase, improved technology for longer duration and higher velocity in the hypersonic domain - Mature 3D printing of nickel based alloys for hypersonic components to improve performance and manufacturability - Investigate Benzoxanine as a high char yield resin for Carbon/Carbon applications that improve processing timelines - Laser weapon optics tech risk mitigation <p>FY 2023 Plans:</p> <ul style="list-style-type: none"> - Continue NanoSat Testbed Initiative: collect and analyze on-orbit mission data from communication architectures experiments. Continue next series of experimentation focused on improved engagement management techniques, enhanced security, and reduced latency with increased throughput - Continue High Temperature Seeker Window Assessment by developing and characterizing advanced materials, radiation hardened components, and experimentation in relevant environments <p>FY 2022 to FY 2023 Increase/Decrease Statement: Decrease from FY 2022 to FY 2023 reflects the FY 2022 Congressional adds for high-speed flight experiment testing, 3D printed high temperature nickel based alloys for hypersonic applications, Benzoxazine for high-mach system thermal protection and laser weapons optics technical risk mitigation. FY 2023 is a return to baseline funding levels.</p>			
Accomplishments/Planned Programs Subtotals		28.879	47.135
			21.223

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency	Date: April 2022
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Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603180C / <i>Advanced Research</i>	Project (Number/Name) MD25 / <i>Advanced Technology Development</i>
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C. Other Program Funding Summary (\$ in Millions)

Line Item	FY 2021	FY 2022	FY 2023	FY 2023	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Cost To	
			Base	OCO	Total					Complete	Total Cost
• 0603176C: <i>Advanced Concepts and Performance Assessment</i>	49.069	40.000	16.737	-	16.737	17.265	17.693	18.109	18.477	Continuing	Continuing
• 0603294C: <i>Common Kill Vehicle Technology</i>	10.793	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	10.793
• 0604181C: <i>Hypersonic Defense</i>	267.589	287.796	225.477	-	225.477	108.540	110.220	287.535	449.590	Continuing	Continuing

Remarks

D. Acquisition Strategy

The acquisition strategy to conduct these technology development agreements consists of partnering with accredited universities, small businesses, and nonprofit organizations. MDA awards competitive procurements via the MDA Innovation, Science, and Technology Broad Agency Announcement (IST BAA) and the Small Business Innovative Research and the Small Business Technology Transfer program.

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency										Date: April 2022		
Appropriation/Budget Activity 0400 / 3					R-1 Program Element (Number/Name) PE 0603180C / <i>Advanced Research</i>				Project (Number/Name) MD40 / <i>Program-Wide Support</i>			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
MD40: <i>Program-Wide Support</i>	4.400	0.742	0.831	0.800	-	0.800	0.801	0.796	0.896	0.920	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

PWS contains non-headquarters management costs in support of MDA functions and activities across the entire MDS. These functions include Government Civilians and Contract Support Services. This effort provides integrity and oversight of the MDS as well as supports MDA in the development and evaluation of technologies that will respond to the changing threat. Additionally, PWS includes personnel to support global deployments performing deployment site preparation and activation, and provides facility capabilities for MDA Executing Agent locations worldwide. Other MDA wide costs include: physical and technical security; civilian drug testing; audit readiness; the Science, Technology, Engineering, and Mathematics (STEM) program; legal services and settlements; travel and agency training; office, equipment, vehicle, and warehouse leases; utilities and base operations across multiple geographic locations; commercial and ancillary facility services; management of all facility aspects regardless of lifecycle stage; supplies and maintenance; compliance with statutory environmental requirements; data and unified communications support; materiel and readiness and central property management of equipment; Facilities Sustainment, Restoration and Modernization (FSRM) program, (formerly Real Property Maintenance) to keep the Department's inventory of facilities in good working order; and similar operating expenses. PWS is allocated on a pro-rata basis across most Agency PEs and therefore fluctuates per PE by fiscal year based on the total Agency budget in that fiscal year.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Missile Defense Agency	Date: April 2022
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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 0603294C / <i>Common Kill Vehicle Technology</i>
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COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
Total Program Element	325.539	10.793	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	336.332
MD85: <i>Common Kill Vehicle Technology</i>	313.877	10.354	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	324.231
MD40: <i>Program Wide Support</i>	11.662	0.439	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	12.101

Program MDAP/MAIS Code: 362

Note

Due to a shift in Department of Defense priorities, the Common Kill Vehicle (CKV) Technology Program has been cancelled beginning in FY 2022.

A. Mission Description and Budget Item Justification

The weapon systems technology maturation efforts under the CKV program element are complete.

The Missile Defense Agency (MDA) pursued multiple component risk reduction efforts for weapon technologies that will enable advanced concepts and designs to mature technology for end-to-end weapon systems and components up to prototypes.

<u>B. Program Change Summary (\$ in Millions)</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023 Base</u>	<u>FY 2023 OCO</u>	<u>FY 2023 Total</u>
Previous President's Budget	11.058	0.000	0.000	-	0.000
Current President's Budget	10.793	0.000	0.000	-	0.000
Total Adjustments	-0.265	0.000	0.000	-	0.000
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	-0.265	0.000			
• Missile Defeat and Defense Enhancement	0.000	0.000	0.000	-	0.000
• Other Adjustment	0.000	0.000	0.000	-	0.000

Change Summary Explanation

No funding is requested in the program element in FY 2022 and the out years.

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency										Date: April 2022		
Appropriation/Budget Activity 0400 / 3					R-1 Program Element (Number/Name) PE 0603294C / Common Kill Vehicle Technology				Project (Number/Name) MD85 / Common Kill Vehicle Technology			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
MD85: Common Kill Vehicle Technology	313.877	10.354	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	324.231
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
Note Due to a shift in Department of Defense priorities, the Common Kill Vehicle (CKV) Technology Program has been cancelled beginning in FY 2022												
A. Mission Description and Budget Item Justification The weapon systems technology maturation efforts under the CKV program element are complete. The Missile Defense Agency (MDA) pursued multiple component risk reduction efforts for weapon technologies that will enable advanced concepts and designs to mature technology for end-to-end weapon systems and components up to prototypes.												
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)									FY 2021	FY 2022	FY 2023	
Title: Common Kill Vehicle Articles: Description: Common Kill Vehicle research efforts included maturation of advanced weapon technologies for current weapon systems concepts including Aegis, Terminal High Altitude Area Defense, Ground based Missile Defense, and advance concepts and designs to mature technology for end-to-end weapon systems and components up to concept prototypes. Specific and/or unique accomplishments to each FY are as follows: FY 2022 Plans: No funding is requested in FY 2022 for this effort. FY 2023 Plans: No funding is requested in FY 2023 for this effort. FY 2022 to FY 2023 Increase/Decrease Statement: N/A									10.354	0.000	0.000	
									-	-	-	
									Accomplishments/Planned Programs Subtotals			
									10.354	0.000	0.000	

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency										Date: April 2022	
Appropriation/Budget Activity 0400 / 3				R-1 Program Element (Number/Name) PE 0603294C / <i>Common Kill Vehicle Technology</i>				Project (Number/Name) MD85 / <i>Common Kill Vehicle Technology</i>			
C. Other Program Funding Summary (\$ in Millions)											
			<u>FY 2023</u>	<u>FY 2023</u>	<u>FY 2023</u>					<u>Cost To</u>	
<u>Line Item</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>Base</u>	<u>OCO</u>	<u>Total</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Complete</u>	<u>Total Cost</u>
• 0603176C: <i>Advanced Concepts and Performance Assessment</i>	49.069	40.000	16.737	-	16.737	17.265	17.693	18.109	18.477	Continuing	Continuing
• 0603180C: <i>Advanced Research</i>	29.621	47.966	22.023	-	22.023	22.758	23.296	23.851	24.335	Continuing	Continuing
Remarks											
D. Acquisition Strategy											
N/A											

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency										Date: April 2022		
Appropriation/Budget Activity 0400 / 3					R-1 Program Element (Number/Name) PE 0603294C / Common Kill Vehicle Technology				Project (Number/Name) MD40 / Program Wide Support			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
MD40: Program Wide Support	11.662	0.439	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	12.101
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Program Wide Support (PWS) is allocated on a pro-rata basis across multiple Agency PEs each fiscal year based on the total Agency budget, and therefore fluctuates per PE by fiscal year. No funding is requested for Program Wide Support in the Common Kill Vehicle Technology Program Element beginning in FY 2022.

A. Mission Description and Budget Item Justification

PWS contains non-headquarters management costs in support of MDA functions and activities across the entire MDS. These functions include Government Civilians and Contract Support Services. This effort provides integrity and oversight of the MDS as well as supports MDA in the development and evaluation of technologies that will respond to the changing threat. Additionally, PWS includes personnel to support global deployments performing deployment site preparation and activation, and provides facility capabilities for MDA Executing Agent locations worldwide. Other MDA wide costs include: physical and technical security; civilian drug testing; audit readiness; the Science, Technology, Engineering, and Mathematics (STEM) program; legal services and settlements; travel and agency training; office, equipment, vehicle, and warehouse leases; utilities and base operations across multiple geographic locations; commercial and ancillary facility services; management of all facility aspects regardless of lifecycle stage; supplies and maintenance; compliance with statutory environmental requirements; data and unified communications support; materiel and readiness and central property management of equipment; Facilities Sustainment, Restoration and Modernization (FSRM) program, (formerly Real Property Maintenance) to keep the Department's inventory of facilities in good working order; and similar operating expenses. PWS is allocated on a pro-rata basis across most Agency PEs and therefore fluctuates per PE by fiscal year based on the total Agency budget in that fiscal year.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2021	FY 2022	FY 2023
Title: Program Wide Support	0.439	0.000	0.000
Articles:	-	-	-
Description: PWS contains non-headquarters management costs in support of MDA functions and activities across the entire MDS. These functions include Government Civilians and Contract Support Services. This effort provides integrity and oversight of the MDS as well as supports MDA in the development and evaluation of technologies that will respond to the changing threat. Additionally, PWS includes personnel to support global deployments performing deployment site preparation and activation, and provides facility capabilities for MDA Executing Agent locations worldwide. Other MDA wide costs include: physical and technical security; civilian drug testing; audit readiness; the Science, Technology, Engineering, and Mathematics (STEM) program; legal services and settlements; travel and agency training; office, equipment, vehicle, and warehouse leases; utilities and base operations across multiple geographic locations; commercial and ancillary facility services; management of all facility aspects regardless of lifecycle stage; supplies and maintenance; compliance with statutory environmental requirements; data and unified communications support; materiel and readiness and central property management of equipment; Facilities Sustainment,			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency		Date: April 2022	
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603294C / <i>Common Kill Vehicle Technology</i>	Project (Number/Name) MD40 / <i>Program Wide Support</i>	
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2021	FY 2022
<p>Restoration and Modernization (FSRM) program, (formerly Real Property Maintenance) to keep the Department's inventory of facilities in good working order; and similar operating expenses. PWS is allocated on a pro-rata basis across most Agency PEs and therefore fluctuates per PE by fiscal year based on the total Agency budget in that fiscal year.</p> <p><i>FY 2022 Plans:</i> No funding is requested for Program Wide Support in the Common Kill Vehicle Technology Program Element beginning in FY 2022.</p> <p><i>FY 2023 Plans:</i> No funding is requested in FY 2023 for this effort</p> <p><i>FY 2022 to FY 2023 Increase/Decrease Statement:</i> N/A</p>			
Accomplishments/Planned Programs Subtotals		0.439	0.000
C. Other Program Funding Summary (\$ in Millions)			
N/A			
Remarks			
D. Acquisition Strategy			
N/A			

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Missile Defense Agency	Date: April 2022
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Appropriation/Budget Activity 0400: Research, Development, Test & Evaluation, Defense-Wide / BA 4: Advanced Component Development & Prototypes (ACD&P)	R-1 Program Element (Number/Name) PE 0603881C / Ballistic Missile Defense Terminal Defense Segment
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COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
Total Program Element	2,669.240	305.081	213.382	190.216	-	190.216	196.279	213.945	224.146	238.269	Continuing	Continuing
MD07: THAAD	2,139.335	251.710	186.625	171.543	-	171.543	179.505	196.404	203.144	215.392	Continuing	Continuing
MC07: Cyber Operations	33.798	10.720	11.977	10.555	-	10.555	7.160	7.996	9.775	10.478	Continuing	Continuing
MD06: Patriot Advanced Capability-3 (PAC-3)	384.191	26.261	1.226	1.211	-	1.211	1.239	1.271	1.297	1.323	Continuing	Continuing
MD40: Program-Wide Support	111.916	16.390	13.554	6.907	-	6.907	8.375	8.274	9.930	11.076	Continuing	Continuing

Program MDAP/MAIS Code: 362

Note

Decrease from FY 2022 to FY 2023 reflects the completion of Software Build 4.1.

A. Mission Description and Budget Item Justification

The Ballistic Missile Defense (BMD) Terminal Defense Segment provides vital forward-deployable capabilities to support regional defensive Missile Defense System (MDS) operations. The Terminal High Altitude Area Defense (THAAD) system provides Combatant Commands (CCMD) a globally-transportable, rapidly-deployable capability to intercept and destroy short-range, medium-range, and limited intermediate-range missile threats inside or outside the atmosphere during terminal phase of flight. This Program Element investigates concepts and continues the development and integration of multiple, independent THAAD software upgrades to improve reliability, availability and readiness, defense planning, and improved capability to engage short-range ballistic missile (SRBM), medium-range ballistic missile (MRBM), and limited intermediate-range ballistic missile (IRBM) threats.

B. Program Change Summary (\$ in Millions)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Previous President's Budget	312.317	277.949	0.000	-	0.000
Current President's Budget	305.081	213.382	190.216	-	190.216
Total Adjustments	-7.236	-64.567	190.216	-	190.216
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	-64.567			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	-7.236	0.000			
• Missile Defeat and Defense Enhancement	0.000	0.000	0.000	-	0.000
• Other Adjustment	0.000	0.000	190.216	-	190.216

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Missile Defense Agency		Date: April 2022
Appropriation/Budget Activity 0400: Research, Development, Test & Evaluation, Defense-Wide / BA 4: Advanced Component Development & Prototypes (ACD&P)	R-1 Program Element (Number/Name) PE 0603881C / Ballistic Missile Defense Terminal Defense Segment	
<p><u>Change Summary Explanation</u></p> <p>Decrease of \$64.5 million in FY 2022 reflects the Congressional reduction for unjustified growth for Layered Homeland Defense (LHD) lack of validated requirement and acquisition strategy.</p> <p>FY 2023 funding increase reflects the fact that the FY 2022 President's Budget request did not include out-year funding.</p>		

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency										Date: April 2022		
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0603881C / Ballistic Missile Defense Terminal Defense Segment				Project (Number/Name) MD07 / THAAD			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
MD07: THAAD	2,139.335	251.710	186.625	171.543	-	171.543	179.505	196.404	203.144	215.392	Continuing	Continuing
Quantity of RDT&E Articles	50	-	-	-	-	-	-	-	-	-		
Note Decrease from FY 2022 to FY 2023 reflects the completion of Software Build 4.1.												
A. Mission Description and Budget Item Justification The THAAD system provides a capability to intercept and destroy short-range, medium-range, and limited intermediate-range missile threats inside or outside the atmosphere during the terminal phase of flight. THAAD continues the development and integration of multiple, independent software upgrades to improve reliability, availability and readiness, defense planning, and improved capability to engage SRBM, MRBM, and limited IRBM threats. THAAD Development continues the development and integration of multiple, independent software builds to deliver enhanced system capabilities and expand the defense of allies and deployed forces from short-to-intermediate-range threats. Program Operations provides strategic planning, program integration, cost estimating, contracting, financial management, internal reviews and audits, earned-value management and program assessments for the THAAD Program Office. Joint Emergent Operational Need (JEON) provides enhanced capability against specific threats by expanding engagement options and increasing coverage areas. Project Redwood details are provided at a Higher Classification reported in accordance with Title 10, United States Code, Section 119 (a)(1) in the Special Access Program Annual Report to Congress. THAAD Program Support provides support for communications and interoperability efforts to operate on multiple networks and safety and mission assurance efforts in support of the Materiel Release process. THAAD Layered Homeland Defense effort supports the demonstration of weapon system and interceptor improvements to enhance THAAD capabilities against evolving threats. This effort will leverage the existing design improvement activities and develop software and hardware enhancements that demonstrate THAAD capabilities for regional and homeland applications. Demonstrations will be performed both at the component level and in a flight test.												
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)									FY 2021	FY 2022	FY 2023	
Title: Terminal High Altitude Area Defense (THAAD) Development									147.298	126.217	108.569	
									Articles: -	-	-	

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency		Date: April 2022	
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603881C / <i>Ballistic Missile Defense Terminal Defense Segment</i>	Project (Number/Name) MD07 / <i>THAAD</i>	
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2021	FY 2022
<p>Description: The THAAD Development program continues the development and integration of multiple, independent software builds to deliver enhanced system capabilities and expand the defense of allies and deployed forces from short-to-intermediate-range threats.</p> <p>Software Build 4.0: THAAD/Missile Segment Enhancement (MSE) Integration Part 1 (JEON) (Development scheduled to complete in 2Q FY 2022)</p> <ul style="list-style-type: none"> - Initial requirements to integrate MSE launchers and missiles into the THAAD weapon system enabling a more tightly integrated upper/lower tier defensive capability in support of JEON. - Improved capability to engage short-range ballistic missile (SRBM), medium-range ballistic missile (MRBM) and limited intermediate-range ballistic missile (IRBM) threats capable of creating complex scenes. - Expanded requirements for THAAD Electronic Protection/Objective Debris Mitigation to provide radar enhancements improving performance against adverse environments. <p>Software Build 4.1: Global Materiel Release Updates for Expanded THAAD (Development scheduled to complete in 2Q FY 2023)</p> <ul style="list-style-type: none"> - Cybersecurity: Implements additional cybersecurity updates to improve cyber posture required to ensure continuity of Authority to Operate approvals. - Interface Change Proposal: Implements necessary Link-16 software interface changes to align with MDS interoperability. - Army Navy/Transportable Radar Surveillance and Control (AN/TPY-2) Radar: Integrates latest AN/TPY-2 radar software (CX 5.0) into THAAD weapon system which ensures system functionality and interoperability providing the capability to track and discriminate evolving threats. - Maintenance Updates: Provides required maintenance updates and implements deferred content from accelerated JEON fielding timelines. - External Integration: Project Manager for Short and Intermediate Effectors for Layered Defense (PM SHIELD) integration and support. <p>Software Build 5.0: THAAD Updates to Maintain Mission Assurance (Development scheduled to complete in 2Q FY 2025)</p> <ul style="list-style-type: none"> - MSE Safety Integration: Integrates additional MSE safety improvements and the ability to manually emplace MSE Launcher. - External Integration: PM SHIELD integration and support. - Configuration 3 system Integration and Cyber Modernization: Updates THAAD weapon system to integrate new hardware addressing obsolescence, cyber vulnerabilities and various supportability issues to ensure continuity of Authority to Operate (ATO) approvals. - THAAD Radio Frequency (RF) Remote Launcher: Delivers the capability to increase the defended area footprint of a single THAAD Battery by enabling RF communications from the TFCC to Remoted THAAD launchers. 			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency		Date: April 2022	
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603881C / <i>Ballistic Missile Defense Terminal Defense Segment</i>	Project (Number/Name) MD07 / <i>THAAD</i>	
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2021	FY 2022
<ul style="list-style-type: none"> - AN/TPY-2 Radar: Integrates latest AN/TPY-2 radar software (CX 6.0) into THAAD weapon system which ensures system functionality and interoperability providing the capability to track and discriminate evolving threats. - Assured Position Navigation and Timing (APNT): Implement protective measures that increase assurance of reliable PNT data. APNT supports a Department of Defense mandate to ensure the integrity and availability of PNT data for the THAAD weapon system. - Remote Workstation: External THAAD Fire Control and Communication (TFCC) hardware and software connectivity allowing for the capability to remote from the TFCC tactical shelter to a remote location. - Dual Monitor: Integrate Dual Monitor capabilities for the ability to provide human factor improvements through additional monitor viewing space to be utilized within the TFCC and in support of Remote Workstation capability to support external Tactical Operation Centers (TOCs) and other external Remote Workstations. - Architecture Improvements: Improvements in Software and Hardware Architecture to increase modularity, interoperability and reduce obsolete software and architecture structures. <p>Software Build 6.0: Full THAAD/MSE Integration (Development scheduled to complete in 2Q FY 2029)</p> <ul style="list-style-type: none"> - Full THAAD MSE Integration. - Updated Ballistic Missile Threat Space and Represented Threats for THAAD Engagements. - Full Active Sensor Bias Monitoring and Reporting: Provide MDS system with bias monitoring and reporting data to support correlation and integration of Ballistic Missile Defense (BMD) System Track and other future techniques. <p>Recurring efforts include:</p> <ul style="list-style-type: none"> - Support element Models and Simulations (M&S) related activities, to include Verification, Validation and Accreditation (VV&A) and Continuous Digital Assessment (CDA) on the path of accredited models and simulations for MDS assessment. - Support M&S related activities in element and MDS test events in the approved Integrated Master Test Plan (IMTP) such as requirements, design, development, and VV&A. - Design, develop, test, and field the releases of THAAD system software to ensure continued performance and operation of fielded batteries. - Provide software updates in support of the incremental evolution of performance upgrades. - Support laboratory assets and equipment to enable future development, and to isolate, identify, and remedy root causes of equipment and software deficiencies identified by the warfighter. - Perform requirements development, engineering analysis, and performance verification for THAAD development and MDS integration to ensure THAAD compliance with the MDS Specification, MDS System Description Document, and Master Integration Plan. - Participate in Missile Defense Agency (MDA) and Army studies to determine the architecture and integration of the THAAD Weapon system into the Integrated Air and Missile Defense (IAMD) Battle Command System (IBCS). 			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency		Date: April 2022	
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603881C / <i>Ballistic Missile Defense Terminal Defense Segment</i>	Project (Number/Name) MD07 / <i>THAAD</i>	
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2021	FY 2022
<p>- Provide and coordinate analysis, studies and papers to support the resolution of issues and concerns with the integration of the THAAD weapon system into the future Army IBCS architecture.</p> <p>- Development of improved tactical network architecture in order to increase availability, robustness, and security of the system to counter cybersecurity threats.</p> <p>- Incremental Development Process to identify THAAD evolution and synchronize requirements that address emerging threat evolution, obsolescence needs, Army training needs, reliability and sustainment issues.</p> <p>- Perform Independent Verification and Validation (IV&V) of software and software assurance risk report.</p> <p>Specific and/or unique accomplishments to each FY are as follows:</p> <p>FY 2022 Plans:</p> <p>Software Build 4.1</p> <p>Provides funding to continue development and integration efforts to include:</p> <p>- Cybersecurity: Implements additional cybersecurity updates to improve cyber posture required to ensure continuity of Authority to Operate (ATO) approvals</p> <p>- Interface Change Proposals: Implements necessary Link-16 software interface changes to align with MDS interoperability</p> <p>- AN/TPY-2 Radar: Integrates latest AN/TPY-2 radar software (CX 5.0) into THAAD weapon system which ensures system functionality and interoperability while providing the capability to track and discriminate evolving threats.</p> <p>- Maintenance Updates: Provides required maintenance updates and implements deferred content from accelerated JEON fielding timelines.</p> <p>- External Integration: PM SHIELD integration and support.</p> <p>Software Build 5.0</p> <p>Provides funding for development and integration efforts to include:</p> <p>- MSE Safety Integration: Integrates additional MSE safety improvements and the ability to manually emplace MSE Launcher.</p> <p>- External Integration: PM SHIELD integration and support.</p> <p>- Configuration 3 system Integration and Cyber Modernization: Updates THAAD weapon system to integrate new hardware addressing obsolescence, cyber vulnerabilities and various supportability issues to ensure continuity of Authority to Operate (ATO) approvals.</p> <p>- THAAD Radio Frequency (RF) Remote Launcher: Delivers the capability to increase the defended area footprint of a single THAAD Battery by enabling RF communications from the TFCC to Remoted THAAD launchers.</p> <p>- AN/TPY-2 Radar: Integrates latest AN/TPY-2 radar software (CX 6.0) into THAAD weapon system which ensures system functionality and interoperability providing the capability to track and discriminate evolving threats.</p>			
			FY 2023

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency		Date: April 2022	
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603881C / <i>Ballistic Missile Defense Terminal Defense Segment</i>	Project (Number/Name) MD07 / <i>THAAD</i>	
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2021	FY 2022
<p>- Assured Position Navigation and Timing (APNT): Implement protective measures that increase assurance of reliable PNT data. APNT supports a Department of Defense mandate to ensure the integrity and availability of PNT data for the THAAD weapon system.</p> <p>- Remote Workstation: External THAAD Fire Control and Communication (TFCC) hardware and software connectivity allowing for the capability to remote from the TFCC tactical shelter to a remote location</p> <p>- Dual Monitor: Integrate Dual Monitor capabilities for the ability to provide human factor improvements through additional monitor viewing space to be utilized within the TFCC and in support of Remote Workstation capability to support external Tactical Operation Centers (TOCs) and other external Remote Workstations.</p> <p>- Architecture Improvements: Improvements in Software and Hardware Architecture to increase modularity, interoperability and reduce obsolete software and architecture structures.</p> <p>FY 2023 Plans:</p> <p>Software Build 4.1</p> <p>Complete development and integration efforts to include:</p> <p>- Cybersecurity: Implements additional cybersecurity updates to improve cyber posture required to ensure continuity of Authority to Operate (ATO) approvals.</p> <p>- Interface Change Proposals: Implements necessary Link-16 software interface changes to align with MDS interoperability.</p> <p>- AN/TPY-2 Radar: Integrates latest AN/TPY-2 radar software (CX 5.0) into THAAD weapon system which ensures system functionality and interoperability while providing the capability to track and discriminate evolving threats.</p> <p>- Maintenance Updates: Provides required maintenance updates and implements deferred content from accelerated JEON fielding timelines.</p> <p>- External Integration: PM SHIELD integration and support.</p> <p>Software Build 5.0</p> <p>Provides for development and integration efforts to include:</p> <p>- MSE Safety Integration: Integrates additional MSE safety improvements and the ability to manually emplace MSE Launcher.</p> <p>- External Integration: PM SHIELD integration and support.</p> <p>- Configuration 3 system Integration and Cyber Modernization: Updates THAAD weapon system to integrate new hardware addressing obsolescence, cyber vulnerabilities and various supportability issues to ensure continuity of Authority to Operate (ATO) approvals.</p> <p>- THAAD Radio Frequency (RF) Remote Launcher: Delivers the capability to increase the defended area footprint of a single THAAD Battery by enabling RF communications from the TFCC to Remoted THAAD launchers.</p> <p>- AN/TPY-2 Radar: Integrates latest AN/TPY-2 radar software (CX 6.0) into THAAD weapon system which ensures system functionality and interoperability providing the capability to track and discriminate evolving threats.</p>			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency		Date: April 2022	
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603881C / <i>Ballistic Missile Defense Terminal Defense Segment</i>	Project (Number/Name) MD07 / <i>THAAD</i>	
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2021	FY 2022
<ul style="list-style-type: none"> - Assured Position Navigation and Timing (APNT): Implement protective measures that increase assurance of reliable PNT data. APNT supports a Department of Defense mandate to ensure the integrity and availability of PNT data for the THAAD weapon system. - Remote Workstation: External THAAD Fire Control and Communication (TFCC) hardware and software connectivity allowing for the capability to remote from the TFCC tactical shelter to a remote location. - Dual Monitor: Integrate Dual Monitor capabilities for the ability to provide human factor improvements through additional monitor viewing space to be utilized within the TFCC and in support of Remote Workstation capability to support external Tactical Operation Centers (TOCs) and other external Remote Workstations. - Architecture Improvements: Improvements in Software and Hardware Architecture to increase modularity, interoperability and reduce obsolete software and architecture structures. <p>FY 2022 to FY 2023 Increase/Decrease Statement: Decrease from FY 2022 to FY 2023 reflects the completion of Software Build 4.1.</p>			
<p>Title: Program Operations</p> <p align="right">Articles:</p> <p>Description: Program Operations provides strategic planning, program integration, contracting, acquisition, engineering, financial management, internal reviews and audits, and program assessments for the THAAD Program Office.</p> <p>Recurring efforts include:</p> <ul style="list-style-type: none"> -Provide technical and business management support activities to provide Program and Agency Leadership with critical program status and decision quality data. -Ensure THAAD program compliance with internal and external direction, policies, and regulations to deliver critical capability within a consistent and disciplined process. -Conduct internal program reviews to measure program progress against the six MDA approved baselines. -Continue a Mission Assurance and Manufacturing Engineering Program to include Quality, Configuration Management, Manufacturing, Engineering, and Safety in all phases of the system life cycle, throughout the supply chain, and at all levels of assembly emphasizing high yield rates which minimize test and rework costs. -Provide Quality Safety and Mission Assurance (QSMA) operations to ensure compliance with Agency requirements for design, test, manufacturing, quality, safety and reliability to ensure high quality products are delivered to the Warfighter. <p>Specific and/or unique accomplishments to each FY are as follows:</p> <p>FY 2022 Plans:</p>		49.976 -	46.402 -
		48.930 -	

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency			Date: April 2022		
Appropriation/Budget Activity 0400 / 4		R-1 Program Element (Number/Name) PE 0603881C / Ballistic Missile Defense Terminal Defense Segment	Project (Number/Name) MD07 / THAAD		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)			FY 2021	FY 2022	FY 2023
-SEE ABOVE.					
FY 2023 Plans: -SEE ABOVE.					
FY 2022 to FY 2023 Increase/Decrease Statement: N/A.					
Title: JEON			3.200	0.000	0.000
Articles:			-	-	-
Description: This accomplishment fully funds the THAAD portion of JEON to deliver expanded engagement options and increased coverage area. This includes accelerating some content previously included in the THAAD Development accomplishment, while adding new development efforts which include Rapid Deployment of Command and Control and Software upgrades and Performance Optimization Against Additional Threats as well as the following three new priorities: 1) U.S. Army's Phased Array Tracking Radar Intercept on Target (PATRIOT) Launch on Remote to utilize THAAD's capability to detect and track threat ballistic missiles at longer ranges. 2) THAAD/MSE Integration Part 1 that integrates MSE launchers and missiles into the THAAD weapon system enabling a more tightly integrated upper/lower tier defensive capability. 3) THAAD Remote Launcher Part 1 that utilizes flexible communication paths to extend the defended area of a THAAD battery. Specific and/or unique accomplishments to each FY are as follows: FY 2022 Plans: -N/A. FY 2023 Plans: -N/A. FY 2022 to FY 2023 Increase/Decrease Statement: N/A.					
Title: Project Redwood- Details at a Higher Classification			14.993	12.052	12.045
Articles:			-	-	-
Description: This project is reported in accordance with Title 10, United States Code, Section 119 (a)(1) in the Special Access Program (SAP) Annual Report to Congress.					

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency		Date: April 2022		
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603881C / Ballistic Missile Defense Terminal Defense Segment	Project (Number/Name) MD07 / THAAD		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2021	FY 2022	FY 2023
FY 2022 Plans: -SEE ABOVE.				
FY 2023 Plans: -SEE ABOVE.				
FY 2022 to FY 2023 Increase/Decrease Statement: N/A.				
Title: THAAD Program Support		1.184	1.954	1.999
Articles:		-	-	-
Description: This activity provides support for efforts such as communications and interoperability upgrades to operate on joint, service, or allied communications networks. This activity provides support for safety and mission assurance requirements, and support of independent government offices as part of the Materiel Release process.				
Recurring efforts include: - Interoperability development and maintenance to ensure the weapon system is authorized to operate on joint, service, or allied communications networks. - Safety confirmation and verification testing, preparation and approvals of System Safety Risk Assessments, issuance of hazard classifications and safety releases, insensitive munitions approvals and waivers, and independent oversight and support in the areas of reliability, availability, and maintainability (RAM) and quality assurance.				
Specific and/or unique accomplishments to each FY are as follows:				
FY 2022 Plans: -SEE ABOVE.				
FY 2023 Plans: -SEE ABOVE.				
FY 2022 to FY 2023 Increase/Decrease Statement: N/A.				
Title: THAAD Layered Homeland Defense		35.059	0.000	0.000
Articles:		-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency		Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603881C / <i>Ballistic Missile Defense Terminal Defense Segment</i>	Project (Number/Name) MD07 / <i>THAAD</i>

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023
<p>Description: The THAAD Layered Homeland Defense effort supports the demonstration of weapon system and interceptor improvements to enhance THAAD capabilities against evolving threats. This effort will leverage the existing design improvement activities and develop software and hardware enhancements that demonstrate THAAD capabilities for regional and homeland applications. Demonstrations will be performed both at the component level and in a flight test.</p> <p>FY 2022 Plans: N/A.</p> <p>FY 2023 Plans: N/A.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: N/A.</p>			
Accomplishments/Planned Programs Subtotals	251.710	186.625	171.543

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

Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• 0208866C: MD07: <i>THAAD O&M</i>	89.706	86.828	86.945	-	86.945	89.297	91.789	93.995	96.024	Continuing	Continuing
• 0208866C: MD07: <i>THAAD Procurement</i>	578.335	380.722	74.944	-	74.944	211.524	435.682	464.343	643.513	Continuing	Continuing
• 0603914C: <i>Ballistic Missile Defense Test</i>	364.994	389.156	367.824	-	367.824	363.963	421.261	476.991	490.176	Continuing	Continuing
• 0604876C: <i>Ballistic Missile Defense Terminal Defense Segment Test</i>	1.000	32.697	69.762	-	69.762	43.602	34.063	153.853	133.524	Continuing	Continuing

Remarks

D. Acquisition Strategy

The THAAD program awards Indefinite Delivery Indefinite Quantity (IDIQ) Task Orders on the Advanced Capability Development (ACD) contract for THAAD development. The ACD contract is comprised of over 40 separate task orders with varying contract types such as firm fixed price, fixed price incentive firm, cost plus incentive fee, and cost plus fixed fee. The discrete task orders allow management and tracking of development work.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603881C / Ballistic Missile Defense Terminal Defense Segment				Project (Number/Name) MD07 / THAAD					
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Terminal High Altitude Area Defense (THAAD) Development - Advanced Capability Development	SS/IDIQ	Lockheed Martin : Sunnyvale, CA / Huntsville, AL	924.051	108.560	Nov 2020	82.417	Nov 2021	65.172	Nov 2022	-		65.172	Continuing	Continuing	Continuing
Terminal High Altitude Area Defense (THAAD) Development - IT Program Support	C/CPAF	Northrup Grumman : AL, AK, CA, CO, HI, NM, VA	13.124	2.816	Nov 2020	2.819	Nov 2021	2.853	Nov 2022	-		2.853	Continuing	Continuing	Continuing
Terminal High Altitude Area Defense (THAAD) Development - MDA Program Support	MIPR	Missile Defense Agency (MDA) : Ft. Belvoir, VA/ Huntsville, AL	12.984	2.402	Dec 2020	0.000		0.000		-		0.000	0.000	15.386	0.000
Terminal High Altitude Area Defense (THAAD) Development - Models & Simulations	MIPR	US Army Combat Capabilities Development Command (CCDC) : Huntsville, AL	274.614	23.303	Dec 2020	30.384	Nov 2021	28.782	Nov 2022	-		28.782	Continuing	Continuing	Continuing
Terminal High Altitude Area Defense (THAAD) Development - Requirements and Design	C/CPAF	Boeing : AL	21.342	3.546	Dec 2020	5.797	Dec 2021	7.278	Dec 2022	-		7.278	Continuing	Continuing	Continuing
Terminal High Altitude Area Defense (THAAD) Development - Software IV&V	MIPR	US Army Combat Capabilities Development Command (CCDC) : Huntsville, AL	0.000	4.503	Nov 2020	4.131	Nov 2021	4.214	Nov 2022	-		4.214	Continuing	Continuing	Continuing
Terminal High Altitude Area Defense (THAAD) Development - Software Support (GOVT)	MIPR	US Army Combat Capabilities Development Command (CCDC) : Huntsville, AL	14.147	0.000		0.000		0.000		-		0.000	0.000	14.147	0.000
Terminal High Altitude Area Defense (THAAD) Development - THAAD Radar Improvements	SS/CPAF	Raytheon : MA	10.000	0.000		0.000		0.000		-		0.000	0.000	10.000	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603881C / Ballistic Missile Defense Te rminal Defense Segment				Project (Number/Name) MD07 / THAAD					
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Terminal High Altitude Area Defense (THAAD) Development - Verification and Assessment	C/CPFF	PARSONS GOVERNMENT SERVICES INC. : AL / CO	16.767	2.168	Nov 2020	0.669	Nov 2021	0.270	Nov 2022	-		0.270	Continuing	Continuing	Continuing
JEON - Advanced Capability Development	SS/IDIQ	Lockheed Martin : Sunnyvale, CA / Huntsville, AL	177.889	0.000		0.000		0.000		-		0.000	0.000	177.889	0.000
JEON - MDA Program Support	Various	MDA : Huntsville, AL	0.509	0.000		0.000		0.000		-		0.000	0.000	0.509	0.000
JEON - OGA JEON Support (GOVT)	MIPR	US Army Tank Automotive Research, Development, and Engineering Center (TARDEC), Army Test and Evaluation Command (ATEC) : Warren, MI / Huntsville, AL	16.159	3.200	Dec 2020	0.000		0.000		-		0.000	0.000	19.359	0.000
Project Redwood- Details at a Higher Classification - Special Programs	SS/FP	N/A : N/A	107.351	14.993	Nov 2020	12.052	Nov 2021	12.045	Nov 2022	-		12.045	Continuing	Continuing	Continuing
THAAD Layered Homeland Defense - THAAD Layered Homeland Defense	Various	Lockheed Martin / U.S. Army Combat Capabilities Development Command (CCDC) : Sunnyvale, CA / Huntsville, AL	0.000	35.059	Mar 2021	0.000		0.000		-		0.000	0.000	35.059	0.000
Subtotal			1,588.937	200.550		138.269		120.614		-		120.614	Continuing	Continuing	N/A
Remarks N/A.															

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603881C / Ballistic Missile Defense Terminal Defense Segment				Project (Number/Name) MD07 / THAAD					
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Operations - Civilian Salaries	Allot	MDA : AL	0.000	0.000		0.000		23.386	Oct 2022	-		23.386	Continuing	Continuing	Continuing
Program Operations - Contractor Support Services	C/CPFF	Various : Various	377.421	49.976	Oct 2020	46.402	Oct 2021	0.000		-		0.000	473.799	947.598	473.799
Program Operations - Program Operations	Allot	MDA : Various	0.000	0.000		0.000		8.773	Oct 2022	-		8.773	Continuing	Continuing	Continuing
THAAD Program Support - Mission Support	MIPR	ATEC / SMDC / CCDC / MDA : WSMR, NM / Huntsville, AL	35.798	1.184	Dec 2020	1.954	Dec 2021	1.999	Dec 2022	-		1.999	Continuing	Continuing	Continuing
THAAD Program Support - Prime Contractor Support	SS/IDIQ	Lockheed Martin : Sunnyvale, CA / Huntsville, AL	0.600	0.000		0.000		0.000		-		0.000	0.000	0.600	0.000
THAAD Program Support - Prior year no longer funded in the FYDP	Various	Various : Various	136.579	0.000		0.000		0.000		-		0.000	0.000	136.579	0.000
Subtotal			550.398	51.160		48.356		34.158		-		34.158	Continuing	Continuing	N/A
Remarks N/A															
Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	N/A
Remarks N/A															

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022		
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603881C / <i>Ballistic Missile Defense Terminal Defense Segment</i>				Project (Number/Name) MD07 / <i>THAAD</i>				

Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Operations - Contractor Support Services	C/CPFF	Various : Various	0.000	0.000		0.000		16.771	Oct 2022	-		16.771	Continuing	Continuing	Continuing
Subtotal			0.000	0.000		0.000		16.771		-		16.771	Continuing	Continuing	N/A

Remarks N/A															
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	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	2,139.335	251.710	186.625	171.543	-	171.543	Continuing	Continuing	N/A

Remarks Award Date reflects date of first obligation. Additional obligations may incrementally occur throughout the year.									
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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Missile Defense Agency														Date: April 2022																											
Appropriation/Budget Activity 0400 / 4														R-1 Program Element (Number/Name) PE 0603881C / Ballistic Missile Defense Terminal Defense Segment														Project (Number/Name) MD07 / THAAD													
Significant Event Complete ▲				Milestone Decision Complete ★				Element Test Complete ◆				System Level Test Complete ●				Complete Activity ◆																									
Significant Event Planned △				Milestone Decision Planned ☆				Element Test Planned ◇				System Level Test Planned ○				Planned Activity ◇																									
														FY 2021		FY 2022		FY 2023		FY 2024		FY 2025		FY 2026		FY 2027															
THAAD Software Build 5.0 - THAAD Updates to Maintain Mission Assurance System Requirement Review (SRR)																▲																									
THAAD Software Build 4.0 - THAAD/Missile Segment Enhancement (MSE) Integration (JEON) Formal Qualification Testing (FQT)																		△																							
THAAD Software Build 4.1 - Global Materiel Release Updates for Expanded THAAD Preliminary Design Review (PDR)																			△																						
THAAD Software Build 4.1 - Global Materiel Release Updates for Expanded THAAD Critical Design Review (CDR)																				△																					
THAAD Software Build 4.1 - Global Materiel Release Updates for Expanded THAAD Formal Qualification Testing (FQT)																					△																				
THAAD Software Build 5.0 - THAAD Updates to Maintain Mission Assurance Preliminary Design Review (PDR)																					△																				
THAAD Software Build 5.0 - THAAD Updates to Maintain Mission Assurance Critical Design Review (CDR)																						△																			
THAAD Software Build 5.0 - THAAD Updates to Maintain Mission Assurance Formal Qualification Testing (FQT)																							△																		
THAAD Software Build 6.0 - Full THAAD/MSE Integration System Requirement Review (SRR)																									△																
THAAD Software Build 6.0 - Full THAAD/MSE Integration Preliminary Design Review (PDR)																												△													

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Missile Defense Agency			Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603881C / <i>Ballistic Missile Defense Terminal Defense Segment</i>	Project (Number/Name) MD07 / <i>THAAD</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
THAAD Software Build 5.0 - THAAD Updates to Maintain Mission Assurance System Requirement Review (SRR)	3	2021	3	2021
THAAD Software Build 4.0 - THAAD/Missile Segment Enhancement (MSE) Integration (JEON) Formal Qualification Testing (FQT)	2	2022	2	2022
THAAD Software Build 4.1 - Global Materiel Release Updates for Expanded THAAD Preliminary Design Review (PDR)	3	2022	3	2022
THAAD Software Build 4.1 - Global Materiel Release Updates for Expanded THAAD Critical Design Review (CDR)	4	2022	4	2022
THAAD Software Build 4.1 - Global Materiel Release Updates for Expanded THAAD Formal Qualification Testing (FQT)	2	2023	2	2023
THAAD Software Build 5.0 - THAAD Updates to Maintain Mission Assurance Preliminary Design Review (PDR)	3	2023	3	2023
THAAD Software Build 5.0 - THAAD Updates to Maintain Mission Assurance Critical Design Review (CDR)	2	2024	2	2024
THAAD Software Build 5.0 - THAAD Updates to Maintain Mission Assurance Formal Qualification Testing (FQT)	2	2025	2	2025
THAAD Software Build 6.0 - Full THAAD/MSE Integration System Requirement Review (SRR)	1	2026	1	2026
THAAD Software Build 6.0 - Full THAAD/MSE Integration Preliminary Design Review (PDR)	1	2027	1	2027

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency										Date: April 2022		
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0603881C / Ballistic Missile Defense Terminal Defense Segment				Project (Number/Name) MC07 / Cyber Operations			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
MC07: Cyber Operations	33.798	10.720	11.977	10.555	-	10.555	7.160	7.996	9.775	10.478	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
Note Decrease from FY 2022 to FY 2023 reflects a lower cybersecurity requirement for software development efforts.												
A. Mission Description and Budget Item Justification Cyber Operations sustain MDA Risk Management Framework (RMF) and Controls Validation Testing (CVT) activities; analysis of validation results, risk assessments; reviews of proposed Program Manager/Information Assurance Manager Plans of Action and Milestones for MDA THAAD mission systems; and supports THAAD certification to operate in the MDS. Development efforts involve robust cybersecurity for both offense and defense to address the advanced threat.												
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)									FY 2021	FY 2022	FY 2023	
Title: Network / System Certification and Accreditation (C&A) Articles: Description: Funding in this project sustains MDA Risk Management Framework (RMF) and Controls Validation Testing (CVT) activities, analysis of validation results, risk assessments, monitoring and tracking of cybersecurity mitigations, and all other activities necessary to comply with the Federal Information Security Management Act (FISMA). Recurring efforts include: - Conduct cybersecurity/information assurance engineering and architecture planning for THAAD information technology systems. - Develop and test cybersecurity/information assurance control measures for MDS THAAD systems. - Develop THAAD RMF for DoD Information Technology Certification and accreditation packages. - Support CVT of THAAD mission, test, and training systems. - Develop Plan of Action and Milestones (POA&Ms) to resource and remediate information assurance deficiencies. - Conduct annual information assurance reviews on the THAAD enclaves to assess compliance in implementing and maintaining Information Assurance (IA) controls. - Perform Information Assurance Vulnerability Alert (IAVA) to mitigate potential system vulnerabilities. - Update THAAD software and hardware to ensure compliance with DoD Weapon System Information Assurance Programs. - Continue THAAD Weapon System software development efforts consistent with DoD cybersecurity requirements which were previously covered under THAAD Development, in order to correlate cyber software activities with realigned funding. Specific and/or unique accomplishments to each FY are as follows:									10.720	11.977	10.555	
									-	-	-	

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency										Date: April 2022		
Appropriation/Budget Activity 0400 / 4				R-1 Program Element (Number/Name) PE 0603881C / <i>Ballistic Missile Defense Terminal Defense Segment</i>				Project (Number/Name) MC07 / <i>Cyber Operations</i>				
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)										FY 2021	FY 2022	FY 2023
FY 2022 Plans: -SEE ABOVE.												
FY 2023 Plans: -SEE ABOVE.												
FY 2022 to FY 2023 Increase/Decrease Statement: Decrease from FY 2022 to FY 2023 reflects a lower cybersecurity requirement for software development efforts.												
Accomplishments/Planned Programs Subtotals										10.720	11.977	10.555
C. Other Program Funding Summary (\$ in Millions)												
<u>Line Item</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u> <u>Base</u>	<u>FY 2023</u> <u>OCO</u>	<u>FY 2023</u> <u>Total</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>	
• 0208866C: MD07: <i>THAAD O&M</i>	89.903	86.828	86.945	-	86.945	89.297	91.789	93.995	96.024	Continuing	Continuing	
• 0208866C: MD07: <i>THAAD Procurement</i>	578.335	380.722	74.994	-	74.994	211.524	435.682	464.343	643.513	Continuing	Continuing	
• 0604876C: <i>Ballistic Missile Defense Terminal Defense Segment Test</i>	1.000	32.697	69.762	-	69.762	43.602	34.063	153.853	133.524	Continuing	Continuing	
Remarks												
D. Acquisition Strategy												
The THAAD program awards Indefinite Delivery Indefinite Quantity (IDIQ) Task Orders on the Advanced Capability Development (ACD) contract for THAAD development. The ACD contract is comprised of over 40 separate task orders with varying contract types such as firm fixed price, fixed price incentive firm, cost plus incentive fee, and cost plus fixed fee. The discrete task orders allow management and tracking of development work.												

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603881C / <i>Ballistic Missile Defense Terminal Defense Segment</i>						Project (Number/Name) MC07 / <i>Cyber Operations</i>			
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Network / System Certification and Accreditation (C&A) - CND/IA Advisory and Assistance Services	C/CPFF	Torch Technologies : Various MDA Locations	5.116	1.263	Oct 2020	1.114	Oct 2021	0.000		-		0.000	7.493	14.986	7.493
Network / System Certification and Accreditation (C&A) - Civilian Salaries	Allot	MDA : AL	0.000	0.000		0.000		0.323	Oct 2022	-		0.323	Continuing	Continuing	Continuing
Network / System Certification and Accreditation (C&A) - Security Engineering	SS/CPFF	LMSSC : Sunnyvale, CA/Huntsville, AL	28.682	9.457	Dec 2020	10.863	Dec 2021	9.255	Dec 2022	-		9.255	Continuing	Continuing	Continuing
Subtotal			33.798	10.720		11.977		9.578		-		9.578	Continuing	Continuing	N/A
Remarks N/A.															
Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Network / System Certification and Accreditation (C&A) - Contract Support Services	C/CPFF	Various : Various	0.000	0.000		0.000		0.977	Oct 2022	-		0.977	Continuing	Continuing	Continuing
Subtotal			0.000	0.000		0.000		0.977		-		0.977	Continuing	Continuing	N/A
Remarks N/A															

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency											Date: April 2022				
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0603881C / Ballistic Missile Defense Terminal Defense Segment					Project (Number/Name) MC07 / Cyber Operations					
			Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			33.798	10.720		11.977		10.555		-		10.555	Continuing	Continuing	N/A

Remarks

Award Date reflects date of first obligation. Additional obligations may incrementally occur throughout the year.

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Missile Defense Agency			Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603881C / <i>Ballistic Missile Defense Terminal Defense Segment</i>	Project (Number/Name) MC07 / <i>Cyber Operations</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
MC07 Completed Cyber Operations	1	2021	1	2022
MC07 Planned Cyber Operations	2	2022	4	2027

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency										Date: April 2022		
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0603881C / Ballistic Missile Defense Terminal Defense Segment				Project (Number/Name) MD06 / Patriot Advanced Capability-3 (PAC-3)			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
MD06: Patriot Advanced Capability-3 (PAC-3)	384.191	26.261	1.226	1.211	-	1.211	1.239	1.271	1.297	1.323	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
Note N/A.												
A. Mission Description and Budget Item Justification PAC-3 is an operational, land-based weapon built upon the proven U.S. Army Phased Array Tracking Radar Intercept on Target (PATRIOT) air and missile defense infrastructure. The Army is responsible for production and further development of the PAC-3 System and Missile Segment Enhancements (MSE); MDA remains responsible for any MDS interoperability and integration efforts. The Army's Project Manager for Short and Intermediate Effectors for Layered Defense (PM SHIELD) will utilize MDA funds to further the integration of PATRIOT with the MDS. This project includes PM SHIELD's portion of the JEON including: 1) PATRIOT launch on remote to utilize THAAD's capability to detect and track threat ballistic missiles at longer ranges and utilize MSE's full kinematic capability 2) THAAD/MSE Integration Part 1 that integrates MSE launchers and missiles into the THAAD weapon system enabling a more tightly integrated upper/lower tier defensive capability												
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)									FY 2021	FY 2022	FY 2023	
Title: General Support									1.487	1.226	1.211	
Articles:									-	-	-	
Description: MDA funds PATRIOT participation in MDS interoperability integration efforts. Activities support the day-to-day tasking that is leveraged upon PM SHIELD by MDA based on the Transfer and Transition Plan Annex L.												
FY 2022 Plans: -SEE ABOVE.												
FY 2023 Plans: -SEE ABOVE.												
FY 2022 to FY 2023 Increase/Decrease Statement: N/A.												
Title: JEON - PM SHIELD									24.774	0.000	0.000	

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency										Date: April 2022	
Appropriation/Budget Activity 0400 / 4				R-1 Program Element (Number/Name) PE 0603881C / <i>Ballistic Missile Defense Terminal Defense Segment</i>				Project (Number/Name) MD06 / <i>Patriot Advanced Capability-3 (PAC-3)</i>			

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)										FY 2021	FY 2022	FY 2023
Articles:										-	-	-
<p>Description: This accomplishment fully funds PM SHIELD's portion of the JEON including PATRIOT Launch on Remote and THAAD/MSE integration Part 1.</p> <p>Specific and/or unique accomplishments to each FY are as follows:</p> <p>FY 2022 Plans: - No funding is requested for this effort in FY 2022.</p> <p>FY 2023 Plans: N/A.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: N/A.</p>												
Accomplishments/Planned Programs Subtotals										26.261	1.226	1.211

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• 0208866C: MD07: THAAD O&M	89.903	86.828	86.945	-	86.945	89.297	91.789	93.995	96.024	Continuing	Continuing
• 0208866C: MD07: THAAD Procurement	578.335	380.722	74.994	-	74.994	211.524	435.682	464.343	643.513	Continuing	Continuing
• 0604876C: Ballistic Missile Defense Terminal Defense Segment Test	1.000	32.697	69.762	-	69.762	43.602	34.063	153.853	133.524	Continuing	Continuing
Remarks											
D. Acquisition Strategy											
The planned acquisition strategy for PATRIOT support is to provide Military Interdepartmental Purchase Requests (MIPR) to the U.S. Army PM SHIELD to further the integration of PATRIOT with the MDS.											

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603881C / Ballistic Missile Defense Terminal Defense Segment				Project (Number/Name) MD06 / Patriot Advanced Capability-3 (PAC-3)					
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
JEON - PM SHIELD - JEON - PM SHIELD	MIPR	PM SHIELD : Huntsville, AL	372.811	24.774	Dec 2020	0.000		0.000		-		0.000	0.000	397.585	0.000
Subtotal			372.811	24.774		0.000		0.000		-		0.000	0.000	397.585	N/A
Remarks N/A															
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
General Support - General Support	MIPR	PM SHIELD : Huntsville, AL	11.380	1.487	Nov 2020	1.226	Nov 2021	1.211	Nov 2022	-		1.211	Continuing	Continuing	Continuing
Subtotal			11.380	1.487		1.226		1.211		-		1.211	Continuing	Continuing	N/A
Remarks N/A															
Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	N/A
Remarks N/A															
Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022		
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603881C / <i>Ballistic Missile Defense Terminal Defense Segment</i>				Project (Number/Name) MD06 / <i>Patriot Advanced Capability-3 (PAC-3)</i>				

Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total					
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Remarks N/A																	
			Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract		
Project Cost Totals			384.191	26.261		1.226		1.211		-		1.211	Continuing	Continuing	N/A		
Remarks Award Date reflects date of first obligation. Additional obligations may incrementally occur throughout the year.																	

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Missile Defense Agency												Date: April 2022											
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603881C / Ballistic Missile Defense Terminal Defense Segment						Project (Number/Name) MD06 / Patriot Advanced Capability-3 (PAC-3)											
Significant Event Complete ▲		Milestone Decision Complete ★		Element Test Complete ◆		System Level Test Complete ●						Complete Activity ◆											
Significant Event Planned △		Milestone Decision Planned ☆		Element Test Planned ◇		System Level Test Planned ○						Planned Activity ◇											
						FY 2021		FY 2022		FY 2023		FY 2024		FY 2025		FY 2026		FY 2027					
MD06 Completed Patriot Advanced Capability-3 (PAC-3) General Support						◆	◆	◆	◆	◆													
MD06 JEON - PM SHIELD											△												
MD06 Planned Patriot Advanced Capability-3 (PAC-3) General Support											◇	◇	◇	◇	◇	◇	◇	◇					

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Missile Defense Agency			Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603881C / <i>Ballistic Missile Defense Terminal Defense Segment</i>	Project (Number/Name) MD06 / <i>Patriot Advanced Capability-3 (PAC-3)</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
MD06 Completed Patriot Advanced Capability-3 (PAC-3) General Support	1	2021	1	2022
MD06 JEON - PM SHIELD	2	2022	2	2022
MD06 Planned Patriot Advanced Capability-3 (PAC-3) General Support	2	2022	4	2027

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency										Date: April 2022		
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0603881C / Ballistic Missile Defense Terminal Defense Segment				Project (Number/Name) MD40 / Program-Wide Support			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
MD40: Program-Wide Support	111.916	16.390	13.554	6.907	-	6.907	8.375	8.274	9.930	11.076	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Program Wide Support (PWS) is allocated on a pro-rata basis across multiple Agency PEs each fiscal year based on the total Agency budget, and therefore fluctuates per PE by fiscal year.

A. Mission Description and Budget Item Justification

PWS contains non-headquarters management costs in support of MDA functions and activities across the entire MDS. These functions include Government Civilians and Contract Support Services. This effort provides integrity and oversight of the MDS as well as supports MDA in the development and evaluation of technologies that will respond to the changing threat. Additionally, PWS includes personnel to support global deployments performing deployment site preparation and activation, and provides facility capabilities for MDA Executing Agent locations worldwide. Other MDA wide costs include: physical and technical security; civilian drug testing; audit readiness; the Science, Technology, Engineering, and Mathematics (STEM) program; legal services and settlements; travel and agency training; office, equipment, vehicle, and warehouse leases; utilities and base operations across multiple geographic locations; commercial and ancillary facility services; management of all facility aspects regardless of lifecycle stage; supplies and maintenance; compliance with statutory environmental requirements; data and unified communications support; materiel and readiness and central property management of equipment; Facilities Sustainment, Restoration and Modernization (FSRM) program (formerly Real Property Maintenance) to keep the Department's inventory of facilities in good working order; and similar operating expenses. PWS is allocated on a pro-rata basis across most Agency PEs and therefore fluctuates per PE by fiscal year based on the total Agency budget in that fiscal year.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2021	FY 2022	FY 2023
Title: Program Wide Support	16.390	13.554	6.907
Articles:	-	-	-
Description: PWS contains non-headquarters management costs in support of MDA functions and activities across the entire MDS. These functions include Government Civilians and Contract Support Services. This effort provides integrity and oversight of the MDS as well as supports MDA in the development and evaluation of technologies that will respond to the changing threat. Additionally, PWS includes personnel to support global deployments performing deployment site preparation and activation, and provides facility capabilities for MDA Executing Agent locations worldwide. Other MDA wide costs include: physical and technical security; civilian drug testing; audit readiness; the STEM program; legal services and settlements; travel and agency training; office, equipment, vehicle, and warehouse leases; utilities and base operations across multiple geographic locations; commercial and ancillary facility services; management of all facility aspects regardless of lifecycle stage; supplies and maintenance; compliance with statutory environmental requirements; data and unified communications support; materiel and readiness and central property management of equipment; the FSRM program (formerly Real Property Maintenance) to keep the Department's			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency		Date: April 2022	
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603881C / <i>Ballistic Missile Defense Terminal Defense Segment</i>	Project (Number/Name) MD40 / <i>Program-Wide Support</i>	
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2021	FY 2022
inventory of facilities in good working order; and similar operating expenses. PWS is allocated on a pro-rata basis across most Agency PEs and therefore fluctuates per PE by fiscal year based on the total Agency budget in that fiscal year.			
FY 2022 Plans: - See ABOVE			
FY 2023 Plans: - SEE ABOVE			
FY 2022 to FY 2023 Increase/Decrease Statement: Decrease from FY 2022 to FY 2023 reflects the PWS allocation on a pro-rata basis across multiple Agency PE's each fiscal year based on the total Agency budget, and therefore fluctuates per PE by fiscal year.			
Accomplishments/Planned Programs Subtotals		16.390	13.554
C. Other Program Funding Summary (\$ in Millions) N/A			
Remarks			
D. Acquisition Strategy N/A			

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603881C / <i>Ballistic Missile Defense Terminal Defense Segment</i>						Project (Number/Name) MD40 / <i>Program-Wide Support</i>			
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Wide Support - Agency Facilities and Maintenance	MIPR	Various : VA	4.973	0.000		7.165	Oct 2021	0.000		-		0.000	Continuing	Continuing	Continuing
Program Wide Support - Agency Facilities and Maintenance SRM	MIPR	Various : Multi: AK, AL, CA, CO, HI, NY, VA	0.000	0.000		0.018	Nov 2021	0.000		-		0.000	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations Management	Various	Various : Multi: AL, CA, CO, VA	7.109	0.000		0.000		0.000		-		0.000	0.000	7.109	0.000
Program Wide Support - Agency Operations and Support Civilian Salaries, Travel, Training	Various	Various : MDA Multi: AL, CO, CA, VA,	18.000	0.000		0.700	Oct 2021	0.000		-		0.000	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations and Support International and Materiel and Readiness	MIPR	Various : Multi: AL, VA, Aust, Japan	3.492	0.000		0.000		0.000		-		0.000	0.000	3.492	0.000
Program Wide Support - Agency Operations and Support Services	C/CPFF	Various : Multi: AL, CO, VA	73.040	16.390	Dec 2020	5.666	Oct 2021	5.792	Nov 2022	-		5.792	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations, Sustainment and GPC	C/CPFF	Various : AK, AL, CA, HI, NY, VA	0.000	0.000		0.005	Nov 2021	1.115	Nov 2022	-		1.115	Continuing	Continuing	Continuing
Program Wide Support - FFRDC/UARC	C/CPAF	Various : Multi: AL, VA	1.787	0.000		0.000		0.000		-		0.000	0.000	1.787	0.000
Program Wide Support - Prior year no longer funded in the FYDP	Various	Various : Various	3.515	0.000		0.000		0.000		-		0.000	0.000	3.515	0.000
Subtotal			111.916	16.390		13.554		6.907		-		6.907	Continuing	Continuing	N/A
Remarks N/A															

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency											Date: April 2022				
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0603881C / Ballistic Missile Defense Terminal Defense Segment					Project (Number/Name) MD40 / Program-Wide Support					
			Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			111.916	16.390		13.554		6.907		-		6.907	Continuing	Continuing	N/A

Remarks

Award Date reflects date of first obligation. Additional obligations may incrementally occur throughout the year.

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Missile Defense Agency														Date: April 2022															
Appropriation/Budget Activity 0400 / 4										R-1 Program Element (Number/Name) PE 0603881C / Ballistic Missile Defense Terminal Defense Segment										Project (Number/Name) MD40 / Program-Wide Support									
Significant Event Complete ▲ Significant Event Planned △					Milestone Decision Complete ★ Milestone Decision Planned ☆					Element Test Complete ◆ Element Test Planned ◇					System Level Test Complete ● System Level Test Planned ○					Complete Activity ◆ Planned Activity ◇									
										FY 2021		FY 2022		FY 2023		FY 2024		FY 2025		FY 2026		FY 2027							
MD40 Program-Wide Support										◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇					

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Missile Defense Agency			Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603881C / Ballistic Missile Defense Terminal Defense Segment	Project (Number/Name) MD40 / Program-Wide Support	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
MD40 Program-Wide Support	1	2021	4	2027

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Missile Defense Agency										Date: April 2022		
Appropriation/Budget Activity					R-1 Program Element (Number/Name)							
0400: Research, Development, Test & Evaluation, Defense-Wide I BA 4: Advanced Component Development & Prototypes (ACD&P)					PE 0603882C I Ballistic Missile Defense Midcourse Defense Segment							
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
Total Program Element	7,443.996	1,195.853	724.028	667.524	-	667.524	870.817	802.617	781.973	765.733	Continuing	Continuing
MD08: Ground Based Midcourse	7,063.948	1,108.120	669.813	616.461	-	616.461	811.895	750.058	727.176	706.512	Continuing	Continuing
MC08: Cyber Operations	163.201	47.814	24.800	27.795	-	27.795	28.553	24.908	25.407	30.271	Continuing	Continuing
MD40: Program-Wide Support	216.847	39.919	29.415	23.268	-	23.268	30.369	27.651	29.390	28.950	Continuing	Continuing
Program MDAP/MAIS Code: 362												

Note

The decrease from FY 2022 to FY 2023 reflects adjustments for prior year carryover. FY 2023 also reflects program changes due to the Increment Ground Test Re-plan decision and prime contract transition for the Development & Sustainment Contract (DSC) to Ground Based Midcourse Defense (GMD) future contracts: System Integration, Test, and Readiness (SITR) contract, GMD Weapon System (GWS) contract, Ground Based Interceptor (GBI) In-service Fleet Boost Vehicle Sustainment contract (BSC), Exo-atmospheric Kill Vehicle (EKV) Sustainment contract (ESC), and GBI Integration and Test contract (ITC). The details of these changes are contained within each R2 Accomplishment.

A. Mission Description and Budget Item Justification

GMD is an Element of the Missile Defense System (MDS) that provides combatant commands (CCMDs), including U.S. Northern Command (USNORTHCOM), with a continuously available (24 hours a day, 7 days a week, 365 days a year) capability to defend the Homeland against limited Intercontinental Ballistic Missile (ICBM) attacks. The GMD Element contributes to the MDS by acquiring, developing, demonstrating, deploying, and sustaining a midcourse weapon system for Homeland Ballistic Missile defense including: integration of the Next Generation Interceptor (NGI), improving Warfighter capabilities, and GMD service life extension to improve Warfighter confidence and utilization of the GMD Weapon System. The GMD capability consists of the GBI, GMD Fire Control (GFC), GMD Communication Network (GCN), In-Flight Interceptor Communication System (IFICS) Data Terminal (IDT), and Ground Launch Support Systems (LSS). Each GBI delivers a single kill vehicle to defeat threat warheads in space during the midcourse phase of the ballistic trajectory. The GFC consists of fire control nodes in Fort Greely, Alaska (FGA) and Missile Defense Integration and Operations Center (MDIOC) Colorado Springs, Colorado. IDTs are currently located in FGA; Vandenberg Space Force Base, California (VSFB); Eareckson Air Station, Alaska (EAS); and Fort Drum, New York. LSS are currently located in FGA and VSFB. The GMD capability leverages integration of MDS sensors across the globe. GMD development program objectives include improve homeland defensive capability against an advancing threat that is increasing both in number of missiles and complexity; execute flight testing; modernize the GMD weapon system to enhance capability and increase reliability; provide fire control and communications; reliability testing of the current fleet; develop GBI software enhancements and service life extensions that improve reliability, capability, and discrimination; improve GMD Models and Simulations (M&S); and provide engineering support for participation in system tests with other MDS assets.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Missile Defense Agency	Date: April 2022
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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 0603882C / <i>Ballistic Missile Defense Midcourse Defense Segment</i>
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B. Program Change Summary (\$ in Millions)	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023 Base</u>	<u>FY 2023 OCO</u>	<u>FY 2023 Total</u>
Previous President's Budget	1,219.261	745.144	0.000	-	0.000
Current President's Budget	1,195.853	724.028	667.524	-	667.524
Total Adjustments	-23.408	-21.116	667.524	-	667.524
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	-21.116			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	-23.247	0.000			
• Missile Defeat and Defense Enhancement	0.000	0.000	0.000	-	0.000
• Other Adjustment	-0.161	0.000	667.524	-	667.524

Change Summary Explanation

Decrease of \$21.1 million in FY 2022 reflects the Congressional reduction for unjustified growth and Layered Homeland Defense (LHD) lack of validated requirement and acquisition strategy.

FY 2023 funding increase reflects the fact that the FY 2022 President's Budget request did not include out-year funding.

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency										Date: April 2022		
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0603882C / Ballistic Missile Defense Midcourse Defense Segment				Project (Number/Name) MD08 / Ground Based Midcourse			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
MD08: Ground Based Midcourse	7,063.948	1,108.120	669.813	616.461	-	616.461	811.895	750.058	727.176	706.512	Continuing	Continuing
Quantity of RDT&E Articles	63	-	-	-	-	-	-	-	-	-		

Note

The decrease from FY 2022 to FY 2023 reflects adjustments for prior year carryover. FY 2023 also reflects program changes due to the Increment Ground Test Re-plan decision and prime contract transition from the Development & Sustainment Contract (DSC) to Ground Based Midcourse Defense (GMD) future contracts: System Integration, Test, and Readiness (SITR) contract, GMD Weapon System (GWS) contract, Ground Based Interceptor (GBI) In-service Fleet Boost Vehicle Sustainment contract (BSC), Exo-atmospheric Kill Vehicle (EKV) Sustainment contract (ESC), and GBI Integration and Test contract (ITC). The details of these changes are contained within each R2 Accomplishment.

A. Mission Description and Budget Item Justification

Ground Based Midcourse Defense (GMD) includes development and delivery of GMD Ground Systems, GBIs, and Systems Engineering and Program Management. Development objectives for GMD include: improve homeland defensive capability against an advancing threat that is increasing both in number of missiles and complexity, modernize the GMD Weapon System to provide improved fire control and communications with reduced obsolescence risk for increased availability for the warfighter, develop GBI software enhancements that improves reliability and discrimination, provide GMD and GBI service life extension upgrades, improve GMD Models and Simulation (M&S), and provide engineering support for participation with other MDS assets in system tests to demonstrate Missile Defense System (MDS) capabilities. GMD will continue the effort to develop and field improved standalone and integrated MDS discrimination capabilities, both of which will improve the System's ability to identify lethal reentry vehicles and non-lethal threat objects for enhanced interceptor performance.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

Title: Ground Based Interceptor		FY 2021	FY 2022	FY 2023
Articles:		181.009	105.560	68.905
Description: The GBI program develops improvements to enhance reliability, counter emerging threats, and improve system performance for fielded GBIs. The GBI reliability program conducts the analysis and testing necessary to characterize the reliability and service life of the GBI Fleet. The data generated from the reliability program allows the Program Office to manage the GBI fleet, develop fleet maintenance strategies, and extend interceptor service life. Missile Defense Agency (MDA) engineering uses this data to develop battle simulations for the ground test program. The Warfighter uses this data to develop tactics, techniques, and procedures (TTPs). The GBI program has planned software builds to better utilize off-board sensor data providing improved on-board discrimination capabilities to select the most lethal object in the threat scene. Additional GBI-related activities are conducted in GMD Weapon System/GBI Service Life Extension Program (SLEP) R2 Accomplishment.		-	-	-
Recurring work:				

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency		Date: April 2022	
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603882C / <i>Ballistic Missile Defense Midcourse Defense Segment</i>	Project (Number/Name) MD08 / <i>Ground Based Midcourse</i>	
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2021	FY 2022
<ul style="list-style-type: none"> -Conduct key Exo-atmospheric Kill Vehicle (EKV) engineering assessments to document current performance/capability and identify potential risk areas to assess and improve overall kill vehicle (KV) reliability for the Warfighter -Collect Reliability, Availability, Maintainability and Testability (RAM-T) data and analysis of performance metrics on the Operational System in order to continuously improve the system for the Warfighter -Continue Probabilistic Risk Assessment (reliability model) development to assess the GBI design enabling improvements to overall GBI reliability for Warfighter defense of the homeland -Continue Stockpile Reliability Program (SRP) functional testing of naturally aged GBI subsystems and components removed from previously fielded GBIs during upgrade/modification to understand performance and aging characteristics in order to establish life limits, achieve GBI maintenance cost savings, and build Warfighter confidence in aging GBIs -Conduct rocket motor propellant studies to extend the service life of limited life items in order to achieve cost savings on GBI lifecycle maintenance and further build Warfighter confidence in aging GBIs -Develop software to improve system robustness and reliability -Sustain the capability to develop and test replacement components and to upgrade the GBI fleet -Continue to use the EKV Hardware-in-the-Loop (HWIL) 10V Chamber for operational analysis of emerging threats, discrimination improvements performance, pre-mission testing and post flight analysis and reconstruction in accordance with the Integrated Master Test Plan (IMTP) to reduce execution risks and gain confidence that capabilities performed as expected <p>Specific and/or unique accomplishments to each FY are as follows:</p> <p>FY 2022 Plans:</p> <ul style="list-style-type: none"> -Develop EKV software to provide additional mid-term discrimination and homeland threat space updates for the Capability Enhancement II(CE-II) fleet -Maintain boost vehicle software -Begin integration of hardware for flight test GBI to support FTG-12 -Begin transition from Development and Sustainment Contract (DSC) to In-service GBI Fleet contracts to demonstrate and deploy new Homeland Defense Increment Capabilities to establish well-defined Capability-based baselines and an enduring Readiness baseline <p>FY 2023 Plans:</p> <ul style="list-style-type: none"> -Continue transition from Development and Sustainment Contract (DSC) to In-service GBI Fleet contracts to demonstrate and deploy new Homeland Defense Increment Capabilities to establish well-defined Capability-based baselines and an enduring Readiness baseline -Continue developing CE-II EKV software to provide additional mid-term discrimination and homeland threat space updates -Deliver GBI for FTG-12 			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency		Date: April 2022		
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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2021	FY 2022	FY 2023
-Complete second delivery of two additional CE-II Block 1 EKV with Configuration 2 (C2) Boost Vehicle GBIs assembled from spares				
FY 2022 to FY 2023 Increase/Decrease Statement: Decrease from FY 2022 to FY 2023 reflects the completion of the acquisition of the FTG-12 flight test vehicle, the completion of DSC software builds, efficiencies for GBI product support, and transition of GBI development from high intensity activities to steady state development for the next build. The decrease also reflects SRP testing on GBI parts acquired in previous years.				
Title: Ground Systems & Fire Control		203.486	172.385	156.614
Articles:		-	-	-
Description: The GMD Ground Systems enable control and operation of the GMD Element as part of the MDS. Ground Systems consists of the GMD Fire Control (GFC), GMD Communications Network (GCN), In-Flight Interceptor Communication System (IFICS) Data Terminal (IDT), and Launch Site Components (LSC) (silos, silo interface vaults [SIVs]). These components collect and process sensor data, perform mission planning and fire control, command the launch of GBIs, communicate with interceptors in flight, and provide environmental support for GBIs during peacetime.				
-Continue development of the Fort Greely, AK (FGA) Communication Center (FGACC) to improve communication redundancy				
-Continue fielding GCN modernization efforts to support FGA Missile Field 4 (MF-4), improve Cybersecurity posture, and replace aging hardware and software that is no longer supportable				
-Continue development, testing and integration of FGA MF-4 and increase Silo capacity and modernize SIV equipment in existing Silos				
-Continue development and testing of the Ground Systems 9 software and hardware build that provides additional discrimination improvements and implements MDS System Track. MDS System Track fuses data from multiple sensors and provides GMD with improved track accuracy and additional discrimination features				
-Continue implementation of software and hardware fixes to address weaknesses found during testing				
-Implement additional cyber resiliency in GMD systems by developing system level requirements that flow to component level designs, allowing GMD systems to operate in a cyber-contested environment				
-Continue development of the Phased Array IDT (PA IDT) antenna to enable on-demand communication with additional interceptors throughout flight with increased frequency of communication events. This will enable kill vehicles to provide additional target scene information to GFC enabling enhanced situational awareness for the Warfighter and improved battle management. This upgrade also addresses obsolescence with the current IDT configuration by replacing aged equipment and processors				
-Continue development and engineering efforts for Ground Weapons Systems (GWS) 10 software to incorporate code modernization, initial PA-IDT capabilities, initiation of Development/Security/Operations (DEVSECOPS), and early integration to support initial flight tests of Next Generation Interceptor (NGI)				

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency		Date: April 2022	
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603882C / <i>Ballistic Missile Defense Midcourse Defense Segment</i>	Project (Number/Name) MD08 / <i>Ground Based Midcourse</i>	
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2021	FY 2022
<p>-Continue development and testing of an integrated Computer Network Defense system that improves the operator's ability to detect and respond to real-time cyber integration efforts</p> <p>-Continue transition from the DSC to the GWS contract</p> <p>Specific and/or unique accomplishments to each FY are as follows:</p> <p>FY 2022 Plans:</p> <ul style="list-style-type: none"> - Complete fielding the programmable modem and receiver/transmitter for the IDT to increase communications bandwidth and enable multiple waveforms to communicate with existing and future interceptors. This upgrade addresses obsolescence with the current IDT by replacing aged equipment -Complete development and begin fielding of Ground Systems 8 software builds. Ground Systems 8 software incorporates 2/3 stage GBI capability, integrates Long Range Discrimination Radar (LRDR) with GMD fire control, and incorporates new discrimination data from Sea-based X-band Radar (SBX) -Begin development of the Phased Array IDT antenna to enable on demand communication with additional interceptors throughout flight with increased frequency of communication events. This will enable kill vehicles to provide additional target scene information to GMD Fire Control enabling enhanced situational awareness for the Warfighter and improved battle management. This upgrade addresses obsolescence with the current IDT by replacing aged equipment and processors -Initiate requirements development and engineering efforts for Ground Systems 10 software to incorporate code modernization, initial Phased Array IDT capabilities, initiation of development/security/operations (DevSecOps), and early integration to support initial flight tests of Next Generation Interceptor - Implement robust cyber resiliency in GMD systems by developing system level requirements that flow to component level designs, allowing GMD systems to operate in a cyber-contested environment - Implements software and hardware fixes to address weaknesses found during testing - Develop and test an integrated Computer Network Defense system that improves the operator's ability to detect and respond to real-time cyber integration efforts <p>FY 2023 Plans:</p> <ul style="list-style-type: none"> -Complete Ground System (GS) Software Build 8 for system level testing to support Missile Defense System (MDS) Increment 6B.2: Expands battle space; uses LRDR/SBX discrimination data to inform KV of target scene; provides mixed fleet planning optimizing use of interceptor types -Complete GS Software Build 9 (GS-9): Improves track accuracy; Incorporates space-based kill assessment (SKA); adds advanced discrimination for multiple sensors increasing performance. GS-9 is integrated into GWS 10A as a part of transition from the DSC to the GWS contract 			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency		Date: April 2022		
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603882C / Ballistic Missile Defense Midcourse Defense Segment	Project (Number/Name) MD08 / Ground Based Midcourse		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2021	FY 2022	FY 2023
<p>-Continue GWS Build 10A to support MDS Increment 6C/7: Software re-architecture, Implementation of DEVSECOPS, GS-9 Improvements and the development of the PA-IDT.</p> <p>-Initiate GWS Build 10B to support MDS Increment 10: NGI flight tests, Initial NGI operational support, weapon system improvements for PA-IDT, additional threats, Interceptor Mixed Fleet Planning, and discrimination improvements</p> <p>-Initiate design, development, and deployment of a Test PA-IDT Transportable (PA-IDT-T) Asset to ensure NGI capabilities can be sufficiently tested to support an NGI production decision, including fully testing both the GMD and NGI capabilities to provide on-demand communications, last scene data, and post-intercept assessment for increased reliability and warfighter confidence</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement:</p> <p>The net decrease from FY 2022 to FY 2023 reflects reduction of Layered Homeland Defense program, realignment of GS-8, GS-9, and GWS 10A software builds due to strategic alignment with NGI and Ground Test Replan, delay of MF-4 integration due to GT Replan, and reductions for prior year carryover.</p>				
<p>Title: Systems Engineering and Program Management</p> <p>Articles:</p> <p>Description: GMD Element Engineering (formerly GMD Systems Engineering) consists of both GMD Element Systems Engineering and GMD Element Product Engineering, and the GMD Technical Direction Agent (TDA). GMD Element Engineering provides the essential engineering functions for the development, fielding, and sustainment of the GMD Element. GMD Program Management supplied by the Development and Sustainment Contract (DSC) and the System Integration, Test, and Readiness (SITR) contract provides the management of GMD development and sustainment activities to ensure content delivery is in line with cost, schedule, and performance objectives.</p> <p>GMD Element Systems Engineering develops and integrates GMD Element capabilities and products with efficient processes and common tools in an integrated digital environment to field a verifiably effective GMD Element to defeat the Ballistic Missile threat to the United States Homeland. GMD Element Systems Engineering provides key functions and products such as: GMD Element-level performance requirements development and verification, GMD internal and external interface requirements development and verification, GMD Element-level developmental testing analyses; GMD Element-level performance analyses and assessments; GMD Element-level modeling and simulation (M&S) development, integration, verification, and validation; digital engineering infrastructure; GMD software assessment; GMD Element-level technical integration; GMD Engineering Development and Early Integration Lab development, maintenance, and operations; and maintenance of the GMD Technical Baseline.</p> <p>GMD Element Product Engineering delivers sound and integrated engineering and manufacturing processes and products through engineering controls, management, and verification; independent test, analysis, and assessment of failed and high risk events and engineering efforts; hardware and software readiness; and industrial and manufacturing readiness. GMD</p>		393.781 -	305.867 -	340.238 -

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency		Date: April 2022	
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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2021	FY 2022
<p>Element Product Engineering provides key functions and products such as: GMD integrated design; risk, issues, and opportunities management; interface designs; failure review boards; and the maintenance of the GMD Operational Capability Baseline.</p> <p>MDS Systems Engineering provides architecture analysis, development and flow-down of System-level GMD performance and interface requirements, MDS integration, System-level requirements verification and validation, and M&S framework support and environmental modeling required for GMD participation in System-level HWIL and digital events that provide data for System-level assessment and capability delivery to the Warfighter.</p> <p>GMD TDA provides the technical expertise and program execution experience required to offer the MDA independent analysis, unbiased and objective weapon system level-oriented advice on technical issues and product development, and recommendations on technical issues and product development challenges faced in the GMD Program.</p> <p>Program Management provides for prime contractor management of DSC and SITR contract activities to ensure technical content delivery in line with cost, schedule, and performance objectives. This effort includes: program and business management; program administration; subcontract management; technical and testing oversight; verification of hardware and software development; quality, safety, and mission assurance; integrated logistics support; and infrastructure to develop, test, and sustainment of the GMD Element.</p> <p>Recurring engineering and management efforts include:</p> <ul style="list-style-type: none"> -Maintain GMD performance and interface requirements -Execute GMD performance analyses and assessments -Integrate and deliver GMD models and simulations supporting multiple intended uses -Expand the GMD Digital Engineering infrastructure including the Integrated Digital Data Environment (IDDE) -Execute GMD Element analysis of ground and cyber tests -Execute Software Independent Verification and Validation and Software Assurance -Expand the GMD DevSecOps Ecosystem -Maintain the GMD Technical Baseline -Maintain GMD risks, issues, and opportunities -Develop GMD interface designs -Execute GMD discrimination design improvements -Maintain the GMD Operational Capability Baseline -Conduct GMD engineering, technical, and integration support to ensure the GMD program meets performance goals -Execute Prime Contractor Integrated Logistics Support (ILS) -Conduct Prime Contractor Quality, Safety and Mission Assurance (QSMA) 			
			FY 2023

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency		Date: April 2022	
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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2021	FY 2022
<p>-Execute Prime Contractor program administration, business management, and subcontract management</p> <p>Recurring Technical Direction Agent (TDA) efforts include:</p> <ul style="list-style-type: none"> -Offer objective advice on technical issues and product development challenges facing the GMD Program -Facilitate the implementation of consistent software and systems engineering processes -Perform independent evaluation of GMD element/component designs, design maturity, and technical approach and make recommendations on technical issues and alternatives -Independently assess integrated system performance and mission effectiveness -Identify and assess risks; Evaluate risk mitigation approaches and make recommendations on alternative approaches and prioritization of risk reduction activities -Conduct special studies to investigate and identify solutions to specific problems that might involve alternate approaches, new architectures, or integration of new activities -Evaluate future mission needs and explore advanced/evolutionary concepts and technologies <p>Specific and/or unique accomplishments to each FY are as follows:</p> <p>FY 2022 Plans:</p> <p>Support the Warfighter with Increased Reliability and Readiness:</p> <ul style="list-style-type: none"> - Integrate and Deliver Models and Simulations Supporting Ground Tests - Execute Ground Test Analysis and Cyber Test Analysis - Maintain GMD Engineering Development and Early Integration Lab Authorities to Operate <p>Increase Engagement Capability and Capacity:</p> <ul style="list-style-type: none"> - Execute GMD Increment 6B Critical Design Review - Execute GMD Performance Deep Dive Assessments to further analyze system design, engineering and integration details - Execute Ground Systems Software Independent Verification and Validation and Software Assurance - Expand Government GMD Engineering Development and Early Integration Lab Capabilities <p>Address the Advanced Threat:</p> <ul style="list-style-type: none"> - Expand the GMD Digital Engineering Integrated Digital Data Environment - Complete the acquisition process and initiate the System Engineering, Integration, Test, and Readiness (SITR) contract to facilitate the system engineering activities for the GMD Weapon System for MDS Increments 9 and 10 			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency		Date: April 2022		
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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2021	FY 2022	FY 2023
<p>- Continue development of threat discrimination improvements to enhance GMD performance against existing and emerging threats</p> <p>FY 2023 Plans:</p> <p>-Execute GMD Increment 6B assessments and verification</p> <p>-Execute GWS 10A System Requirements Review (SRR) and Preliminary Design Review (PDR)</p> <p>-Execute GWS Incremental Reviews</p> <p>-Initiate and Support NGI PDRs</p> <p>-Conduct GMD Increment 10 SRR</p> <p>-Conduct Increment 10 GMD Element Design and Technical integration using Digital Engineering to integrate the NGI to deliver a multi-interceptor GMD Weapon System</p> <p>-Transition, expand, maintain, and operate GMD Engineering Development and Early Integration Lab Capabilities for fielded and future GMD increments including establishing GMD Integration Lab</p> <p>-Plan, manage, and execute transition of GMD activities to align with the GMD Future Acquisition Strategy, in order to maintain and deliver GMD capabilities for MDS Increment 6B, 6C, 10, and 11 to the Warfighter</p> <p>-Conduct an Independent analysis and assessment of the NGI programs to support PDRs and the GMD Weapon System to support Increment 6C and 10 Engineering Technical Reviews</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement:</p> <p>Increase from FY 2022 to FY 2023 provides transition for Element Engineering and Government Laboratories from the Development & Sustainment Contract (DSC) to the System Integration, Test, & Readiness (SITR) contract and the initiation of Increment 10, which is integration of NGI into the GMD Weapon System. The increase will also provide investments for the GMD DevSecOps Ecosystem and GMD Digital Engineering.</p>				
<p>Title: Program Operations</p> <p align="right">Articles:</p> <p>Description: Program Operations provides for government management of the GMD program. This effort provides:</p> <p>-Technical, business, acquisition, configuration management and integration activities to ensure the GMD program meets cost, schedule, and performance goals</p> <p>-Ensure program compliance with internal and external direction, policies, and regulations to deliver critical capability within a consistent and disciplined process</p> <p>-Internal Agency program reviews to measure program progress against the six MDA approved baselines</p> <p>-Mission Assurance and Manufacturing Engineering Program to include Quality, Configuration Management, Manufacturing, Engineering, and Safety (QSMA) in all phases of the system life cycle, throughout the supply chain, and at all levels of assembly emphasizing high yield rates which minimize test and rework costs</p>		60.118 -	46.476 -	50.704 -

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency		Date: April 2022		
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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2021	FY 2022	FY 2023
-Sustainment of core infrastructure and unified communications services to accomplish the GMD mission				
FY 2022 Plans: - SEE ABOVE.				
FY 2023 Plans: - Improve Information Technology (IT) systems and infrastructure for digital engineering implementation				
FY 2022 to FY 2023 Increase/Decrease Statement: N/A				
Title: GMD Weapon System/GBI Service Life Extension Program (SLEP)		269.726	39.525	0.000
Articles:		-	-	-
Description: The GMD Weapon System / GBI Service Life Extension Program (SLEP) completes reliability upgrades for existing weapon system and GBI components, sustains repair capabilities, and performs other activities to sustain the existing GBI and GMD Weapon System capability.				
Recurring work:				
-Sustain equipment at production/repair facilities				
-Continue reliability upgrades on existing GBI fleet and weapon system components				
FY 2022 Plans: -SEE ABOVE				
FY 2023 Plans: -N/A				
FY 2022 to FY 2023 Increase/Decrease Statement: Decrease from FY 2022 to FY 2023 reflects the use of previously procured boost vehicle components, which reduced the cost for GMD reliability and SLEP GBI upgrades. The decrease also reflects the impact of prior year Congressional plus-up funding, which enables SLEP upgrades to continue in FY 2023.				
Accomplishments/Planned Programs Subtotals		1,108.120	669.813	616.461

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency									Date: April 2022		
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C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• 0208866C: MD08: Midcourse Defense O&M	148.741	156.623	185.564	-	185.564	199.248	204.864	188.486	186.647	Continuing	Continuing
• 0208866C: MD08:: GMD Procurement	150.000	0.000	11.300	-	11.300	0.000	18.403	42.725	48.866	Continuing	Continuing
• 0604874C: Improved Homeland Defense Interceptors	843.899	884.125	1,833.357	-	1,833.357	2,104.382	2,232.025	1,448.632	1,358.561	Continuing	Continuing
• 0604887C: Ballistic Missile Defense Midcourse Defense Segment Test	67.071	61.424	84.075	-	84.075	73.920	68.490	95.223	191.476	Continuing	Continuing
Remarks											
D. Acquisition Strategy											
<p>The GMD program will continue to follow testing, development, and evolutionary acquisition through incremental development for near term improvements while simultaneously developing the next generation technologies for major leaps in missile defense capabilities to address the advancing threat. The Agency acquisition strategy ensures GMD Components are upgraded to improve GMD Component performance and GMD Element performance in order to build on the proven GMD contribution to the integrated MDS. This acquisition approach reduces obsolescence risk, provides opportunities for incremental capability improvements, and allows decision makers to make informed trades between cost, schedule, and performance while exploring improved operational and technological capabilities.</p> <p>GMD awarded a competitive DSC on December 30, 2011. This contract included development, fielding, test, systems engineering, integration, and configuration management; equipment manufacturing and upgrade; training, operations and sustainment of the GMD Element and associated support facilities. On January 31, 2018, the DSC Extension was awarded to the Boeing Company (Boeing) with a period of performance through 1Q FY 2024. The DSC Extension includes supporting test, engineering, software, and performance based logistics scope. The DSC structure breaks out major efforts into separate Contract Line Item Numbers with individual incentives for management insight, accounting and property accountability.</p> <p>The current DSC prime contractor is responsible for a majority of the GMD scope through delivery of MDS Increment 6B.2. GMDs current DSC period of performance ends in December 2023 for the general scope with the expectation that minimal contract line items will remain open beyond December 2023 to allow the prime contractor to complete the delivery of MDS Increment 6B.2 in 2024. The DSC will deliver GS-9 software to the Government to support transition to the future contracts for deliveries after MDS Increment 6B.2. Boeing executes the DSC with four major subcontractors: Northrop Grumman Mission Systems, Northrop Grumman Innovation Solutions, Raytheon Missile Systems, Vigor, and many other minor subcontractors.</p> <p>The GMD Future Acquisition Strategy will satisfy future GMD Element requirements beyond DSCs support, and will initiate and execute concurrently while the DSC scope is completing.</p>											

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency		Date: April 2022
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<p>GMD Future Acquisition Strategy:</p> <p>MDA plans to competitively award a single SITR contract to provide, along with the Technical Direction Agent, a synergistic approach in executing the GMD Element-level engineering, integration, test, and readiness of the GMD Weapon System. The SITR contractor is charged with being the Government's technical partner for day-to-day operation and sustainment of the GMD Weapon System alongside the USNORTHCOM Warfighters. While the Government maintains overall authority, the SITR contractor will assume a technical role responsible for ensuring overall GMD integration including physical and logical integration of the GMD Components, GMD Element, and MDA enterprise level integration, planning and execution of all necessary testing to verify and validate overall requirements compliance.</p> <p>MDA plans to competitively award a single GMD Weapon System (GWS) contract to provide design, development, production, product level testing, sustainment planning, and deployment of new capabilities for the Weapon System. The GWS contractor will be responsible for developing weapon system solutions, including fire control and communication systems improvements, required to update the legacy system to remain effective while NGI is under development, as well as, preparing for the seamless introduction of NGI and other future MDS capabilities. The GWS contract will update the system interface for the addition of NGIs to the fleet, provide the Warfighter capability to operate the GWS with a mixed fleet of GBIs and NGIs, and identify and develop solutions for message exchanges between GWS and in-flight kill vehicles. All of this must be accomplished while maintaining a robust cyber defense network capable of detecting and defending against current and future cybersecurity threats.</p> <p>MDA has awarded/plans to award sole source contracts to the GMDs GBI in-service fleet (ISF) original equipment manufacturers (OEMs) to perform service life extensions and maintain the existing fleet, execute repairs, and develop software. These contracts are intended primarily to ensure fleet viability until replacement interceptors (NGI) are fielded. ISF is constrained to the legacy interceptor fleet and its component boosters and kill vehicles. The Boost Vehicle Sustainment Contract was awarded to Northrop Grumman in September 2021. The EKV Sustainment Contract is planned for award in 2Q FY 2022. The GBI Integration and Test Contract is planned for award in 1Q FY 2024.</p> <p>MDA competitively awarded two best value contracts on March 24, 2021 for the development of Next Generation Interceptor and plans to maintain competition through the Critical Design Review in FY 2025 to reduce technical risk, drive industry behavior(s) through retention of a competitive environment throughout early design development activities, secure competitive production pricing, and support the Department's ability to field a system capable of negating the expanded threat.</p> <p>GMD Increment 6C, 10, and 11 will be executed with the SITR and GWS contracts. Both contracts are expected to be awarded NLT 4Q FY 2022.</p> <p>GMD has implemented a robust Program Board structure allowing more Government insight and decisions into the technical baseline and has changed business processes for greater Government involvement in program decisions. In addition, GMD utilizes Government laboratory modeling and simulation and analysis capabilities to augment the current DSC efforts. These efforts utilize existing MDA and Other Government Agency competitively awarded contracts with the COLSA Corporation, VSBF, CA, MDIOC, U.S. Army Combat Capabilities Development Command Aviation & Missile Center (formerly known as U.S. Army Aviation and Missile Research, Development and Engineering Center), and Pacific Missile Range Facility in Hawaii.</p>		

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603882C / Ballistic Missile Defense Mi dcourse Defense Segment				Project (Number/Name) MD08 / Ground Based Midcourse					
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Ground Based Interceptor - Additional Boosters	C/CPIF	Boeing AL/AK/AZ : CA/CO/TX/VA	219.874	10.850	Nov 2020	0.000		0.000		-		0.000	0.000	230.724	0.000
Ground Based Interceptor - All Up Round Development	C/CPIF	Boeing : AL/AK/AZ/ CA/CO/TX/VA	16.965	0.000		0.000		0.000		-		0.000	0.000	16.965	0.000
Ground Based Interceptor - Booster Development	C/CPIF	Boeing : AL/AK/AZ CA/CO/TX/VA	125.000	0.000		0.000		0.000		-		0.000	0.000	125.000	0.000
Ground Based Interceptor - Configuration 2 CBAU Booster Development	C/CPIF	Boeing : AL/AK/AZ CA/CO/TX/VA	54.550	0.000		0.000		0.000		-		0.000	0.000	54.550	0.000
Ground Based Interceptor - EKV Spares	C/CPIF	Boeing : AL/AK/AZ/ CA/CO/TX/VA	6.811	1.300	Nov 2020	0.000		0.000		-		0.000	0.000	8.111	0.000
Ground Based Interceptor - Flight Rotations for MDS Testing	C/CPIF	Boeing : AL/AK/AZ/ CA/CO/TX/VA	73.950	0.000		0.000		0.000		-		0.000	0.000	73.950	0.000
Ground Based Interceptor - GBI Integration for Flight Test	C/CPIF	Boeing : AL/AK/AZ/ CA/UT	11.395	0.000		10.342	Jan 2022	0.000		-		0.000	0.000	21.737	0.000
Ground Based Interceptor - GBI Parts Testing & Reverse Flow	C/CPIF	Boeing : AL/AK/AZ/ CA/CO/TX/VA	4.267	2.936	Nov 2020	0.000		0.000		-		0.000	0.000	7.203	0.000
Ground Based Interceptor - GBI Prime Product Support	C/CPIF	Boeing AL/AK/AZ : CA/CO/TX/VA	459.348	74.400	Nov 2020	0.000		0.000		-		0.000	0.000	533.748	0.000
Ground Based Interceptor - GBI Relocations & Emplacements	C/CPIF	Boeing : AL/AK/AZ/ CA/CO/TX/VA	0.000	17.239	Nov 2020	0.000		0.000		-		0.000	0.000	17.239	0.000
Ground Based Interceptor - Government Reliability Program	MIPR	Various : Various	33.323	3.104	Nov 2020	0.000		0.000		-		0.000	0.000	36.427	0.000
Ground Based Interceptor - Ground Based Interceptors #48-58 (CE-II)	C/CPIF	Boeing : AL/AK/AZ/ CA/CO/TX/VA	716.580	0.000		0.000		0.000		-		0.000	0.000	716.580	0.000

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Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Ground Based Interceptor - Interceptor Manufacturing Support	MIPR	Various : Vanguard, HSV, AL	35.153	6.781	Nov 2020	0.000		0.000		-		0.000	0.000	41.934	0.000
Ground Based Interceptor - Logistics and Safety Support	C/CPIF	VENTURI, INC. : Various	2.008	2.673	Jan 2021	2.954	Jan 2022	0.000		-		0.000	0.000	7.635	0.000
Ground Based Interceptor - Logistics and Safety Support - Scott AFB	MIPR	DOD - USAF - SCOTT AIR FORCE BASE (SCOTT AFB) : IL	0.000	0.000		0.000		3.217	Jan 2023	-		3.217	Continuing	Continuing	Continuing
Ground Based Interceptor - Operational Spares	C/CPIF	Boeing AL/AK/AZ : CA/CO/TX/VA	28.962	0.000		0.000		0.000		-		0.000	0.000	28.962	0.000
Ground Based Interceptor - Prime Interceptor Manufacturing & Lab Support	C/CPIF	Boeing : AL/AK/AZ/ CA/CO/TX/VA	69.227	0.000		0.000		0.000		-		0.000	0.000	69.227	0.000
Ground Based Interceptor - Prime Reliability Program	C/CPIF	Boeing AL/AK/AZ : CA/CO/TX/VA	90.400	18.960	Nov 2020	0.000		0.000		-		0.000	0.000	109.360	0.000
Ground Based Interceptor - Software Maintenance & Updates	C/CPIF	Boeing AL/AK/AZ : CA/UT/TBD	122.111	34.546	Nov 2020	23.958	Nov 2021	0.000		-		0.000	0.000	180.615	0.000
Ground Based Interceptor - Software Maintenance & Updates - BOEING COMPANY	C/CPIF	BOEING : AL	0.000	0.000		0.000		12.530	Nov 2022	-		12.530	Continuing	Continuing	Continuing
Ground Based Interceptor - Software Maintenance & Updates - RAYTHEON	C/CPIF	RAYTHEON : Various	0.000	0.000		0.000		5.077	Nov 2022	-		5.077	Continuing	Continuing	Continuing
Ground Systems & Fire Control - Ft. Greely Comm Center	C/TBD	TBD : AK	0.000	0.000		20.692	Nov 2021	5.403	Nov 2022	-		5.403	Continuing	Continuing	Continuing
Ground Systems & Fire Control - GS-8 Software & Hardware Development	C/CPIF	Boeing : AL/AK/CA/ CO/VA	51.437	88.955	Jan 2021	27.617	Jan 2022	0.002	Nov 2022	-		0.002	Continuing	Continuing	Continuing

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Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Ground Systems & Fire Control - GS-9 Software & Hardware Development	C/CPIF	BOEING : AL/AK/CA/CO/VA/TBD	57.415	52.838	Jan 2021	46.264	Jan 2022	19.812	Nov 2022	-		19.812	Continuing	Continuing	Continuing
Ground Systems & Fire Control - GWS-10A Software & Hardware Development - GWS	TBD	TBD : TBD	0.000	0.000		0.000		26.787	Nov 2022	-		26.787	Continuing	Continuing	Continuing
Ground Systems & Fire Control - GWS-10A Software & Hardware Development - Various	Various	Various : Various	0.000	7.578	Jan 2021	51.702	Jan 2022	0.000		-		0.000	0.000	59.280	0.000
Ground Systems & Fire Control - GWS-10B Software & Hardware Development - GWS	TBD	TBD : TBD	0.000	0.000		0.000		59.197	Nov 2022	-		59.197	Continuing	Continuing	Continuing
Ground Systems & Fire Control - Government Fort Drum IDT	MIPR	MDA/AL : /VA/NY	0.576	0.000		0.000		0.000		-		0.000	0.000	0.576	0.000
Ground Systems & Fire Control - Government Missile Field 4 (20 Silos)	MIPR	MDA : Various	11.782	7.874	Nov 2020	0.000		0.000		-		0.000	0.000	19.656	0.000
Ground Systems & Fire Control - Government Software Development	MIPR	DOD - USA - COMBAT CAPABILITIES DEVELOPMENT COMMAND (CCDC) : AL	15.308	4.054	Nov 2020	0.000		0.000		-		0.000	0.000	19.362	0.000
Ground Systems & Fire Control - MF-1: two silos to ensure the number of fielded GBIs does not decrease through the FYDP	C/CPIF	Boeing : AL/AK/AZ/CA/CO/VA	14.958	0.000		0.000		0.000		-		0.000	0.000	14.958	0.000

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Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Ground Systems & Fire Control - Phased Array IDT Development	TBD	TBD : TBD	0.216	0.000		16.934	Nov 2021	29.488	Nov 2022	-		29.488	Continuing	Continuing	Continuing
Ground Systems & Fire Control - Prime CLE Re-Architecture	C/CPIF	Boeing AL/AK/AZ : CA/CO/VA	46.609	0.000		0.000		0.000		-		0.000	0.000	46.609	0.000
Ground Systems & Fire Control - Prime Communications Infrastructure	C/CPIF	Boeing AL/AK/AZ : CA/CO/VA	9.968	0.000		0.000		0.000		-		0.000	0.000	9.968	0.000
Ground Systems & Fire Control - Prime Fort Drum IDT	C/CPIF	Boeing AL : CO/NY/VA	10.063	0.000		0.000		0.000		-		0.000	0.000	10.063	0.000
Ground Systems & Fire Control - Prime Ground Systems Software Development	C/CPIF	Boeing AL/AK/AZ : CA/CO/VA	621.011	0.000		0.000		0.000		-		0.000	0.000	621.011	0.000
Ground Systems & Fire Control - Prime MF-1 Repair and Refurbishment	C/CPIF	Boeing AL/AK/AZ : CA/CO/VA	38.925	0.000		0.000		0.000		-		0.000	0.000	38.925	0.000
Ground Systems & Fire Control - Prime Missile Field 4 (20 Silos)	C/CPIF	BOEING : Various	121.588	0.678	Nov 2020	2.319	Nov 2021	0.000		-		0.000	0.000	124.585	0.000
Ground Systems & Fire Control - Prime On Demand Communications	C/CPFF	Boeing : AL/AK/AZ/CA/CO/TX/VA	33.765	1.844	Nov 2020	0.000		0.000		-		0.000	0.000	35.609	0.000
Ground Systems & Fire Control - Prime Technology Refresh	C/CPIF	Boeing/TBD : AL/AK/CA/CO/VA/TBD	524.518	39.665	Nov 2020	1.523	Nov 2021	0.000		-		0.000	0.000	565.706	0.000
Ground Systems & Fire Control - Test Phased Array IDT	TBD	TBD : TBD	0.000	0.000		0.000		12.341	Nov 2022	-		12.341	Continuing	Continuing	Continuing
Systems Engineering and Program Management	C/CPIF	Boeing : AL	0.000	0.000		2.034	Nov 2021	2.008	Nov 2022	-		2.008	Continuing	Continuing	Continuing

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Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603882C / <i>Ballistic Missile Defense Midcourse Defense Segment</i>	Project (Number/Name) MD08 / <i>Ground Based Midcourse</i>
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Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
- Prime Modeling and Simulation - Boeing															
Systems Engineering and Program Management - Prime Modeling and Simulation - SITR	TBD	TBD : TBD	0.000	0.000		0.000		6.871	Nov 2022	-		6.871	Continuing	Continuing	Continuing
Systems Engineering and Program Management - Prime System Engineering & Integration - SITR	TBD	TBD : Various	0.000	0.000		0.000		3.289	Nov 2022	-		3.289	Continuing	Continuing	Continuing
GMD Weapon System/ GBI Service Life Extension Program (SLEP) - GMD Weapon System/GBI Service Life Extension Program (SLEP)	C/CPIF	Boeing/TBD : AL/AK/AZ/CA/UT/TBD	180.000	269.726	Nov 2020	39.525	Nov 2021	0.000		-		0.000	0.000	489.251	0.000
Subtotal			3,808.063	646.001		245.864		186.022		-		186.022	Continuing	Continuing	N/A

Remarks

N/A

Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Ground Based Interceptor - GBI Prime Product Support - ISF	Various	Various : Various	0.000	0.000		0.000		8.209	Nov 2022	-		8.209	Continuing	Continuing	Continuing
Ground Based Interceptor - Kill Vehicle Space Chamber Testing - AEDC	MIPR	Arnold AFB/ Arnold Engineering Development Center (AEDC) : OH	6.467	8.220	Nov 2020	0.000		2.735	Jan 2023	-		2.735	Continuing	Continuing	Continuing

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Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Ground Based Interceptor - GBI Prime Product Support - Boeing	C/CPIF	BOEING : AL/AZ/UT/CA/AK/TBD	0.000	0.000		38.852	Nov 2021	14.249	Nov 2022	-		14.249	Continuing	Continuing	Continuing
Ground Based Interceptor - GBI Relocations & Emplacements	C/CPIF	Boeing : AL/AK	0.000	0.000		1.691	Nov 2021	0.000		-		0.000	0.000	1.691	0.000
Ground Based Interceptor - Government Reliability Program - NORTHROP GRUMMAN	C/CPIF	NORTHROP GRUMMAN : AL	0.000	0.000		0.000		2.138	Nov 2022	-		2.138	Continuing	Continuing	Continuing
Ground Based Interceptor - Government Reliability Program - NSWC	C/CPIF	NSWC (Naval Surface Warfare Center) : AL/CO/IN	0.000	0.000		5.823	Nov 2021	2.043	Nov 2022	-		2.043	Continuing	Continuing	Continuing
Ground Based Interceptor - Government Reliability Program - Various	C/CPIF	Various : Various	0.000	0.000		0.000		0.256	Nov 2022	-		0.256	Continuing	Continuing	Continuing
Ground Based Interceptor - Kill Vehicle Space Chamber Testing - Boeing	C/CPIF	BOEING : Various	0.000	0.000		12.206	Nov 2021	4.739	Nov 2022	-		4.739	Continuing	Continuing	Continuing
Ground Based Interceptor - Kill Vehicle Space Chamber Testing - CCDC	MIPR	USA CCDC AVIATION AND MISSILE CENTE : AL	0.000	0.000		0.000		2.529	Jan 2023	-		2.529	Continuing	Continuing	Continuing
Ground Based Interceptor - Kill Vehicle Space Chamber Testing- (AFMETCAL)	MIPR	Air Force Metrology and Calibration Program Office (AFMETCAL) : Various	0.000	0.000		0.000		2.122	Jan 2023	-		2.122	Continuing	Continuing	Continuing
Ground Based Interceptor - Logistics & Safety Support - Army Aviation and Missile Command (AMCOM) Logistics Center (ALC)	MIPR	Army Aviation and Missile Command (AMCOM) Logistics Center (ALC) : AL	0.000	0.000		0.000		2.925	Jan 2023	-		2.925	Continuing	Continuing	Continuing

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Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Ground Based Interceptor - Logistics & Safety Support - CCDC	MIPR	USA CCDC AVIATION AND MISSILE CENTE : AL	0.000	0.000		3.723	Nov 2021	1.291	Jan 2023	-		1.291	Continuing	Continuing	Continuing
Ground Based Interceptor - Prime Reliability Program	C/CPIF	BOEING : AL	0.000	0.000		6.011	Nov 2021	4.845	Nov 2022	-		4.845	Continuing	Continuing	Continuing
Ground Systems & Fire Control - Government Missile Field 4 (20 Silos)	MIPR	Army Corps of Engineers : AK	0.000	0.000		4.190	Nov 2021	2.985	Jan 2023	-		2.985	Continuing	Continuing	Continuing
Ground Systems & Fire Control - Government Software Development	MIPR	Various : Various	0.000	0.000		1.144	Nov 2021	0.599	Jan 2023	-		0.599	Continuing	Continuing	Continuing
Systems Engineering and Program Management - Government Discrimination Improvements	C/CPIF	PARSONS GOVERNMENT SERVICES INC. : AL/ TBD	30.787	6.184	Nov 2020	0.290	Nov 2021	0.553	Nov 2022	-		0.553	Continuing	Continuing	Continuing
Systems Engineering and Program Management - Government EKV HWIL Tests in Space Chamber	MIPR	AEDC : Tullahoma, TN	39.996	0.000		0.000		0.000		-		0.000	0.000	39.996	0.000
Systems Engineering and Program Management - Government Modeling and Simulation	MIPR	USA CCDC AVIATION AND MISSILE CENTE : Redstone Arsenal/ AL, TBD	164.561	24.798	Nov 2020	26.312	Nov 2021	23.743	Jan 2023	-		23.743	Continuing	Continuing	Continuing
Systems Engineering and Program Management - Government Systems Engineering & Integration	C/CPIF	Jacobs Tech Inc, Parsons Govt Serv, Torch Tech Inc, TBD : AL	242.610	62.553	Nov 2020	61.364	Nov 2021	0.536	Nov 2022	-		0.536	Continuing	Continuing	Continuing
Systems Engineering and Program Management - Government Systems Engineering & Integration - Air Force Space and Missile Systems Center (SMC)	MIPR	Air Force Space and Missile Systems Center (SMC) : TBD	0.000	0.000		0.000		3.145	Jan 2023	-		3.145	Continuing	Continuing	Continuing

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Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Systems Engineering and Program Management - Government Systems Engineering & Integration - CCDC	MIPR	USA CCDC AVIATION AND MISSILE CENTE : TBD	0.000	0.000		0.000		5.374	Jan 2023	-		5.374	Continuing	Continuing	Continuing
Systems Engineering and Program Management - Government Systems Engineering & Integration - PARSONS GOVERNMENT SERVICES INC.	C/CPIF	PARSONS GOVERNMENT SERVICES INC. : TBD	0.000	0.000		0.000		39.764	Nov 2022	-		39.764	Continuing	Continuing	Continuing
Systems Engineering and Program Management - Government Systems Engineering & Integration - TORCH TECHNOLOGIES INC	C/CPIF	TORCH TECHNOLOGIES INC : TBD	0.000	0.000		0.000		1.460	Nov 2022	-		1.460	Continuing	Continuing	Continuing
Systems Engineering and Program Management - Information Management & Technology Ops	C/CPAF	Northrop Grumman/ Jacobs Engineering : AL, AK, CA, CO, HI, NM, VA	62.947	12.246	Nov 2020	12.261	Nov 2021	12.402	Nov 2022	-		12.402	Continuing	Continuing	Continuing
Systems Engineering and Program Management - M&S Industry Support	C/CPAF	Northrop Grumman : AI, VA	2.539	0.000		0.000		0.000		-		0.000	0.000	2.539	0.000
Systems Engineering and Program Management - M&S Support CCDC	Allot	Various : TBD	0.000	4.238	Nov 2020	0.000		0.000		-		0.000	0.000	4.238	0.000
Systems Engineering and Program Management - M&S Support - Various	Various	Various : Various	0.000	0.938	Nov 2020	0.000		0.000		-		0.000	0.000	0.938	0.000
Systems Engineering and Program Management - Prime Design, Readiness, Analysis and Reporting	C/CPIF	Boeing AL/AK/AZ : CA/CO/TX/VA	23.672	0.000		0.000		0.000		-		0.000	0.000	23.672	0.000

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Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Systems Engineering and Program Management - Prime Discrimination Improvements	C/CPIF	Boeing AL/AK/AZ : CA/CO/TX/VA	127.472	5.000	Nov 2020	0.000		0.000		-		0.000	0.000	132.472	0.000
Systems Engineering and Program Management - Prime EKV HWIL Tests in Space Chamber	C/CPIF	Boeing AL/AK/AZ : CA/CO/TX/VA	70.656	0.000		0.000		0.000		-		0.000	0.000	70.656	0.000
Systems Engineering and Program Management - Prime Modeling and Simulation - Boeing	C/CPIF	Boeing : AL, AZ	233.178	34.016	Nov 2020	22.220	Nov 2021	15.498	Nov 2022	-		15.498	Continuing	Continuing	Continuing
Systems Engineering and Program Management - Prime Modeling and Simulation - Sitr	TBD	TBD : TBD	0.000	0.000		0.000		16.652	Nov 2022	-		16.652	Continuing	Continuing	Continuing
Systems Engineering and Program Management - Prime Program Management - Boeing	C/CPIF	Boeing : AL/AK/AZ/ CA/CO/UT	448.691	96.676	Nov 2020	51.050	Nov 2021	22.962	Nov 2022	-		22.962	Continuing	Continuing	Continuing
Systems Engineering and Program Management - Prime Program Management - Sitr	C/CPIF	TBD : TBD	0.000	0.000		0.000		9.308	Nov 2022	-		9.308	Continuing	Continuing	Continuing
Systems Engineering and Program Management - Prime System Engineering and Integration - Boeing	C/CPIF	Boeing/TBD : AL/AZ/ TBD	477.845	78.677	Nov 2020	62.486	Nov 2021	11.972	Nov 2022	-		11.972	Continuing	Continuing	Continuing
Systems Engineering and Program Management - Prime System Engineering and Integration - JACOBS TECHNOLOGY INC.	C/CPIF	JACOBS TECHNOLOGY INC. : TBD	0.000	0.000		0.000		10.602	Nov 2022	-		10.602	Continuing	Continuing	Continuing
Systems Engineering and Program Management -	C/CPIF	TBD : TBD	0.000	0.000		0.000		80.489	Nov 2022	-		80.489	Continuing	Continuing	Continuing

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Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603882C / <i>Ballistic Missile Defense Midcourse Defense Segment</i>						Project (Number/Name) MD08 / <i>Ground Based Midcourse</i>			
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Prime System Engineering and Integration - Sitr															
Systems Engineering and Program Management - Systems Engineering & Analysis	Various	Various, TBD : AL/VA/TBD	62.955	1.217	Nov 2020	6.345	Nov 2021	12.951	Nov 2022	-		12.951	Continuing	Continuing	Continuing
Systems Engineering and Program Management - Systems Engineering & Analysis - CSS Support	C/CPFF	TEAMS : AL	26.823	7.606	Nov 2020	6.396	Nov 2021	4.317	Nov 2022	-		4.317	Continuing	Continuing	Continuing
Systems Engineering and Program Management - Systems Engineering & Analysis - FFRDC / UARC	MIPR	Various : AL/VA	14.298	4.195	Nov 2020	3.848	Nov 2021	1.986	Nov 2022	-		1.986	Continuing	Continuing	Continuing
Systems Engineering and Program Management - Systems Engineering & Analysis - Industry Support	C/CPIF	Boeing : AL	31.014	10.067	Nov 2020	4.370	Nov 2021	2.920	Nov 2022	-		2.920	Continuing	Continuing	Continuing
Systems Engineering and Program Management - Systems Engineering and Analysis - Discrimination Engineering & Analysis	C/CPIF	Boeing : AL/CA/CO/VA	38.168	0.000		8.500	Nov 2021	9.606	Nov 2022	-		9.606	Continuing	Continuing	Continuing
Systems Engineering and Program Management - Systems Engineering and Analysis - Lockheed M&S Support	C/CPAF	LOCKHEED MARTIN CORPORATION : CO	0.000	0.000		0.000		5.000	Nov 2022	-		5.000	Continuing	Continuing	Continuing
Systems Engineering and Program Management - Systems Engineering and Analysis - M&S Support	Allot	MDA : AL/VA	54.467	9.074	Nov 2020	6.979	Nov 2021	0.667	Nov 2022	-		0.667	0.000	71.187	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603882C / Ballistic Missile Defense Mi dcourse Defense Segment				Project (Number/Name) MD08 / Ground Based Midcourse					
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Systems Engineering and Program Management - Technical Direction Agent	MIPR	John Hopkins Univ Applied Physics Lab LLC, Various : AL/ CA/MD/NM/UT/MA/ VA/GA/PA/CO	99.404	36.296	Nov 2020	31.412	Nov 2021	36.163	Nov 2022	-		36.163	Continuing	Continuing	Continuing
Program Operations - Contract Support Services - Various	C/CPFF	Various : AL/AK/CA/ CO/VA	499.564	18.820	Nov 2020	0.000		0.000		-		0.000	0.000	518.384	0.000
Program Operations - FFRDC Support - CECOM	MIPR	Communications Electronics Command (CECOM) : AL	0.000	0.000		0.000		1.513	Jan 2023	-		1.513	Continuing	Continuing	Continuing
Program Operations - FFRDC Support - MIT/LL	MIPR	MIT/LL : AL/VA/CO	55.563	1.928	Nov 2020	0.708	Nov 2021	0.000		-		0.000	0.000	58.199	0.000
Program Operations - Government Civilian Salaries	MIPR	MDA : AL/VA	357.628	31.503	Oct 2020	23.082	Oct 2021	24.005	Oct 2022	-		24.005	Continuing	Continuing	Continuing
Program Operations - Information Technology Services	MIPR	Jacobs Technology Inc. : AL/CO	11.405	5.926	Oct 2020	2.550	Oct 2021	1.471	Jan 2023	-		1.471	Continuing	Continuing	Continuing
Program Operations - Information Technology Services - NORTHROP GRUMMAN	MIPR	NORTHROP GRUMMAN : Various	0.000	0.000		0.000		2.395	Jan 2023	-		2.395	Continuing	Continuing	Continuing
Program Operations - Other Government Agencies	MIPR	USA CCDC AVIATION AND MISSILE CENTE : AL	58.514	1.035	Nov 2020	0.807	Nov 2021	0.731	Jan 2023	-		0.731	Continuing	Continuing	Continuing
Program Operations - Safety and Quality	MIPR	MDA : AL/AK/CA/VA	0.583	0.000		0.000		0.000		-		0.000	0.000	0.583	0.000
Program Operations - Travel	MIPR	MDA : AL/VA	14.078	0.906	Oct 2020	0.771	Oct 2021	1.336	Oct 2022	-		1.336	Continuing	Continuing	Continuing
Subtotal			3,255.885	462.119		405.391		411.186		-		411.186	Continuing	Continuing	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603882C / <i>Ballistic Missile Defense Midcourse Defense Segment</i>						Project (Number/Name) MD08 / <i>Ground Based Midcourse</i>			
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Remarks N/A															
Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	N/A
Remarks N/A															
Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Operations - Contract Support Services - Vet Tech	C/CPIF	Veterans Technology, LLC : AL	0.000	0.000		0.000		2.101	Nov 2022	-		2.101	Continuing	Continuing	Continuing
Program Operations - Contract Support Services - ARES	C/CPIF	ARES CORPORATION : AL	0.000	0.000		0.000		1.302	Nov 2022	-		1.302	Continuing	Continuing	Continuing
Program Operations - Contract Support Services - SABG	C/CPIF	STRATEGIC ALLIANCE BUSINESS GROUP LLC : AL	0.000	0.000		0.000		1.203	Nov 2022	-		1.203	Continuing	Continuing	Continuing
Program Operations - Contract Support Services - AI SOLUTIONS, INC.	C/CPIF	AI SOLUTIONS, INC. : AL	0.000	0.000		0.000		2.273	Nov 2022	-		2.273	Continuing	Continuing	Continuing
Program Operations - Contract Support Services - SAS	C/CPIF	STRATEGIC ALLIANCE SOLUTIONS LLC : AL	0.000	0.000		0.000		4.892	Nov 2022	-		4.892	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603882C / Ballistic Missile Defense Mi dcourse Defense Segment				Project (Number/Name) MD08 / Ground Based Midcourse					
Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Operations - Contract Support Services - Various	C/CPIF	AI Solutions, APT Research Inc, BCF Solutions, Booz Allen Hamilton, Macaulay-Brown, Parsons Government Services, Strategic Alliance Business Group, Venturi, Veterans Tech, Yorktown Systems Group : AL/CO/AK	0.000	0.000		18.558	Nov 2021	0.000		-		0.000	0.000	18.558	0.000
Program Operations - Contract Support Services - Venturi	C/CPIF	VENTURI, INC. : AL	0.000	0.000		0.000		1.546	Nov 2022	-		1.546	Continuing	Continuing	Continuing
Program Operations - Contract Support Services - Yorktown	C/CPIF	YORKTOWN SYSTEMS GROUP, INC. : AL	0.000	0.000		0.000		1.809	Nov 2022	-		1.809	Continuing	Continuing	Continuing
Program Operations - Contract Support Services -BCF SOLUTIONS, INC.	C/CPIF	BCF SOLUTIONS, INC. : AL	0.000	0.000		0.000		4.127	Nov 2022	-		4.127	Continuing	Continuing	Continuing
Subtotal			0.000	0.000		18.558		19.253		-		19.253	Continuing	Continuing	N/A
Remarks N/A															
			Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			7,063.948	1,108.120		669.813		616.461		-		616.461	Continuing	Continuing	N/A
Remarks Award Date reflects date of first obligation. Additional obligations may incrementally occur throughout the year.															

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Missile Defense Agency										Date: April 2022																							
Appropriation/Budget Activity 0400 / 4										R-1 Program Element (Number/Name) PE 0603882C / Ballistic Missile Defense Midcourse Defense Segment										Project (Number/Name) MD08 / Ground Based Midcourse													
Significant Event Complete ▲		Milestone Decision Complete ★		Element Test Complete ◆		System Level Test Complete ●		Complete Activity ◆																									
Significant Event Planned △		Milestone Decision Planned ☆		Element Test Planned ◇		System Level Test Planned ○		Planned Activity ◇																									
										FY 2021		FY 2022		FY 2023		FY 2024		FY 2025		FY 2026		FY 2027											
Capability Enhancement II (CEII) Block 1 GBI Delivery 1										◇	◇	◇	◇	◇	◇	◇	◇																
Capability Enhancement II (CEII) Block 1 GBI Delivery 2										◇	◇	◇	◇	◇	◇	◇	◇																
GM Boost Vehicle Test (BVT)-03 Interceptor Integration, Checkout and Emplacement										◆																							
Acquisition of Five Configuration 2 (C2) Boost Vehicles										◇	◇	◇	◇	◇	◇	◇	◇																
Ground Systems Software (SW) 9 Development										◇	◇	◇	◇	◇	◇	◇	◇	◇															
Ground Systems Software 8 Development										◇	◇	◇	◇	◇	◇	◇	◇	◇	◇														
In-Flight Interceptor Communication System (IFICS) Data Terminal (IDT) Modernization and Processor Upgrades										◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇													
GMD Communications Network (GCN) Modernization										◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇												
Exo-atmospheric Kill Vehicle (EKV) SW 11.0 Development and Testing										◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇												
Missile Field 4/1 Modernization/Expansion										◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇										
Phased Array IDT										◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇								
Stockpile Reliability Program Testing										◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇
GMD Weapon System/GBI Service Life Extension Program (SLEP)										◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	
Fort Greely Communications Center												◇	◇	◇	◇	◇	◇	◇	◇	◇													
Ground Weapon System Software (GWS) 10A Development												◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇											
Integrate and Emplace FTG-12 Flight Test Vehicle													◇	◇	◇	◇	◇	◇	◇														
Test Phased Array IDT																	◇	◇	◇	◇	◇	◇	◇	◇	◇								
Ground Weapon System Software (GWS) 10B Development																		◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇					
EKV SW 12.0 Development																				◇	◇	◇	◇	◇	◇	◇	◇	◇	◇				

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Missile Defense Agency			Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603882C / <i>Ballistic Missile Defense Midcourse Defense Segment</i>	Project (Number/Name) MD08 / <i>Ground Based Midcourse</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Capability Enhancement II (CEII) Block 1 GBI Delivery 1	1	2021	4	2022
Capability Enhancement II (CEII) Block 1 GBI Delivery 2	1	2021	1	2023
GM Boost Vehicle Test (BVT)-03 Interceptor Integration, Checkout and Emplacement	1	2021	1	2021
Acquisition of Five Configuration 2 (C2) Boost Vehicles	1	2021	4	2022
Ground Systems Software (SW) 9 Development	1	2021	1	2023
Ground Systems Software 8 Development	1	2021	2	2023
In-Flight Interceptor Communication System (IFICS) Data Terminal (IDT) Modernization and Processor Upgrades	1	2021	4	2023
GMD Communications Network (GCN) Modernization	1	2021	1	2024
Exo-atmospheric Kill Vehicle (EKV) SW 11.0 Development and Testing	1	2021	1	2024
Missile Field 4/1 Modernization/Expansion	1	2021	4	2024
Phased Array IDT	1	2021	4	2025
Stockpile Reliability Program Testing	1	2021	4	2027
GMD Weapon System/GBI Service Life Extension Program (SLEP)	1	2021	4	2027
Fort Greely Communications Center	3	2021	4	2023
Ground Weapon System Software (GWS) 10A Development	3	2021	4	2024
Integrate and Emplace FTG-12 Flight Test Vehicle	4	2021	4	2023
Test Phased Array IDT	1	2023	4	2025
Ground Weapon System Software (GWS) 10B Development	2	2023	4	2026
EKV SW 12.0 Development	2	2024	2	2027

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency										Date: April 2022		
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0603882C / Ballistic Missile Defense Midcourse Defense Segment				Project (Number/Name) MC08 / Cyber Operations			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
MC08: Cyber Operations	163.201	47.814	24.800	27.795	-	27.795	28.553	24.908	25.407	30.271	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Increase from FY 2022 to FY 2023 provides the upgrade of the Eareckson Air Station, AK (EAS) Site Control Monitoring System (SCMS) to comply with cyber Risk Management Framework (RMF) certification requirements, as well as, cyber assessments on power plant systems and virtualized cyber testing with system defenders and operators. In addition, the increase reflects a reassessment and need for additional contractor cyber support personnel for Warfighter Integration to ensure Network / System Certification and Accreditation (C&A).

A. Mission Description and Budget Item Justification

The Ground Based Midcourse Defense (GMD) Cyber Operations provide cybersecurity and cyber resiliency to maintain and operate all mission and mission support systems.

GMD systems must maintain Network and System Certification and Accreditation (C&A) for operation on all GMD networks and nodes. Cybersecurity and Cyber Resiliency efforts harden the GMD system against a cyber-attack and reduces system vulnerabilities. The strategy implements cybersecurity and cyber resiliency systems throughout the lifecycle to flow requirements to the Ground Based Interceptor (GBI) and GMD Ground Systems to influence system development.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2021	FY 2022	FY 2023
Title: Network / System Certification and Accreditation (C&A)	8.492	6.577	7.374
Articles:	-	-	-
Description: GMD Systems maintain a defensive cyber posture through analysis of system software and hardware. By conducting annual cybersecurity reviews, all GMD systems are evaluated to ensure the systems are authorized per the RMF to assess compliance in implementing and maintaining cybersecurity controls. Develops GMD Department of Defense (DoD) RMF Assessment and Authorization packages, necessary to ensure all GMD networks and nodes maintain authority to operate.			
Recurring efforts include: <ul style="list-style-type: none"> -Implement the GMD Cybersecurity Risk Process across all systems to execute risk-based decisions on cybersecurity controls -Assess, implement, document, and validate up to 512 cybersecurity control families (1935 security protections and control enhancements) for 25 representative systems comprising 250,000 computing and logic bearing components to support the GMD Development, Test, Training, and Operational systems -Ensure compliance with security mandates to maintain continued authorization to operate -Ensure the cyber workforce is trained and qualified 			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency		Date: April 2022		
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603882C / Ballistic Missile Defense Midcourse Defense Segment	Project (Number/Name) MC08 / Cyber Operations		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2021	FY 2022	FY 2023
-Support modification of Installation Support Agreements for assigned real property to ensure Facility-Related Control Systems, supporting MDA facilities, are cyber-secure per DoD Instruction 8510.01				
FY 2022 Plans: -SEE ABOVE				
FY 2023 Plans: -SEE ABOVE				
FY 2022 to FY 2023 Increase/Decrease Statement: Increase from FY 2022 to FY 2023 provides reassessment of required cyber contractor personnel to support Warfighter Integration for Network / System C&A.				
Title: Cyber Security and Cyber Resiliency		39.322	18.223	20.421
Articles:		-	-	-
Description: Cybersecurity and Cyber Resiliency efforts harden the GMD system against a cyber-attack and reduces system vulnerabilities. The strategy implements cybersecurity and cyber resiliency systems throughout the lifecycle to flow requirements to the GBI and GMD Ground Systems to influence system development. Early cyber testing is completed to identify vulnerabilities and fixes early in the design process.				
Recurring Accomplishments:				
-Implement robust cyber resiliency in the GMD weapon systems by developing system level requirements that flow to component level designs, allowing the GMD system to operate in a cyber-contested environment				
-Support testing on developmental systems in a virtualized environment by integrating cyber test events allowing execution of specific cyber threat vectors on developmental software in an effort to identify capability flaws that will be assessed through the cyber risk process				
-Tests Cooperative Vulnerability and Penetration Assessment (CVPA) to discover unknown vulnerabilities and determine effectiveness of mitigations from development level cyber testing				
-Tests Support Adversarial Assessment penetration to determine effectiveness of cyber-attacks in an operational environment along with the effectiveness of the operational and technical mitigations implemented from developmental cyber testing				
-Implements software and hardware fixes to address weaknesses found during testing				
-Develop intermediate cybersecurity processes and procedures that provide operators, maintainers, and Warfighter specific steps to recognize and react to cyber-attacks, thus advancing the operational cyber resiliency through the defensive cyber operations capability				

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency										Date: April 2022		
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0603882C / Ballistic Missile Defense Mi dcourse Defense Segment					Project (Number/Name) MC08 / Cyber Operations		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)										FY 2021	FY 2022	FY 2023
<div>-Develop and execute quarterly cybersecurity training scenarios allowing fire control operators and network defenders to train in a cyber-contested environment while in a kinetic engagement scenario</div> <div>-Provide training opportunities for Fire Control Operators and Cyber Incident Responders to test Tactics, Techniques, and Procedures (TTPs) to improve resiliency to a cyber-attack</div> <div>Specific and/or unique accomplishments to each FY are as follows:</div> <div>FY 2022 Plans:</div> <div>- Test a new Computer Network Defense system that improves the operators ability to detect and respond to real-time cyber events</div> <div>- Conduct Penetration Assessment on Fort Greely AK Power Plant systems to assess attack vectors and implement a Cyber Resilient design</div> <div>FY 2023 Plans:</div> <div>- Field virtualized environment on training system to test cyber-attacks on training scenarios, culminating in an assessment of Warfighter and defensive cyber operations response times</div> <div>- Develop new attack vectors on a virtual power plant system similar to Fort Greely, AK (FGA) Power Plant</div> <div>- Implement EAS SCMS upgrades for RMF compliance</div> <div>FY 2022 to FY 2023 Increase/Decrease Statement:</div> <div>Increase from FY 2022 to FY 2023 provides cyber assessments on the FGA Power Plant systems and virtualized cyber testing with system defenders and operators. In addition, the increase provides the upgrade of the EAS SCMS for cyber RMF certification.</div>												
Accomplishments/Planned Programs Subtotals										47.814	24.800	27.795
C. Other Program Funding Summary (\$ in Millions)												
Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost	
• 0208866C: MD08: GMD Procurement	150.000	0.000	11.300	-	11.300	0.000	18.403	42.725	48.866	Continuing	Continuing	
• 028866C: MD08: Midcourse Defense O&M	148.741	156.623	185.564	-	185.564	199.248	204.864	188.486	186.647	0.000	1,270.173	
• 0604874C: Improved Homeland Defense Interceptors	843.899	884.125	1,833.357	-	1,833.357	2,104.382	2,232.025	1,448.632	1,358.561	Continuing	Continuing	

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency									Date: April 2022		
Appropriation/Budget Activity 0400 / 4				R-1 Program Element (Number/Name) PE 0603882C / Ballistic Missile Defense Midcourse Defense Segment				Project (Number/Name) MC08 / Cyber Operations			
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• 0604887C: Ballistic Missile Defense Midcourse Defense Segment Test	67.071	61.424	84.075	-	84.075	73.920	68.490	95.223	191.476	Continuing	Continuing
Remarks											
D. Acquisition Strategy											
<p>The Development and Sustainment Contract (DSC) with the Boeing Company as lead is used to design, test, implement and field technical solutions throughout the GMD system's architecture to ensure that sufficient cyber protections exist. The Technical, Engineering, Advisory, and Management Support (TEAMS) contract which includes Booz Allen Hamilton, Decisive Analytics, and Parsons, along with Federally Funded Research and Development Center (FFRDC) MITRE personnel, is used to ensure Network and System Certification and Accreditation requirements are met.</p> <p>The Integrated Research and Development for Enterprise Solutions (IRES) contract with Jacobs Engineering Group as lead is used to provide cyber related equipment, licenses and support. The U.S. Corps of Engineers is used to provide expertise and to sub-contract out work required for the SCMS cyber upgrade project at EAS, AK.</p> <p>GMD awarded the competitive DSC on December 30, 2011 to the Boeing Company. This contract included development, fielding, test, systems engineering, integration, and configuration management; equipment manufacturing and upgrade; training, operations and sustainment of the GMD system and associated support facilities.</p> <p>On January 31, 2018, the DSC Extension was awarded to the Boeing Company with a period of performance through 1Q FY 2024. The DSC Extension includes supporting test, engineering, software, and performance based logistics scope. The DSC structure breaks out major efforts into separate Contract Line Item Numbers with each having incentive fees under the Cost Plus Incentive Fee contract.</p> <p>The current prime contractor is responsible for the entirety of the GMD scope. GMD's current DSC period of performance ends in December 2023 for the general scope with the expectation that minimal contract line items will remain open beyond December 2023 to allow the prime contractor to complete the delivery of MDS Increment 6B.2 in 2024.</p> <p>The GMD Future Acquisition Strategy scope will satisfy future GMD Cybersecurity requirements beyond DSC and will initiate and execute concurrently while the DSC scope is completed. GMD will execute Cybersecurity scope on each individual future contracts to ensure proper cybersecurity protections across the enterprise.</p> <p>GMD Future Acquisition Strategy:</p> <p>MDA plans to competitively award a single System Engineering, Integration, Test, and Readiness (SITR) contract to provide, along with the Technical Direction Agent (TDA), a synergistic approach in executing the element-level engineering, integration, test, and readiness of the GMD System. The SITR contractor is charged with</p>											

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency		Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603882C / <i>Ballistic Missile Defense Midcourse Defense Segment</i>	Project (Number/Name) MC08 / <i>Cyber Operations</i>
<p>being the government's technical partner for day-to-day operation and sustainment of the GMD Weapon System (GWS) alongside the U.S. Northern Command (USNORTHCOM) Warfighters. While the Government maintains overall authority, the SITR contractor will assume a technical role responsible for ensuring overall GMD integration including physical and logical integration of the GMD components, GMD system and MDA enterprise level integration, planning and execution of all necessary testing to verify and validate overall requirements compliance.</p> <p>MDA plans to competitively award a single GMD Weapon System (GWS) contract to provide design, development, production, product level testing, sustainment planning, and deployment of new capabilities for the Weapon System. The GWS contractor will be responsible for developing weapon system solutions, including fire control and communication systems improvements, required to update the legacy system to remain effective while NGI is under development, as well as, preparing for the seamless introduction of NGI and other future MDS capabilities. The GWS contract will update the system interface for the addition of NGIs to the fleet, provide the Warfighter capability to operate the GWS with a mixed fleet of GBIs and NGIs, and identify and develop solutions for message exchanges between GWS and in-flight kill vehicles. All of this must be accomplished while maintaining a robust cyber defense network capable of detecting and defending against current and future cybersecurity threats.</p> <p>MDA has awarded/plans to award sole source contracts to the GMD's in-service fleet (ISF) original equipment manufacturers (OEMs) to perform service life extensions and maintain the existing fleet, execute repairs, and develop software. These contracts are intended primarily to ensure fleet viability until replacement interceptors (NGI) are fielded. ISF is constrained to the legacy interceptor fleet and its component boosters and kill vehicles. The Boost Vehicle Sustainment Contract was awarded to Northrop Grumman in 4Q FY 2021. The Exo-atmospheric Kill Vehicle (EKV) Sustainment Contract is planned for award to Raytheon on 2Q FY 2022. The GBI Integration and Test Contract is planned for award in 1Q FY 2024.</p> <p>GMD Increment 10 and 11 will be executed with the SITR and GWS contracts. Both contracts are expected to be awarded NLT 4Q FY 2022.</p>		

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603882C / Ballistic Missile Defense Midcourse Defense Segment				Project (Number/Name) MC08 / Cyber Operations					
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Cyber Security and Cyber Resiliency - Cyber Security and Cyber Resiliency - GMD Cybersecurity Program - Army Corps of Engineers	MIPR	Army Corps of Engineers/ Huntsville : TBD	0.000	0.000		0.000		1.642	Jan 2023	-		1.642	Continuing	Continuing	Continuing
Subtotal			0.000	0.000		0.000		1.642		-		1.642	Continuing	Continuing	N/A
Remarks N/A															
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Network / System Certification and Accreditation (C&A) - Network / System Certification and Accreditation (C&A) - Civilian Salaries	MIPR	MDA : AL/CA/CO	5.738	1.964	Nov 2020	1.086	Nov 2021	1.130	Nov 2022	-		1.130	Continuing	Continuing	Continuing
Network / System Certification and Accreditation (C&A) - Network / System Certification and Accreditation (C&A) - Contract Support Services	C/CPFF	Booz Allen Hamilton, AL, Decisive Analytics, AL : Torch Technologies, AL Parsons, AL	30.014	6.528	Nov 2020	0.000		0.000		-		0.000	0.000	36.542	0.000
Cyber Security and Cyber Resiliency - Cyber Security and Cyber Resiliency - Cybersecurity	C/CPAF	Jacobs, AL, CO : MITRE, AL	20.926	1.550	Nov 2020	1.344	Nov 2021	0.000		-		0.000	0.000	23.820	0.000
Cyber Security and Cyber Resiliency - Cyber Security	C/CPFF	Booz Allen Hamilton : AL, VA	0.890	1.693	Nov 2020	0.000		0.000		-		0.000	0.000	2.583	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603882C / <i>Ballistic Missile Defense Midcourse Defense Segment</i>						Project (Number/Name) MC08 / <i>Cyber Operations</i>			
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
and Cyber Resiliency - Facility-Related Control Systems Contract Method															
Cyber Security and Cyber Resiliency - Cyber Security and Cyber Resiliency - GMD Cybersecurity Program	C/CPAF	Boeing : AL/CO	67.053	16.268	Nov 2020	16.879	Nov 2021	17.048	Nov 2022	-		17.048	Continuing	Continuing	Continuing
Cyber Security and Cyber Resiliency - Cyber Security and Cyber Resiliency - GMD Cybersecurity Program - Communications Electronics Command (CECOM)	MIPR	Communications Electronics Command (CECOM) : AL	0.000	0.000		0.000		1.371	Jan 2023	-		1.371	Continuing	Continuing	Continuing
Cyber Security and Cyber Resiliency - Cyber Security and Cyber Resiliency - GMD Cybersecurity Program - JACOBS TECHNOLOGY INC.	C/CPIF	JACOBS TECHNOLOGY INC. : CO	0.000	0.000		0.000		0.360	Nov 2022	-		0.360	Continuing	Continuing	Continuing
Cyber Security and Cyber Resiliency - Cyber Security and Cyber Resiliency - Ground Systems Software Cybersecurity	C/CPIF	Boeing AL/AK/AZ : CA/CO/VA	38.580	19.811	Nov 2020	0.000		0.000		-		0.000	0.000	58.391	0.000
Subtotal			163.201	47.814		19.309		19.909		-		19.909	Continuing	Continuing	N/A
Remarks N/A															

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603882C / Ballistic Missile Defense Midcourse Defense Segment				Project (Number/Name) MC08 / Cyber Operations					
Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Network / System Certification and Accreditation (C&A) - Contract Support Services - Booz-Allen Hamilton Inc	C/CPIF	BOOZ ALLEN HAMILTON INC. : AL	0.000	0.000		0.000		1.673	Nov 2022	-		1.673	Continuing	Continuing	Continuing
Network / System Certification and Accreditation (C&A) - Contract Support Services - DECISIVE ANALYTICS CORPORATION/TBD	C/CPIF	Various : AL	0.000	0.000		0.000		1.084	Nov 2022	-		1.084	Continuing	Continuing	Continuing
Network / System Certification and Accreditation (C&A) - Contract Support Services - Parsons	C/CPIF	PARSONS GOVERNMENT SERVICES INC. : AL	0.000	0.000		5.491	Nov 2021	3.487	Nov 2022	-		3.487	Continuing	Continuing	Continuing
Subtotal			0.000	0.000		5.491		6.244		-		6.244	Continuing	Continuing	N/A
Remarks N/A															
			Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			163.201	47.814		24.800		27.795		-		27.795	Continuing	Continuing	N/A
Remarks Award Date reflects date of first obligation. Additional obligations may incrementally occur throughout the year.															



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PE 0603882C: *Ballistic Missile Defense Midcourse Defe...*
Missile Defense Agency

R-1 Line #78

R-1 Program Element (Number/Name)
PE 0603882C / Ballistic Missile Defense Mi
dcourse Defense Segment

Project (Number/Name)
MC08 / *Cyber Operations*

Complete Activity 
Planned Activity 

[illegible]

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Missile Defense Agency			Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603882C / <i>Ballistic Missile Defense Midcourse Defense Segment</i>	Project (Number/Name) MC08 / <i>Cyber Operations</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Network and System Certification and Accreditation	1	2021	4	2027
Cybersecurity and Cyber Resiliency	1	2021	4	2027
Cooperative Vulnerability Penetration Assessment (CVPA)	1	2021	4	2027
Adversarial Assessment (AA)	1	2021	4	2027
Computer Network Defense (CND)	1	2021	4	2027

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency										Date: April 2022		
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0603882C / Ballistic Missile Defense Midcourse Defense Segment				Project (Number/Name) MD40 / Program-Wide Support			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
MD40: Program-Wide Support	216.847	39.919	29.415	23.268	-	23.268	30.369	27.651	29.390	28.950	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Program Wide Support (PWS) is allocated on a pro-rata basis across multiple Agency PEs each fiscal year based on the total Agency budget, and therefore fluctuates per PE by fiscal year.

A. Mission Description and Budget Item Justification

PWS contains non-headquarters management costs in support of MDA functions and activities across the entire MDS. These functions include Government Civilians and Contract Support Services. This effort provides integrity and oversight of the MDS as well as supports MDA in the development and evaluation of technologies that will respond to the changing threat. Additionally, PWS includes personnel to support global deployments performing deployment site preparation and activation, and provides facility capabilities for MDA Executing Agent locations worldwide. Other MDA wide costs include: physical and technical security; civilian drug testing; audit readiness; the Science, Technology, Engineering, and Mathematics (STEM) program; legal services and settlements; travel and agency training; office, equipment, vehicle, and warehouse leases; utilities and base operations across multiple geographic locations; commercial and ancillary facility services; management of all facility aspects regardless of lifecycle stage; supplies and maintenance; compliance with statutory environmental requirements; data and unified communications support; materiel and readiness and central property management of equipment; Facilities Sustainment, Restoration and Modernization (FSRM) program (formerly Real Property Maintenance) to keep the Department's inventory of facilities in good working order; and similar operating expenses. PWS is allocated on a pro-rata basis across most Agency PEs and therefore fluctuates per PE by fiscal year based on the total Agency budget in that fiscal year.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2021	FY 2022	FY 2023
Title: Program Wide Support	39.919	29.415	23.268
Articles:	-	-	-
Description: PWS contains non-headquarters management costs in support of MDA functions and activities across the entire MDS. These functions include Government Civilians and Contract Support Services. This effort provides integrity and oversight of the MDS as well as supports MDA in the development and evaluation of technologies that will respond to the changing threat. Additionally, PWS includes personnel to support global deployments performing deployment site preparation and activation, and provides facility capabilities for MDA Executing Agent locations worldwide. Other MDA wide costs include: physical and technical security; civilian drug testing; audit readiness; the STEM program; legal services and settlements; travel and agency training; office, equipment, vehicle, and warehouse leases; utilities and base operations across multiple geographic locations; commercial and ancillary facility services; management of all facility aspects regardless of lifecycle stage; supplies and maintenance; compliance with statutory environmental requirements; data and unified communications support; materiel and readiness and central property management of equipment; the FSRM program (formerly Real Property Maintenance) to keep the Department's			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency		Date: April 2022	
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603882C / <i>Ballistic Missile Defense Midcourse Defense Segment</i>	Project (Number/Name) MD40 / <i>Program-Wide Support</i>	
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2021	FY 2022
inventory of facilities in good working order; and similar operating expenses. PWS is allocated on a pro-rata basis across most Agency PEs and therefore fluctuates per PE by fiscal year based on the total Agency budget in that fiscal year.			
FY 2022 Plans: - SEE ABOVE.			
FY 2023 Plans: - SEE ABOVE.			
FY 2022 to FY 2023 Increase/Decrease Statement: Decrease from FY 2022 to FY 2023 reflects the PWS allocation on a pro-rata basis across multiple Agency PE's each fiscal year based on the total Agency budget, and therefore fluctuates per PE by fiscal year.			
Accomplishments/Planned Programs Subtotals		39.919	29.415
C. Other Program Funding Summary (\$ in Millions) N/A			
Remarks			
D. Acquisition Strategy N/A			

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603882C / <i>Ballistic Missile Defense Midcourse Defense Segment</i>						Project (Number/Name) MD40 / <i>Program-Wide Support</i>			
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Wide Support - Agency Facilities and Maintenance	MIPR	Various : Multi: AK, AL, CA, VA	6.920	0.000		0.000		0.000		-		0.000	0.000	6.920	0.000
Program Wide Support - Agency Facilities and Maintenance SRM	MIPR	Various : Multi: AK, AL, CA, HI, NY, VA	0.000	2.652	Jan 2021	0.000		0.000		-		0.000	0.000	2.652	0.000
Program Wide Support - Agency Operations Management	C/CPAF	Various : Multi: AL, CA, CO, VA	17.922	0.000		0.000		0.000		-		0.000	0.000	17.922	0.000
Program Wide Support - Agency Operations and Support Civilian Salaries, Travel, Training	Various	MDA : Multi: AK, AL, CA, CO, VA	110.425	29.946	Oct 2020	29.415	Oct 2021	23.268	Oct 2022	-		23.268	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations and Support Other Agency Services (MIPR)	MIPR	Various : Multi: AK, AL, CO, CA, HI, VA	26.298	0.319	Oct 2020	0.000		0.000		-		0.000	0.000	26.617	0.000
Program Wide Support - Agency Operations and Support Services	C/CPFF	Various : Multi: AK, AL, CA, CO, HI, VA	31.190	6.202	Jul 2021	0.000		0.000		-		0.000	0.000	37.392	0.000
Program Wide Support - Agency Operations, Sustainment and GPC	C/FFP	Various : Multi: AK, AL, CA, HI, NY, VA	0.000	0.800	Dec 2020	0.000		0.000		-		0.000	0.000	0.800	0.000
Program Wide Support - Prior year no longer funded in the FYDP	Various	Various : Various	24.092	0.000		0.000		0.000		-		0.000	0.000	24.092	0.000
Subtotal			216.847	39.919		29.415		23.268		-		23.268	Continuing	Continuing	N/A
Remarks Support is allocated on a pro-rata basis and therefore, fluctuates by year based on the adjusted RDT&E profile															

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency											Date: April 2022						
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0603882C / Ballistic Missile Defense Midcourse Defense Segment					Project (Number/Name) MD40 / Program-Wide Support							
					Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals					216.847	39.919		29.415		23.268		-		23.268	Continuing	Continuing	N/A

Remarks

Award Date reflects date of first obligation. Additional obligations may incrementally occur throughout the year.

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Missile Defense Agency														Date: April 2022																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
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MD40 Program-Wide Support														◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Missile Defense Agency			Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603882C / Ballistic Missile Defense Mi dcourse Defense Segment	Project (Number/Name) MD40 / Program-Wide Support	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
MD40 Program-Wide Support	1	2021	4	2027

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Missile Defense Agency **Date:** April 2022

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0603884C <i>I Ballistic Missile Defense Sensors</i>
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COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
Total Program Element	2,312.414	259.605	254.962	231.134	-	231.134	250.028	274.705	276.254	257.575	Continuing	Continuing
MD11: <i>BMDs Radars</i>	2,146.367	234.250	225.016	201.402	-	201.402	220.505	246.437	244.188	227.133	Continuing	Continuing
MC11: <i>Cyber Operations</i>	43.344	11.255	20.215	21.339	-	21.339	20.724	20.416	21.689	20.704	Continuing	Continuing
MD40: <i>Program-Wide Support</i>	122.703	14.100	9.731	8.393	-	8.393	8.799	7.852	10.377	9.738	Continuing	Continuing

Program MDAP/MAIS Code: 362

Note

Decrease from FY 2022 to FY 2023 reflects the FY 2022 Congressional Plus-up for the additional development of Modeling & Simulation (M&S) of new Hardware-in-the-loop (HWIL) and Digital model capabilities to support Integrated Master Test Plan (IMTP) events and system-level digital testing, including development and testing of radar protections and mitigations as well as improvement to MDS cybersecurity.

A. Mission Description and Budget Item Justification

The Missile Defense System (MDS) network of layered Sensors provides essential situational awareness and fire control data for the command and control of MDS weapon systems, such as Ground-Based Midcourse Defense (GMD), Aegis Ballistic Missile Defense (BMD), and Terminal High Altitude Area Defense (THAAD). The suite of remote ground-based sensors provides early warning, midcourse, and terminal missile defense threat data. This data enables layered detection and tracking of missile targets, providing fire-control quality position, velocity, and discrimination data through GMD Fire Control (GFC), or Command and Control, Battle Management and Communications (C2BMC).

Overlapping coverage of geographically diverse sensors provides improved threat track data, reduces the impact of the loss of any one sensor, and reduces the potential impact of countermeasures. The extended coverage and accuracy provided by a network of layered sensors increases the defensive footprint and reduces the number of target engagements required, thereby conserving interceptor inventory and maintaining a high probability of successful engagement. Networked forward-based sensors enable C2BMC to pair the best sensor coverage with the best available weapon system to provide the most effective defense against missile threats.

This Program Element (PE) includes MDS threat discrimination improvements, which will enhance MDS effectiveness against the evolving adversary threat. The result will be a MDS architecture more capable of discriminating and destroying reentry vehicles with a higher degree of confidence, improving Warfighter shot doctrine, and more efficiently using interceptor inventory. MDS threat discrimination improvements are funded from the Enabling (0603890C), Midcourse (0603882C), BMD Sensors (0603884C), C2BMC (0603896C), and Aegis BMD (0603892C) PEs.

The BMD Sensors Program contributes to regional and homeland missile defense through the development, delivery, and deployment/redeployment of Army Navy/Transportable Radar Surveillance and Control-2 (AN/TPY-2) radars for operations or tests. AN/TPY-2 radars can be configured to operate as either a THAAD Fire Unit Radar (terminal mode) or Forward-Based Radar. These radars are transportable and add flexibility to respond to geographical changes in threats. Radars provide early warning tracking and discrimination data through all phases of missile flight. Through the MDS C2BMC and coalition data links, the AN/TPY-2 provides fire control data

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Missile Defense Agency			Date: April 2022			
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 0603884C I Ballistic Missile Defense Sensors				
to enable remote Standard Missile (SM)-3 engagements by Aegis BMD, and to cue deployed THAAD and U.S. and partner PATRIOT (Phased Array Tracking Radar to Intercept on Target) batteries.						
The MDS sensor network includes: the COBRA DANE (CD) Radar at Eareckson Air Station, AK, and the Upgraded Early Warning Radars (UEWRs) at Beale Air Force Base, CA; Cape Cod Space Force Station (SFS), MA; Clear SFS, AK; Royal Air Force Fylingdales, United Kingdom; and Thule Air Base, Greenland, for defense of the homeland.						
This program element supports sensors M&S development of Digital and Hardware-in-the-loop (HWIL) models to support IMTP events and system-level digital testing for MDS assessments of LRDR, AN/TPY-2, SBX, UEWR, and CD radar.						
This program element also supports the planning and deployment of persistent radars.						
Cyber Operations sustain the Risk Management Framework (RMF) and Controls Validation Testing (CVT) activities, analysis of validation results, risk assessments, reviews of Plans of Action and Milestones (POA&Ms), and alignment and integration to the Tier 2 Cybersecurity Service Provider (CSSP) for the Sensors mission systems. Cyber Operations supports the execution of lab-based developmental cyber testing (Cooperative Vulnerability Identification (CVI) and Adversarial Cybersecurity Developmental Test and Evaluation (ACD)) for all major mission system software version releases. Enhances software supply chain security by developing and maintaining the software bill of materials (SBOM) for all developed and delivered Ground Sensors mission and mission support software as directed in the President's Executive Order on Improving the Nation's Cybersecurity dated May 12, 2021.						
B. Program Change Summary (\$ in Millions)		FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Previous President's Budget		265.803	224.750	0.000	-	0.000
Current President's Budget		259.605	254.962	231.134	-	231.134
Total Adjustments		-6.198	30.212	231.134	-	231.134
• Congressional General Reductions		0.000	0.000			
• Congressional Directed Reductions		0.000	0.000			
• Congressional Rescissions		0.000	0.000			
• Congressional Adds		0.000	30.212			
• Congressional Directed Transfers		0.000	0.000			
• Reprogrammings		0.000	0.000			
• SBIR/STTR Transfer		-6.198	0.000			
• Missile Defeat and Defense Enhancement		0.000	0.000	0.000	-	0.000
• Other Adjustment		0.000	0.000	231.134	-	231.134
Change Summary Explanation						
Increase of \$30.2 million in FY 2022 provides the Congressional Plus-up for HWIL and Digital modeling capabilities for the IMTP and improvements to Missile Defense System Cybersecurity.						

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Missile Defense Agency		Date: April 2022
Appropriation/Budget Activity 0400: Research, Development, Test & Evaluation, Defense-Wide / BA 4: Advanced Component Development & Prototypes (ACD&P)	R-1 Program Element (Number/Name) PE 0603884C / Ballistic Missile Defense Sensors	
<p>FY 2023 funding increase provides for the fact that the FY 2022 President's Budget request did not include out-year funding.</p>		

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency										Date: April 2022		
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0603884C / Ballistic Missile Defense Sensors				Project (Number/Name) MD11 / BMDS Radars			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
MD11: BMDS Radars	2,146.367	234.250	225.016	201.402	-	201.402	220.505	246.437	244.188	227.133	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
Note Decrease from FY 2022 to FY 2023 reflects the FY 2022 Congressional Plus-up for the additional development of Modeling & Simulation (M&S) of new Hardware-in-the-loop (HWIL) and Digital model capabilities to support Integrated Master Test Plan (IMTP) events and system-level digital testing, including development and testing of radar protections and mitigations. A. Mission Description and Budget Item Justification The Missile Defense System (MDS) Radars project includes development of future AN/TPY-2, COBRA DANE, Long Range Discrimination Radar (LRDR), Sea Based X-Band (SBX), and Upgraded Early Warning Radars (UEWR) capabilities through system engineering; software development; and testing support. Modeling and Simulation (M&S) efforts include enhanced sensor models, development of Radio Frequency scene generators, integration of digital simulations into the MDS M&S architecture, and Verification, Validation, and Accreditation of radar models. Joint Emerging Operational Needs Statement (JEONS) provides rapid deployment of software upgrades to optimize performance against increasing threats and improve regional integration. This project also funds participation and support for MDS element ground and flight test campaigns and Warfighter games and exercises. This project provides development of discrimination advanced algorithms for MDS radars to counter evolving threats. The discrimination improvement effort will develop and field integrated element capabilities to improve MDS ability to identify lethal and non-lethal objects. Sensors will continue development of discrimination improvement midterm design and test support for MDS radars and far term trade analysis and planning. B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)												
Title: Basic Development Program Articles: Description: The Basic Development Program includes development and testing of software maintenance updates to address software trouble reports identified on fielded software versions and flight/ground test events. Software improvement efforts also include optimization of increased processing capabilities. The Basic Development Program also provides analysis of software performance during flight and ground testing to support Materiel Release for software deliveries. The Materiel Release Closure Plan for the AN/TPY-2 ensures the Reliability, Availability, and Maintainability (RAM) Program promotes reliability growth in the suite of AN/TPY-2 radars via product improvements. Specific and/or unique accomplishments to each FY are as follows:									FY 2021	FY 2022	FY 2023	
									26.003 -	22.314 -	25.207 -	

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency		Date: April 2022		
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603884C / Ballistic Missile Defense Sensors	Project (Number/Name) MD11 / BMDS Radars		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2021	FY 2022	FY 2023
FY 2022 Plans: - SEE ABOVE.				
FY 2023 Plans: - SEE ABOVE.				
FY 2022 to FY 2023 Increase/Decrease Statement: Increase from FY 2022 to FY 2023 provides for additional testing of software maintenance updates and resolution of software trouble reports.				
Title: BMDS Radars Modeling & Simulation (M&S) Articles: Description: Missile Defense System (MDS) Radars M&S efforts include development and maintenance of enhanced sensor models, development and maintenance of Radio Frequency (RF) scene generators, integration of digital simulations into the MDS, M&S architecture, and Verification, Validation, and Certification (VV&C) of radar models, including high fidelity models used for performance assessment. This effort includes support for technical and performance assessments using Open Systems Architecture Sensor Models (OSM), Open Systems Architecture Signal Injectors (OSI) and other models/tools, as well as development and sustainment of Digital and Hardware in the Loop (HWIL) representations of various simulations and models to include the tactical versions of AN/TPY-2, LRDR, SBX, UEWR, and CD. This effort funds the development of End-to-end Digital Integrated System-level Simulation (EDISS) and Ground Test Integrated System-level Simulation (GTISS) improvements to the MDA Ground Test Architecture. MDS Radars M&S efforts also fund the development and validation of Multi-band Electronic Attack Digital Injection Capability (MEDIC). This effort includes support for tactical requirements verification, including development and VV&C of models for testing electronic protection and objective debris mitigation algorithms. This project also supports war games, Warfighter exercises and training, and execution of element-level ground test campaigns and element-level post-flight reconstructions, as well as the development of M&S frameworks and truth models required to anchor M&S. Specific and/or unique accomplishments to each FY are as follows: FY 2022 Plans: Digital M&S Priorities: - Continue core modeling of real-world radar capabilities to keep pace with the evolving MDS, continuing LRDR and AN/TPY-2 modeling, along with increasing modeling efforts on MDA standalone radars to support system-level digital testing and IMTP events - Conduct supporting Continuous Digital Assessments - Continue integration, test, and analysis of EDISS v1 capabilities		40.950 -	75.330 -	54.483 -

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency		Date: April 2022	
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603884C / <i>Ballistic Missile Defense Sensors</i>	Project (Number/Name) MD11 / <i>BMDS Radars</i>	
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2021	FY 2022
<ul style="list-style-type: none"> - Continue software development of EDISS v2 - Continue integration and testing for EDISS v2 - Initiate software development for EDISS v3 - Initiate EDISS v4 system requirements analysis - Initiate development of additional capabilities in high fidelity digital models for AN/TPY-2 and SBX - Continue validation of high fidelity digital model for LRDR - Continue development of medium fidelity digital models to support Warfighter exercises and training - Continue operations and sustainment of MDS Sensors HWIL lab and analysis environment <p>Ground Test M&S Priorities:</p> <ul style="list-style-type: none"> - Continue Phase 1 of GTISS improvements to the MDA Ground Test Architecture - Complete Engineering and Development of GTISS Phase 2 - Continue Integration and Test GTISS Phase 2 M&S - Complete GTISS Phase 3 Functional Analysis and System Design - Initiate GTISS Phase 3 Integration, Test, and Verification - Initiate development of additional capabilities in high fidelity ground test models to support IMTP events - Continue validation of high fidelity models for AN/TPY-2 - Continue development of protections and mitigations modeling capabilities - Procure next generation hardware to support increased model capabilities - Initiate verification and validation activities for protections and mitigations modeling capabilities <p>FY 2023 Plans:</p> <p>Digital M&S Priorities:</p> <ul style="list-style-type: none"> - Continue core modeling of real-world radar capabilities to keep pace with the evolving MDS, continuing LRDR and AN/TPY-2 modeling, along with increasing modeling efforts on MDA standalone radars - Continue supporting Continuous Digital Assessments to include planning, execution, analysis and reporting - Complete software development of EDISS v2 - Complete integration and testing for EDISS v2 - Complete software development of interfaces for OSM models for AN/TPY-2, COBRA DANE, UEWR, SBX, and LRDR for EDISS v3 - Conduct element-level and support system-level verification and validation activities - Continue EDISS v4 system requirements analysis - Continue development of additional capabilities in high fidelity digital models for AN/TPY-2, SBX, LRDR, UEWR, and CD - Complete EDISS v4 Design Synthesis 			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency		Date: April 2022	
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603884C / <i>Ballistic Missile Defense Sensors</i>	Project (Number/Name) MD11 / <i>BMDs Radars</i>	
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2021	FY 2022
<ul style="list-style-type: none"> - Complete EDISS v4 Engineering and Development - Continue EDISS v4 Integration, Test, and Verification <p>Ground Test and Hardware-in-the-Loop (HWIL) M&S Priorities:</p> <ul style="list-style-type: none"> - Complete Phase 1 of GTISS improvements to the MDA Ground Test Architecture - Complete GTISS Phase 2 Integration, Test, and Verification - Complete GTISS Phase 3 Design Synthesis - Complete GTISS Phase 3 Engineering and Development - Continue GTISS Phase 3 Integration, Test, and Verification - Continue development of additional capabilities in high fidelity ground test models for AN/TPY-2, SBX, LRDR, and UEWR - Complete Element Post Flight Reconstructions (EPFRs) of FTX-45 for LRDR and UEWR <p>FY 2022 to FY 2023 Increase/Decrease Statement: Decrease from FY 2022 to FY 2023 reflects the Congressional Plus-up completion of CPU funding for additional development for Modeling & Simulation (M&S) of new Hardware-in-the-loop (HWIL) and Digital model capabilities to support Integrated Master Test Plan (IMTP) events and system-level digital testing, including development and testing of radar protections and mitigations."</p> <p>Title: Capability Development Program</p> <p align="right">Articles:</p> <p>Description: The Capability Development Program provides engineering support to enable compliance with BMD System Specification threat capabilities and addresses advanced threats. This task includes the redesign of select components to address obsolescence and improve reliability of the system. This task continues electronic protection and objective debris mitigation development efforts to reduce or eliminate the effect of corporate clutter and electronic attack on sensors. It develops, designs, and tests sensor mid-term discrimination improvements for X-Band radars, to include SBX threat discrimination improvements. This effort funds participation in far-term discrimination improvement threat model specifications and develops discrimination and countermeasure mitigation capability development. Additional software development activities include THAAD Missile Segment Enhancement (MSE) fielding and integration, and X86 performance optimization to enhance processing speed, improvements to cybersecurity posture, additional development of sensor electronic protection for AN/TPY-2 and LRDR, and developmental information system enhancements. This effort includes threat updates and verification, core standards system engineering, and required updates to models, simulation, and performance assessment.</p> <p>Specific and/or unique accomplishments to each FY are as follows:</p> <p>FY 2022 Plans:</p>			
		120.309	82.531
		-	-
		74.824	-

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency			Date: April 2022		
Appropriation/Budget Activity 0400 / 4		R-1 Program Element (Number/Name) PE 0603884C / <i>Ballistic Missile Defense Sensors</i>		Project (Number/Name) MD11 / <i>BMDS Radars</i>	
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)			FY 2021	FY 2022	FY 2023
<ul style="list-style-type: none"> - Continue development of sensor mid-term threat discrimination improvements for X-Band radars, to include SBX threat discrimination improvements - Continue development of sensor Electronic Protection and Objective Debris Mitigation development efforts to mitigate electronic attack and to reduce the effect of clutter on sensors - Initiate development of a domestic secure server solution to meet the AN/TPY-2 cybersecurity and performance requirements <p>FY 2023 Plans:</p> <ul style="list-style-type: none"> - Continue development of sensor mid-term threat discrimination improvements for X-Band radars, to include SBX threat discrimination improvements - Continue development of sensor Electronic Protection and Objective Debris Mitigation development efforts to mitigate electronic attack and to reduce the effect of clutter on sensors - Continue development of a domestic secure server solution to meet the AN/TPY-2 cybersecurity and performance requirements - Initiate enhanced electronic protections mitigations <p>FY 2022 to FY 2023 Increase/Decrease Statement: Decrease from FY 2022 to FY 2023 reflects completion of development for X-Band Refined Space and Intel Data capability and efforts to support Expanded THAAD/MSE Integration.</p>					
<p>Title: Sensors Directorate Operations</p> <p align="right">Articles:</p> <p>Description: Program Operations provides strategic planning, program integration, contracting, acquisition, engineering, financial management, internal reviews and audits, and program assessments for the Sensors Program Office.</p> <p>Recurring activities include:</p> <ul style="list-style-type: none"> - Provide technical and business management support activities to provide critical program status and decision quality data - Ensure Sensors program compliance with internal and external direction, policies, and regulations to deliver critical capability within a consistent and disciplined process - Conduct internal program reviews to measure program progress against the six Missile Defense Agency approved baselines - Continue a Mission Assurance and Manufacturing Engineering Program to include Quality, Configuration Management, Manufacturing, Engineering, and Safety in all phases of the system life cycle, throughout the supply chain, and at all levels of assembly emphasizing high yield rates which minimize test and rework costs - Provide Quality Safety and Mission Assurance (QSMA) operations to ensure compliance with Agency requirements for design, test, manufacturing, quality, safety and reliability to ensure high quality products are delivered to the Warfighter <p>Specific and/or unique accomplishments to each FY are as follows:</p>			46.099 -	43.140 -	45.428 -

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency									Date: April 2022		
Appropriation/Budget Activity 0400 / 4				R-1 Program Element (Number/Name) PE 0603884C / Ballistic Missile Defense Sensors				Project (Number/Name) MD11 / BMDS Radars			
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)									FY 2021	FY 2022	FY 2023
FY 2022 Plans: - SEE ABOVE.											
FY 2023 Plans: - SEE ABOVE.											
FY 2022 to FY 2023 Increase/Decrease Statement: N/A											
Title: Upgrade Clear Early Warning Radar									0.889	1.701	1.460
Articles:									-	-	-
Description: Upgrade of Clear Early Warning Radar and Cape Cod Early Warning Radar includes adaptation of hardware and software to UEWR infrastructure, support to MDS communications and architecture work and installation at site. This project also includes preparation and removal of legacy equipment at each UEWR site.											
Specific and/or unique accomplishments to each FY are as follows:											
FY 2022 Plans: -Initiate Automatic Data Processing Equipment (ADPE) Rehost strings for Integrated Software Test Center (ISTC) 1 and ISTC 2 required for CD to continue participation in ground tests											
FY 2023 Plans: -Continue Automatic Data Processing Equipment (ADPE) Rehost strings for ISTC 1 and ISTC 2 required for CD to continue participation in ground tests											
FY 2022 to FY 2023 Increase/Decrease Statement: Decrease from FY 2022 to FY 2023 reflects completion of non-recurring engineering for the ADPE Rehost strings for ISTC (Integrated Software Test Center) 1 and ISTC 2 required for CD to continue participation in ground tests.											
Accomplishments/Planned Programs Subtotals									234.250	225.016	201.402
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• 0208866C MD11: MDS Procurement	243.270	2.738	4.606	-	4.606	8.962	6.682	13.382	27.475	Continuing	Continuing

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency									Date: April 2022		
Appropriation/Budget Activity 0400 / 4				R-1 Program Element (Number/Name) PE 0603884C / Ballistic Missile Defense Sensors				Project (Number/Name) MD11 / BMDS Radars			
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• 0208866C MD11: MDS Radars Program, Operation and Maintenance	255.708	190.674	200.207	-	200.207	236.382	230.788	258.747	259.955	Continuing	Continuing
• 0603882C: Ballistic Missile Defense Midcourse Defense Segment	1,195.853	724.028	667.524	-	667.524	870.817	802.617	781.973	765.733	Continuing	Continuing
• 0603890C: BMD Enabling Programs	607.167	623.644	591.847	-	591.847	613.589	625.761	635.633	640.374	Continuing	Continuing
• 0603896C: Ballistic Missile Defense Command and Control, Battle Management & Communication	639.027	564.946	589.374	-	589.374	575.883	588.824	612.853	605.801	Continuing	Continuing
• 0603898C: Ballistic Missile Defense Joint Warfighter Support	49.261	50.594	50.269	-	50.269	51.849	55.960	56.488	54.980	Continuing	Continuing
• 0603904C: Missile Defense Integration and Operations Center (MDIOC)	54.026	52.403	49.367	-	49.367	51.744	56.502	57.833	59.006	Continuing	Continuing
• 0603907C: Sea Based X-Band Radar (SBX)	120.063	147.241	164.668	-	164.668	174.934	215.367	198.956	179.622	Continuing	Continuing
• 0603914C: Ballistic Missile Defense Test	364.994	389.156	367.824	-	367.824	363.963	421.261	476.991	490.176	Continuing	Continuing
• 0604181C: Hypersonic Defense	267.589	287.796	225.477	-	225.477	108.540	110.220	287.535	449.590	Continuing	Continuing
• 0604672C: Homeland Defense Radar-Hawaii	133.000	75.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	208.000
• 0604873C: Long Range Discrimination Radar (LRDR)	135.088	133.335	75.120	-	75.120	103.451	95.712	71.715	76.316	Continuing	Continuing
• 0604879C: Ballistic Missile Defense Sensor Test	64.245	77.428	88.326	-	88.326	91.495	98.146	103.010	145.810	Continuing	Continuing
Remarks											

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency		Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603884C / <i>Ballistic Missile Defense Sensors</i>	Project (Number/Name) MD11 / <i>BMDS Radars</i>
<p><u>D. Acquisition Strategy</u></p> <p>The Radar Development Contract (RDC) awarded on Nov 1, 2017 supports the Sensors Directorate's X-Band Radars (XBR). Missile Defense System (MDS) capability and performance requirements, which underpin continuing XBR development requirements include, but are not limited to, the Army/Navy Transportable Radar Surveillance and Control (AN/TPY-2) radar and the Sea-Based X-Band (SBX) radar. These requirements stem directly from formal Warfighter requirements as developed in the United States Strategic Command (USSTRATCOM)-led Warfighter Involvement Process (see USSTRATCOM Special Instruction (SI) 538-3, Missile Defense Warfighter Involvement Process, June 25, 2008). Achievable requirements documented in the Prioritized Capabilities List (PCL) and Modification and Fielding Requirements List (MFRL) are documented in MDA's Achievable Capabilities List (ACL) and translated via the MDS architecture and system specifications into flow-down requirements, characteristics, and capability needs for individual MDS program specifications, and ultimately are approved through the systems engineering and baseline change management process for MDS programs to execute. The RDC supports the XBRs for product improvement, including developmental upgrades of software and development of hardware and software to meet enhanced capabilities and risk reduction measures; warfighter support, including wargames and exercise support; engineering services, including engineering support for delivered and accepted radars to facilitate maintenance efforts which may include, but are not limited to, hardware obsolescence studies, hardware redesign, technology insertion and refurbishment; MDS test subject matter expert (SME) support; modeling and simulation SME support; and cybersecurity. These support activities are for all AN/TPY-2 radars, in the Forward Based Mode (FBM) and Terminal Mode (TM), and the SBX Radar to include the Weather Air Search Radar (WxASR) located on the SBX platform.</p>		

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603884C / Ballistic Missile Defense Sensors				Project (Number/Name) MD11 / BMDS Radars					
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Basic Development Program - X-Band Software Enhancements/ Development - CCDC	MIPR	DOD - USA - COMBAT CAPABILITIES DEVELOPMENT COMMAND (CCDC) AVIATION AND MISSILE CENTER (AVMC) : AL	0.000	0.000		0.000		8.134	Nov 2022	-		8.134	Continuing	Continuing	Continuing
Basic Development Program - Material Release Get Well Plan - AMCOM	MIPR	AMCOM : AL	0.568	0.012	Nov 2020	0.133	Nov 2021	0.133	Nov 2022	-		0.133	Continuing	Continuing	Continuing
Basic Development Program - Basic Development - SBX	SS/CPAF	Raytheon : MA	2.000	1.971	Nov 2020	1.500	Nov 2021	2.000	Nov 2022	-		2.000	Continuing	Continuing	Continuing
Basic Development Program - Information Assurance AN/TPY-2	SS/CPAF	Raytheon : MA	30.767	0.000		0.000		0.000		-		0.000	0.000	30.767	0.000
Basic Development Program - Information Assurance SBX	SS/CPAF	Raytheon : MA	1.303	0.000		0.000		0.000		-		0.000	0.000	1.303	0.000
Basic Development Program - Material Release Get Well Plan - ATEC	MIPR	ATEC : AL	1.535	0.199	Nov 2020	0.000		0.000		-		0.000	0.000	1.734	0.000
Basic Development Program - Material Release Get Well Plan - CCDC	SS/CPAF	CCDC AVMC : AL	18.899	0.000		0.000		0.000		-		0.000	0.000	18.899	0.000
Basic Development Program - Sys Integration & Tech Assessments	MIPR	CCDC AVMC : AL	29.415	0.000		0.000		0.000		-		0.000	0.000	29.415	0.000
Basic Development Program - X-Band	SS/CPAF	Raytheon : AL	144.939	23.821	Nov 2020	20.681	Nov 2021	14.940	Nov 2022	-		14.940	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603884C / Ballistic Missile Defense Sensors					Project (Number/Name) MD11 / BMDS Radars				
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Software Enhancements/ Development															
BMDS Radars Modeling & Simulation (M&S) - M&S Development - Boeing	C/CPAF	Boeing : AL	0.248	0.000		0.000		0.000		-		0.000	0.000	0.248	0.000
BMDS Radars Modeling & Simulation (M&S) - M&S Development - Decibel	C/CPAF	Decibel : AL	2.000	0.000		0.000		0.000		-		0.000	0.000	2.000	0.000
BMDS Radars Modeling & Simulation (M&S) - M&S Development - HWIL and Digital modeling capabilities for IMTP	C/CPAF	RAYTHEON : Various	0.000	0.000		27.200	May 2022	0.000		-		0.000	0.000	27.200	0.000
BMDS Radars Modeling & Simulation (M&S) - M&S Development - Northrop Grumman	C/CPAF	Northrop Grumman : AL	1.219	0.000		0.000		0.000		-		0.000	0.000	1.219	0.000
BMDS Radars Modeling & Simulation (M&S) - M&S Development - Raytheon	C/CPAF	Raytheon : AL,MA, CO	178.697	20.693	Jan 2021	33.741	Jan 2022	21.456	Jan 2023	-		21.456	Continuing	Continuing	Continuing
BMDS Radars Modeling & Simulation (M&S) - M&S Development-FFRDC/ UARC	Various	JHU, MITRE : MD, AL	1.171	0.000		0.000		0.000		-		0.000	0.000	1.171	0.000
BMDS Radars Modeling & Simulation (M&S) - M&S Development-LM	SS/CPIF	Lockheed Martin : NJ	6.043	5.700	Nov 2020	3.144	Nov 2021	9.178	Nov 2022	-		9.178	Continuing	Continuing	Continuing
BMDS Radars Modeling & Simulation (M&S) - MEDIC Development-CCDC	MIPR	DOD - USA - COMBAT CAPABILITIES DEVELOPMENT COMMAND (CCDC) AVIATION AND MISSILE CENTER (AVMC) : AL	0.000	3.600	Nov 2020	0.000		9.203	Nov 2022	-		9.203	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603884C / Ballistic Missile Defense Sensors					Project (Number/Name) MD11 / BMDS Radars				
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
BMDS Radars Modeling & Simulation (M&S) - VV&A of Models	MIPR	DOD - USA - COMBAT CAPABILITIES DEVELOPMENT COMMAND (CCDC) AVIATION AND MISSILE CENTER (AVMC) : AL	63.192	8.049	Dec 2020	7.898	Dec 2021	11.192	Dec 2022	-		11.192	Continuing	Continuing	Continuing
BMDS Radars Modeling & Simulation (M&S) - VV&A of Models - GTRI	SS/CPFF	GTRI (Georgia Tech Research Institute) : GA	0.126	0.400	Oct 2020	0.796	Oct 2021	0.000		-		0.000	0.000	1.322	0.000
Capability Development Program - Electronic Protection - GTRI	SS/CPFF	GTRI : GA	0.521	0.000		0.000		0.000		-		0.000	0.000	0.521	0.000
Capability Development Program - Electronic Protection - PRIME	C/CPAF	Raytheon : MA	18.315	31.512	Nov 2020	17.270	Nov 2021	9.292	Nov 2022	-		9.292	Continuing	Continuing	Continuing
Capability Development Program - Enhanced Discrimination -M&S - CCDC	MIPR	DOD - USA - COMBAT CAPABILITIES DEVELOPMENT COMMAND (CCDC) AVIATION AND MISSILE CENTER (AVMC) : AL	12.800	3.019	Nov 2020	0.500	Nov 2021	1.000	Nov 2022	-		1.000	Continuing	Continuing	Continuing
Capability Development Program - Enhanced Discrimination - MITRE	MIPR	MITRE : AL	3.930	0.433	Jan 2021	0.000		0.000		-		0.000	0.000	4.363	0.000
Capability Development Program - AN/TPY-2 Capability Development - CCDC	MIPR	DOD - USA - COMBAT CAPABILITIES DEVELOPMENT COMMAND (CCDC) AVIATION AND MISSILE CENTER (AVMC) : AL	20.798	9.642	Nov 2020	4.977	Nov 2021	0.000		-		0.000	0.000	35.417	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603884C / Ballistic Missile Defense Sensors				Project (Number/Name) MD11 / BMDS Radars					
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Capability Development Program - AN/TPY-2 Capability Development - GTRI	SS/CPFF	GTRI : GA	1.084	0.698	Feb 2021	0.000		0.000		-		0.000	0.000	1.782	0.000
Capability Development Program - AN/TPY-2 Capability Development - JHU	SS/CPFF	JOHNS HOPKINS UNIVERSITY APPLIED PHYSICS LABORATORY LLC, THE : MD	5.341	1.358	Dec 2020	0.000		0.000		-		0.000	0.000	6.699	0.000
Capability Development Program - AN/TPY-2 Capability Development - NSWC	MIPR	Naval Surface Warfare Center : VA	0.094	0.000		0.000		0.000		-		0.000	0.000	0.094	0.000
Capability Development Program - AN/TPY-2 Capability Development - PRIME	SS/CPAF	Raytheon : MA	232.948	15.773	Nov 2020	25.536	Nov 2021	14.262	Nov 2022	-		14.262	Continuing	Continuing	Continuing
Capability Development Program - Communication Development	MIPR	Secretary of the Air Force (SAF) : Various	8.886	0.000		0.000		0.000		-		0.000	0.000	8.886	0.000
Capability Development Program - Electronic Protection - CCDC	MIPR	DOD - USA - COMBAT CAPABILITIES DEVELOPMENT COMMAND (CCDC) AVIATION AND MISSILE CENTER (AVMC) : AL	25.504	0.000		0.000		0.000		-		0.000	0.000	25.504	0.000
Capability Development Program - Enhanced Discrimination	C/CPAF	Raytheon : MA	291.823	42.221	Jan 2021	21.755	Jan 2022	23.957	Nov 2022	-		23.957	Continuing	Continuing	Continuing
Capability Development Program - Enhanced Discrimination - LM	SS/CPIF	Lockheed Martin : NJ	5.922	6.000	Dec 2020	1.900	Dec 2021	0.000		-		0.000	0.000	13.822	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603884C / <i>Ballistic Missile Defense Sensors</i>				Project (Number/Name) MD11 / <i>BMDs Radars</i>					
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Capability Development Program - Network and Infrastructure Services	C/CPAF	Jacobs Engineering : AL, CO, MA, VA	6.086	6.130	Nov 2020	6.176	Nov 2021	6.213	Nov 2022	-		6.213	Continuing	Continuing	Continuing
Capability Development Program - Post Intercept Assessment (PIA)	C/CPAF	Raytheon : MA	10.400	0.000		0.000		0.000		-		0.000	0.000	10.400	0.000
Capability Development Program - SBX Capability Development	MIPR	DOD - USA - COMBAT CAPABILITIES DEVELOPMENT COMMAND (CCDC) AVIATION AND MISSILE CENTER (AVMC) : AL	0.907	0.000		4.417	Nov 2021	1.548	Nov 2022	-		1.548	0.000	6.872	0.000
Capability Development Program - SBX Capability Development - Raytheon	SS/CPAF	Raytheon : MA	19.581	3.323	Jan 2021	0.000		14.387	Nov 2022	-		14.387	Continuing	Continuing	Continuing
Capability Development Program - UEWR Capability Development - CCDC	MIPR	CCDC AVMC : AL	6.145	0.200	Jun 2021	0.000		0.000		-		0.000	0.000	6.345	0.000
Sensors Directorate Operations - AN/TPY-2 WSMR Support	MIPR	WSMR (White Sands Missile Range) : NM	0.617	1.220	Nov 2020	0.619	Oct 2021	0.000		-		0.000	0.000	2.456	0.000
Sensors Directorate Operations - Army Hybrid Program Office	MIPR	DOD - USA - AVIATION AND MISSILE COMMAND (AMCOM) LOGISTICS CENTER (ALC) : AL	10.116	1.188	Dec 2020	1.436	Dec 2021	0.000		-		0.000	0.000	12.740	0.000
Sensors Directorate Operations - Civilians/ Travel	Various	MDA : AL, VA, MA	221.299	17.751	Oct 2020	19.484	Oct 2021	20.874	Oct 2022	-		20.874	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603884C / Ballistic Missile Defense Sensors				Project (Number/Name) MD11 / BMDS Radars					
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Sensors Directorate Operations - Contractor Support Services	C/CPFF	Various : Various	264.015	17.659	Oct 2020	14.431	Oct 2021	0.000		-		0.000	0.000	296.105	0.000
Sensors Directorate Operations - FFRDC/ UARC	SS/CPAF	GTRI, JHU/APL, MITRE, MIT/LL : AL, GA, MA, MD, VA	112.026	7.597	Nov 2020	6.390	Nov 2021	0.000		-		0.000	0.000	126.013	0.000
Sensors Directorate Operations - Network and Infrastructure Services	C/CPAF	Jacobs Engineering : AL, AK, CA, CO, HI, NM, VA	48.362	0.535	Jun 2021	0.298	Jan 2022	0.000		-		0.000	0.000	49.195	0.000
Sensors Directorate Operations - Network and Infrastructure Services - Network Management	C/FFP	Network Management Resources, Inc : VA	0.513	0.149	Apr 2021	0.000		0.000		-		0.000	0.000	0.662	0.000
Sensors Directorate Operations - Other Govt Agencies	MIPR	Various : Various	38.063	0.000		0.482	Feb 2022	0.000		-		0.000	0.000	38.545	0.000
Upgrade Clear Early Warning Radar - Facilities Site Activation/Admin Comms	MIPR	Various : AL, MA, AK	7.839	0.000		0.000		0.000		-		0.000	0.000	7.839	0.000
Upgrade Clear Early Warning Radar - Radar Upgrade -- Prime Contractor	C/CPAF	Raytheon : MA	133.624	0.889	Jan 2021	1.701	Jan 2022	0.000		-		0.000	0.000	136.214	0.000
Joint Emerging Operational Need (JEON) - Software Enhancements/ Development	C/CPAF	Raytheon : MA	70.900	0.000		0.000		0.000		-		0.000	0.000	70.900	0.000
High Altitude Electromagnetic Pulse (HEMP) Hardening - FBM Site Modifications	MIPR	Various : Various	5.800	0.000		0.000		0.000		-		0.000	0.000	5.800	0.000
High Altitude Electromagnetic Pulse (HEMP) Hardening -	MIPR	DISA : VA	1.227	0.000		0.000		0.000		-		0.000	0.000	1.227	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603884C / Ballistic Missile Defense Sensors				Project (Number/Name) MD11 / BMDS Radars					
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Hardened Transportable Terminal (HTT) Communications															
High Altitude Electromagnetic Pulse (HEMP) Hardening - Hardened Transportable Terminal (HTT) Engineering, Development and Sustainment	MIPR	Tobyhanna Army Depot (TYAD) : PA	5.773	0.000		0.000		0.000		-		0.000	0.000	5.773	0.000
High Altitude Electromagnetic Pulse (HEMP) Hardening - Power Distribution Centers (PDC) and Commercial Power	C/TBD	Various : Various	39.600	0.000		0.000		0.000		-		0.000	0.000	39.600	0.000
High Altitude Electromagnetic Pulse (HEMP) Hardening - Power Distribution System (PDS) Development and Integration	SS/CPAF	Raytheon : MA	16.600	0.000		0.000		0.000		-		0.000	0.000	16.600	0.000
Subtotal			2,129.581	231.742		222.465		167.769		-		167.769	Continuing	Continuing	N/A
Remarks N/A															
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
BMDS Radars Modeling & Simulation (M&S) - VV&A of Models - GTRI	SS/CPFF	GTRI (Georgia Tech Research Institute) : GA	0.000	0.000		0.000		0.860	Oct 2022	-		0.860	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603884C / Ballistic Missile Defense Sensors					Project (Number/Name) MD11 / BMDS Radars				
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
BMDS Radars Modeling & Simulation (M&S) - Warfighter Exercises	SS/CPIF	RAYTHEON : CO	16.786	2.508	Feb 2021	2.551	Feb 2022	2.594	Feb 2023	-		2.594	Continuing	Continuing	Continuing
Capability Development Program - AN/TPY-2 Capability Development - GTRI	MIPR	GTRI (Georgia Tech Research Institute) : GA	0.000	0.000		0.000		1.888	Nov 2022	-		1.888	Continuing	Continuing	Continuing
Capability Development Program - AN/TPY-2 Capability Development - JHU	MIPR	JOHNS HOPKINS UNIVERSITY APPLIED PHYSICS LABORATORY LLC, THE : MD	0.000	0.000		0.000		1.383	Nov 2022	-		1.383	Continuing	Continuing	Continuing
Capability Development Program - Enhanced Discrimination - MITRE	MIPR	DOD - USA - COMMUNICATIONS ELECTRONICS COMMAND (CECOM) : AL	0.000	0.000		0.000		0.894	Oct 2022	-		0.894	Continuing	Continuing	Continuing
Sensors Directorate Operations - AN/TPY-2 WSMR Support	MIPR	WSMR (White Sands Missile Range) : NM	0.000	0.000		0.000		0.975	Oct 2022	-		0.975	Continuing	Continuing	Continuing
Sensors Directorate Operations - Army Hybrid Program Office	MIPR	DOD - USA - AVIATION AND MISSILE COMMAND (AMCOM) LOGISTICS CENTER (ALC) : AL	0.000	0.000		0.000		1.100	Dec 2022	-		1.100	Continuing	Continuing	Continuing
Sensors Directorate Operations - Contractor Support Services	C/CPFF	Various : Various	0.000	0.000		0.000		1.314	Oct 2022	-		1.314	Continuing	Continuing	Continuing
Sensors Directorate Operations - Contractor Support Services - MDS Engineering	C/CPFF	PARSONS GOVERNMENT SERVICES INC. : Various	0.000	0.000		0.000		6.640	Oct 2022	-		6.640	Continuing	Continuing	Continuing
Sensors Directorate Operations - Contractor	C/CPFF	AI SOLUTIONS, INC. : Various	0.000	0.000		0.000		1.112	Oct 2022	-		1.112	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603884C / <i>Ballistic Missile Defense Sensors</i>						Project (Number/Name) MD11 / <i>BMDs Radars</i>			
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Support Services - Quality and Mission Assurance															
Sensors Directorate Operations - Contractor Support Services - Warfighter Integration	C/CPFF	STRATEGIC ALLIANCE SOLUTIONS LLC : Various	0.000	0.000		0.000		2.375	Oct 2022	-		2.375	Continuing	Continuing	Continuing
Sensors Directorate Operations - FFRDC - MITRE	MIPR	DOD - USA - COMMUNICATIONS ELECTRONICS COMMAND (CECOM) : Various	0.000	0.000		0.000		4.435	Nov 2022	-		4.435	Continuing	Continuing	Continuing
Sensors Directorate Operations - Network and Infrastructure Services	C/CPAF	JACOBS TECHNOLOGY INC. : Various	0.000	0.000		0.000		0.832	Jan 2023	-		0.832	Continuing	Continuing	Continuing
Sensors Directorate Operations - Network and Infrastructure Services - Network Management	C/FFP	NETWORK MANAGEMENT RESOURCES, INC. : VA	0.000	0.000		0.000		0.168	Apr 2023	-		0.168	Continuing	Continuing	Continuing
Sensors Directorate Operations - UARC - JHU/APL	SS/CPFF	JOHNS HOPKINS UNIVERSITY APPLIED PHYSICS LABORATORY LLC, THE : Various	0.000	0.000		0.000		2.441	Nov 2022	-		2.441	Continuing	Continuing	Continuing
Upgrade Clear Early Warning Radar - Automatic Data Processing Equipment (ADPE) Rehost	MIPR	DOD - USSF - US SPACE FORCE (USSF) : Various	0.000	0.000		0.000		1.460	Jan 2023	-		1.460	Continuing	Continuing	Continuing
Subtotal			16.786	2.508		2.551		30.471		-		30.471	Continuing	Continuing	N/A
Remarks Operations and sustainment of Upgraded Early Warning Radar (UEWR), COBRA DANE (CD), and Army Navy/Transportable Radar Surveillance and Control (AN/TPY-2) Radars Contract Logistics Support (CLS) are Operations and Maintenance (O&M) Defense-Wide appropriations and are described in the Missile Defense Agency (MDA) O-Documents.															

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity						R-1 Program Element (Number/Name)				Project (Number/Name)					
0400 / 4						PE 0603884C / Ballistic Missile Defense Sensors				MD11 / BMDS Radars					
Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	N/A
Remarks															
N/A															
Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Sensors Directorate Operations - Contractor Support Services - Acquisition	C/CPFF	BCF SOLUTIONS, INC. : Various	0.000	0.000		0.000		1.554	Oct 2022	-		1.554	Continuing	Continuing	Continuing
Sensors Directorate Operations - Contractor Support Services - Various	C/CPFF	Various : Various	0.000	0.000		0.000		1.608	Oct 2022	-		1.608	Continuing	Continuing	Continuing
Subtotal			0.000	0.000		0.000		3.162		-		3.162	Continuing	Continuing	N/A
Remarks															
N/A															
			Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			2,146.367	234.250		225.016		201.402		-		201.402	Continuing	Continuing	N/A
Remarks															
Award Dates reflect date of first obligation. Additional obligations may incrementally occur throughout the year.															

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Missile Defense Agency										Date: April 2022									
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0603884C / Ballistic Missile Defense Sensors					Project (Number/Name) MD11 / BMDS Radars									
Significant Event Complete ▲ Significant Event Planned △		Milestone Decision Complete ★ Milestone Decision Planned ☆		Element Test Complete ◆ Element Test Planned ◇		System Level Test Complete ● System Level Test Planned ○				Complete Activity ◆ Planned Activity ◇									
					FY 2021		FY 2022		FY 2023		FY 2024		FY 2025		FY 2026		FY 2027		
(EX) AIR AND MISSILE DEFENSE EXERCISE 21					◆	◆	◆												
FS-21 E4 (AEGIS 5.1, DT Intercept Flight Test)							▲												
TH CTV-01 (LTPO, DT Interceptor Only Flight Test)								▲											
GTI-ISR (21) (MDS Ground Test)								◆											
FTX-43 (OTHER, DT Tracking Exercise Flight Test)								▲											
SICO-09-1								◇											
SICO-09-2								◇											
(EX) AIR AND MISSILE DEFENSE EXERCISE 22								◇	◇	◇									
FTT-21 (TH, DT Intercept Flight Test)									△										
(EX) EAGLE RESOLVE 22									△										
GTI-08a (N/I) (MDS Ground Test)									◇										
FTX-26 (OT) (SN, OT Target Only Flight Test)										△									
GTI-09 Sprint 1 (E/C) (MDS Ground Test)										◇									
FTX-45										△									
GTD-08a (N/I) (MDS Ground Test)											◇								
(EX) AIR AND MISSILE DEFENSE EXERCISE 23											◇	◇	◇						
GTI-09 Sprint 2 (E/C) (MDS Ground Test)											◇								
SICO-8a2 (MDS Ground Test)											◇								
SICO-09-3 Ground Test											◇								
FTT-25 (TH, DT/OT Intercept Flight Test)												△							
SICO 9-4 Ground Test												◇							
GTI-ISR (23) (MDS Ground Test)													◇						
FTG-12 (GM, DT/OT Intercept Flight Test)														△					
GTI-08b (N/I)														◇					

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Missile Defense Agency														Date: April 2022																			
Appropriation/Budget Activity 0400 / 4														R-1 Program Element (Number/Name) PE 0603884C / Ballistic Missile Defense Sensors										Project (Number/Name) MD11 / BMDS Radars									
Significant Event Complete ▲				Milestone Decision Complete ★				Element Test Complete ◆				System Level Test Complete ●				Complete Activity ◆																	
Significant Event Planned △				Milestone Decision Planned ☆				Element Test Planned ◇				System Level Test Planned ○				Planned Activity ◇																	
														FY 2021		FY 2022		FY 2023		FY 2024		FY 2025		FY 2026		FY 2027							
(EX) AIR AND MISSILE DEFENSE EXERCISE 24																				◇	◇	◇											
GTI-ASI (24) (MDS Ground Test)																					◇												
FTX-28 E2 (TH, DT/OT Tracking Exercise Flight Test)																					△												
FTX-28 E1 (TH, DT/OT Tracking Exercise Flight Test)																					△												
FTX-28 E3 (TH, DT/OT Tracking Exercise Flight Test)																					△												
GTD-08b (N/I)																					◇												
GTI-13 Sprint 1 (N/I) (MDS Ground Test)																						◇											
JFTX-01 E1 (JAPAN, DT Tracking Exercise Flight Test)																						△											
JFTX-01 E2 (JAPAN, DT Tracking Exercise Flight Test)																						△											
GTI-ISR (25) (MDS Ground Test)																							◇										
GTI-12 Sprint 1 (E/C) (MDS Ground Test)																							◇										
GTI-13 Sprint 2 (N/I) (MDS Ground Test)																							◇										
GTD-13 (N/I) (MDS Ground Test)																								◇									
GTI-10 (E/C) (MDS Ground Test)																								◇									
GTI-12 Sprint 2 (E/C) (MDS Ground Test)																								◇									
GTD-10 (E/C) (MDS Ground Test)																									◇								
GTD-12 (E/C) (MDS Ground Test)																									◇								
GTI-ASI (26) (MDS Ground Test)																										◇							
TH CTV-03 (TH, DT Interceptor Only Flight Test)																											△						
GTI-14 Sprint 1 (N/I)																											◇						
FTG-16 (GM, DT Intercept Flight Test)																													△				
GTI-14 (N/I) Sprint 2 (MDS Ground Test)																													◇				
GTI-15 Sprint 1 (E/C) (MDS Ground Test)																														◇			
FTT-22 (TH, DT/OT Intercept Flight Test)																															△		

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Missile Defense Agency												Date: April 2022																							
Appropriation/Budget Activity 0400 / 4												R-1 Program Element (Number/Name) PE 0603884C / Ballistic Missile Defense Sensors												Project (Number/Name) MD11 / BMDS Radars											
Significant Event Complete ▲				Milestone Decision Complete ★				Element Test Complete ◆				System Level Test Complete ●				Complete Activity ◆																			
Significant Event Planned △				Milestone Decision Planned ☆				Element Test Planned ◇				System Level Test Planned ○				Planned Activity ◇																			
												FY 2021		FY 2022		FY 2023		FY 2024		FY 2025		FY 2026		FY 2027											
FTG-17 (GM, DT/OT Intercept Flight Test)																												△							
GTD-14 (N/I) (MDS Ground Test)																													◇						
GTI-ISR (27) (MDS Ground Test)																													◇						

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Missile Defense Agency			Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603884C / <i>Ballistic Missile Defense Sensors</i>	Project (Number/Name) MD11 / <i>BMDS Radars</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
(EX) AIR AND MISSILE DEFENSE EXERCISE 21	1	2021	3	2021
FS-21 E4 (AEGIS 5.1, DT Intercept Flight Test)	3	2021	3	2021
TH CTV-01 (LTPO, DT Interceptor Only Flight Test)	4	2021	4	2021
GTI-ISR (21) (MDS Ground Test)	1	2022	1	2022
FTX-43 (OTHER, DT Tracking Exercise Flight Test)	1	2022	1	2022
SICO-09-1	1	2022	1	2022
SICO-09-2	1	2022	1	2022
(EX) AIR AND MISSILE DEFENSE EXERCISE 22	1	2022	3	2022
FTT-21 (TH, DT Intercept Flight Test)	2	2022	2	2022
(EX) EAGLE RESOLVE 22	2	2022	2	2022
GTI-08a (N/I) (MDS Ground Test)	3	2022	3	2022
FTX-26 (OT) (SN, OT Target Only Flight Test)	4	2022	4	2022
GTI-09 Sprint 1 (E/C) (MDS Ground Test)	4	2022	4	2022
FTX-45	4	2022	4	2022
GTD-08a (N/I) (MDS Ground Test)	1	2023	1	2023
(EX) AIR AND MISSILE DEFENSE EXERCISE 23	1	2023	3	2023
GTI-09 Sprint 2 (E/C) (MDS Ground Test)	2	2023	2	2023
SICO-8a2 (MDS Ground Test)	2	2023	2	2023
SICO-09-3 Ground Test	2	2023	2	2023
FTT-25 (TH, DT/OT Intercept Flight Test)	3	2023	3	2023
SICO 9-4 Ground Test	3	2023	3	2023
GTI-ISR (23) (MDS Ground Test)	4	2023	4	2023

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Missile Defense Agency			Date: April 2022	
Appropriation/Budget Activity 0400 / 4		R-1 Program Element (Number/Name) PE 0603884C / <i>Ballistic Missile Defense Sensors</i>		Project (Number/Name) MD11 / <i>BMDS Radars</i>
		Start		End
Events	Quarter	Year	Quarter	Year
FTG-12 (GM, DT/OT Intercept Flight Test)	4	2023	4	2023
GTI-08b (N/I)	4	2023	4	2023
(EX) AIR AND MISSILE DEFENSE EXERCISE 24	1	2024	3	2024
GTI-ASI (24) (MDS Ground Test)	2	2024	2	2024
FTX-28 E2 (TH, DT/OT Tracking Exercise Flight Test)	2	2024	2	2024
FTX-28 E1 (TH, DT/OT Tracking Exercise Flight Test)	2	2024	2	2024
FTX-28 E3 (TH, DT/OT Tracking Exercise Flight Test)	2	2024	2	2024
GTD-08b (N/I)	2	2024	2	2024
GTI-13 Sprint 1 (N/I) (MDS Ground Test)	1	2025	1	2025
JFTX-01 E1 (JAPAN, DT Tracking Exercise Flight Test)	1	2025	1	2025
JFTX-01 E2 (JAPAN, DT Tracking Exercise Flight Test)	1	2025	1	2025
GTI-ISR (25) (MDS Ground Test)	2	2025	2	2025
GTI-12 Sprint 1 (E/C) (MDS Ground Test)	3	2025	3	2025
GTI-13 Sprint 2 (N/I) (MDS Ground Test)	3	2025	3	2025
GTD-13 (N/I) (MDS Ground Test)	4	2025	4	2025
GTI-10 (E/C) (MDS Ground Test)	1	2026	1	2026
GTI-12 Sprint 2 (E/C) (MDS Ground Test)	1	2026	1	2026
GTD-10 (E/C) (MDS Ground Test)	2	2026	2	2026
GTD-12 (E/C) (MDS Ground Test)	2	2026	2	2026
GTI-ASI (26) (MDS Ground Test)	3	2026	3	2026
TH CTV-03 (TH, DT Interceptor Only Flight Test)	4	2026	4	2026
GTI-14 Sprint 1 (N/I)	4	2026	4	2026
FTG-16 (GM, DT Intercept Flight Test)	2	2027	2	2027
GTI-14 (N/I) Sprint 2 (MDS Ground Test)	2	2027	2	2027
GTI-15 Sprint 1 (E/C) (MDS Ground Test)	3	2027	3	2027

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Missile Defense Agency			Date: April 2022		
Appropriation/Budget Activity 0400 / 4		R-1 Program Element (Number/Name) PE 0603884C / Ballistic Missile Defense Sensors		Project (Number/Name) MD11 / BMDS Radars	
		Start		End	
Events		Quarter	Year	Quarter	Year
FTT-22 (TH, DT/OT Intercept Flight Test)		3	2027	3	2027
FTG-17 (GM, DT/OT Intercept Flight Test)		4	2027	4	2027
GTD-14 (N/I) (MDS Ground Test)		4	2027	4	2027
GTI-ISR (27) (MDS Ground Test)		4	2027	4	2027

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency										Date: April 2022		
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0603884C / Ballistic Missile Defense Sensors				Project (Number/Name) MC11 / Cyber Operations			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
MC11: Cyber Operations	43.344	11.255	20.215	21.339	-	21.339	20.724	20.416	21.689	20.704	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
Note N/A												
A. Mission Description and Budget Item Justification												
Sustain the Department of Defense Instruction (DoDI) 8510.01 Risk Management Framework (RMF) for DoD Information Technology (IT) requirement for the MDA Ground Sensors Directorate and conduct Security Control Assessments (SCA) activities, analysis of validation results, risk assessments, and reviews of proposed Program Manager/Information System Security Manager (PM/ISSM) Plans of Action and Milestones (POA&M) for MDA Ground Sensors mission and mission support systems. It also includes support for external cybersecurity assessments and penetration testing of the Ground Sensors mission systems, both in laboratory developmental testing and in ground test activities, in accordance with Director, Operational Test and Evaluation (DOT&E) directives and the Integrated Master Test Plan (IMTP). It maintains the Assessment and Authorization (A&A) data repository, capturing the RMF documentation (artifacts, validation results, Cybersecurity Risk Assessment results, cybersecurity scorecard, and Authorizing Official (AO) authorization decisions) and POA&M for all MDA information systems. This project supports the alignment, development, and implementation of an integrated Tier 2 Cyber Security Service Provider (CSSP) capability on the Ground Sensors mission systems in accordance with the DoD Cybersecurity Discipline Implementation Plan and DoDI 8530.01 Cybersecurity Activities Support to DoD Information Network Operations.												
Provides the monitoring, prioritization, and tracking of Cybersecurity mitigation detailed in Information Technology security POA&Ms. The activities include preparation of A&A documentation and accreditation recommendations to the MDA Senior Information Security Officer (SISO)/Security Control Assessor (SCA) and Authorizing Official (AO). Independent Verification and Validation (IV&V) team actions ensure the availability, integrity, authentication, confidentiality, and non-repudiation of the MDA mission; test; and administrative systems. These activities are necessary to comply with the Federal Information Security Management Act (FISMA).												
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)									FY 2021	FY 2022	FY 2023	
Title: Network / System Certification and Accreditation (C&A) Articles:									11.255	20.215	21.339	
									-	-	-	
Description: Cyber Operations funds Ground Sensors Directorate Information System Security Manager (ISSM) and Information System Security Officer (ISSO) civilian salaries as well as cybersecurity engineering and architecture planning for program information technology systems. This project plans and tests the cybersecurity controls for the Missile Defense System (MDS) and maintains Risk Management Framework (RMF) authorizations for Ground Sensors managed information systems, conducts Controls Validation Testing (CVT)/ Security Controls Assessment (SCA) of Ground Sensors mission and support systems, and provides and maintains Plans of Action and Milestones (POA&M) to mitigate cybersecurity deficiencies. Cyber Operations conducts annual cybersecurity program reviews on the Sensors enclaves to assess compliance in implementing and maintaining												

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency									Date: April 2022		
Appropriation/Budget Activity 0400 / 4				R-1 Program Element (Number/Name) PE 0603884C / Ballistic Missile Defense Sensors				Project (Number/Name) MC11 / Cyber Operations			
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)									FY 2021	FY 2022	FY 2023
controls. This effort supports the alignment, development, and implementation of an integrated Tier 2 Cyber Security Service Provider (CSSP) capability on the Ground Sensors mission systems in accordance with the DoD Cybersecurity Discipline Implementation Plan and DoDI 8530.01 Cybersecurity Activities Support to DoD Information Network Operations.											
Specific and/or unique accomplishments to each FY are as follows:											
FY 2022 Plans:											
-Increase scope and complexity of portfolio of systems/networks managed, including implementation of RMF requirements for Hardware in the Loop (HWIL) and lab architectures and flight and ground test support architectures. Additional RMF compliance efforts for critical modeling and simulation/stimulation capabilities for both software-based modeling and HWIL testing.											
-Conduct assessment and authorizations for current SN portfolio of systems, improves Risk Management Framework (RMF) reporting and compliance, and reduces overall cybersecurity risk.											
-Conduct required cybersecurity testing for AN/TPY-2, XBR, and LRDR mission & supporting systems.											
-Provide subject matter expertise and cyber engineering manpower support for operational cybersecurity test execution (e.g., CVPA, AA, etc).											
FY 2023 Plans:											
-Develop and maintain the software bill of materials (SBOM) for all developed and delivered mission and mission support software as directed in the President's Executive Order on Improving the Nation's Cybersecurity dated May 12, 2021.											
-Execution of four (4) developmental cybersecurity test events for AN/TPY-2 (2), XBR (1), and LRDR (1).											
FY 2022 to FY 2023 Increase/Decrease Statement:											
N/A											
Accomplishments/Planned Programs Subtotals									11.255	20.215	21.339
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• 0603896C: Ballistic Missile Defense Command and Control, Battle Management & Communication	639.027	564.946	589.374	-	589.374	575.883	588.824	612.853	605.801	Continuing	Continuing
• 0603898C: Ballistic Missile Defense Joint Warfighter Support	49.261	50.594	50.269	-	50.269	51.849	55.960	56.488	54.980	Continuing	Continuing

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency									Date: April 2022		
Appropriation/Budget Activity 0400 / 4				R-1 Program Element (Number/Name) PE 0603884C / Ballistic Missile Defense Sensors				Project (Number/Name) MC11 / Cyber Operations			
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• 0603904C: Missile Defense Integration and Operations Center (MDIOC)	54.026	52.403	49.367	-	49.367	51.744	56.502	57.833	59.006	Continuing	Continuing
• 0603907C: Sea Based X-Band Radar (SBX)	120.063	147.241	164.668	-	164.668	174.934	215.367	198.956	179.622	Continuing	Continuing
• 0604672C: Homeland Defense Radar-Hawaii	133.000	75.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	208.000
• 0604873C: Long Range Discrimination Radar (LRDR)	135.088	133.335	75.120	-	75.120	103.451	95.712	71.715	76.316	Continuing	Continuing
• 0604879C: Ballistic Missile Defense Sensor Test	64.245	77.428	88.326	-	88.326	91.495	98.146	103.010	145.810	Continuing	Continuing
• 0901598C: Management HQ - MDA	26.902	24.102	25.259	-	25.259	25.836	26.438	26.984	27.524	Continuing	Continuing
Remarks											
D. Acquisition Strategy											
The Ground Sensors Directorate will execute the Department of Defense Instruction (DoDI) 8510.01 Risk Management Framework (RMF) for DoD Information Technology (IT) requirement on several existing Radar Prime Contracts to include the Radar Development Contract, the Radar Test Contract, Long Range Discrimination Radar, and the Contractor Logistics Support contract. Ground Sensors will also employ Contracted Service Support resources through the Technical, Engineering, Advisory, & Management (TEAMS) and TEAMS Next contracts, Federally Funded Research and Development (FFRDC, MITRE) support, and via Military Interdepartmental Purchase Request (MIPR) through Military Sealift Command. Ground Sensors will conduct Security Control Assessments (SCA) activities, developmental and operational cybersecurity testing, analyze validation results, accomplish risk assessments, and perform reviews of proposed Program Manager/ Information System Security Manager (PM/ISSM) Plans of Action and Milestones (POA&M) for MDA Ground Sensors mission and mission support systems.											

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603884C / Ballistic Missile Defense Sensors					Project (Number/Name) MC11 / Cyber Operations				
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Network / System Certification and Accreditation (C&A) - AN/TPY 2 Cybersecurity Compliance	SS/CPAF	RAYTHEON : MA	0.000	0.000		0.000		3.057	Oct 2022	-		3.057	Continuing	Continuing	Continuing
Network / System Certification and Accreditation (C&A) - LRDR Cybersecurity Compliance	SS/FPIF	LOCKHEED MARTIN CORPORATION : NJ	0.000	0.000		0.000		1.739	Oct 2022	-		1.739	Continuing	Continuing	Continuing
Network / System Certification and Accreditation (C&A) - SBX Cybersecurity Compliance - PRIME	SS/CPAF	RAYTHEON : Various	0.000	0.000		0.000		0.107	Nov 2022	-		0.107	Continuing	Continuing	Continuing
Network / System Certification and Accreditation (C&A) - Systems Engineering Cybersecurity	SS/CPAF	RAYTHEON : Various	0.000	0.000		0.000		0.321	Oct 2022	-		0.321	Continuing	Continuing	Continuing
Subtotal			0.000	0.000		0.000		5.224		-		5.224	Continuing	Continuing	N/A
Remarks N/A															
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Network / System Certification and Accreditation (C&A) - AN/TPY 2 CSSP Development and Implementation	SS/CPAF	Raytheon : MA	8.680	4.967	Oct 2020	0.470	Oct 2021	0.000		-		0.000	0.000	14.117	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603884C / <i>Ballistic Missile Defense Sensors</i>						Project (Number/Name) MC11 / <i>Cyber Operations</i>			
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Network / System Certification and Accreditation (C&A) - AN/TPY 2 Cybersecurity Compliance	SS/CPAF	Raytheon : MA	6.345	2.657	Oct 2020	6.087	Oct 2021	1.643	Oct 2022	-		1.643	Continuing	Continuing	Continuing
Network / System Certification and Accreditation (C&A) - CND/IA Advisory and Assistance Services (Booz Allen) - Consolidated in Contract Support Services	C/CPFF	Booz Allen Hamilton : AL, CO, VA	5.134	0.000		0.000		0.000		-		0.000	0.000	5.134	0.000
Network / System Certification and Accreditation (C&A) - CND/IA Advisory and Assistance Services (Torch Technologies) - Consolidated in Contract Support Services	C/CPFF	Torch Technologies : AL, CO, VA	2.641	0.000		0.000		0.000		-		0.000	0.000	2.641	0.000
Network / System Certification and Accreditation (C&A) - Civilian Salaries/Travel	Various	MDA : AL, CO, VA	1.626	0.456	Oct 2020	0.466	Oct 2021	0.483	Oct 2022	-		0.483	Continuing	Continuing	Continuing
Network / System Certification and Accreditation (C&A) - Contract Support Services	Various	MDA : Various	4.522	1.075	Oct 2020	4.535	Nov 2021	0.000		-		0.000	0.000	10.132	0.000
Network / System Certification and Accreditation (C&A) - Contract Support Services - Cybersecurity Engineering - BAH	C/CPFF	BOOZ ALLEN HAMILTON INC. : Various	0.000	0.000		0.000		2.850	Nov 2022	-		2.850	Continuing	Continuing	Continuing
Network / System Certification and	C/CPFF	DECISIVE ANALYTICS	0.000	0.000		0.000		1.112	Nov 2022	-		1.112	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603884C / <i>Ballistic Missile Defense Sensors</i>						Project (Number/Name) MC11 / <i>Cyber Operations</i>			
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Accreditation (C&A) - Contract Support Services - Cybersecurity Engineering - DAC		CORPORATION : Various													
Network / System Certification and Accreditation (C&A) - Contract Support Services - Cybersecurity Engineering - Parsons	C/CPFF	PARSONS GOVERNMENT SERVICES INC. : Various	0.000	0.000		0.000		1.959	Nov 2022	-		1.959	Continuing	Continuing	Continuing
Network / System Certification and Accreditation (C&A) - Cybersecurity Supply Chain Compliance	SS/CPAF	Raytheon : MA	9.849	0.000		0.000		0.000		-		0.000	0.000	9.849	0.000
Network / System Certification and Accreditation (C&A) - LRDR Cybersecurity Compliance	SS/FPIF	Lockheed Martin : NJ	3.221	2.100	Mar 2021	1.186	Oct 2021	0.000		-		0.000	0.000	6.507	0.000
Network / System Certification and Accreditation (C&A) - SBX Cybersecurity Compliance	MIPR	Military Sealift Command : VA	1.326	0.000		3.430	Oct 2021	0.000		-		0.000	0.000	4.756	0.000
Network / System Certification and Accreditation (C&A) - SBX Cybersecurity Compliance - Gryphon	C/CPIF	GRYPHON TECHNOLOGIES, L.C. : Various	0.000	0.000		0.000		1.293	Nov 2022	-		1.293	Continuing	Continuing	Continuing
Network / System Certification and Accreditation (C&A) - SBX Cybersecurity Compliance - PRIME	SS/CPAF	RAYTHEON : Various	0.000	0.000		0.000		3.253	Nov 2022	-		3.253	Continuing	Continuing	Continuing
Network / System Certification and	Various	Various : AK, AL, CO, VA	0.000	0.000		0.986	Oct 2021	1.874	Nov 2022	-		1.874	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603884C / <i>Ballistic Missile Defense Sensors</i>						Project (Number/Name) MC11 / <i>Cyber Operations</i>			
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Accreditation (C&A) - Sensors Test Cybersecurity Compliance															
Network / System Certification and Accreditation (C&A) - Systems Engineering Cybersecurity	MIPR	Various : AL, CO, VA	0.000	0.000		3.055	Oct 2021	1.158	Nov 2022	-		1.158	Continuing	Continuing	Continuing
Network / System Certification and Accreditation (C&A) - Systems Engineering Cybersecurity - MITRE	MIPR	DOD - USA - COMMUNICATIONS ELECTRONICS COMMAND (CECOM) : Various	0.000	0.000		0.000		0.490	Nov 2022	-		0.490	Continuing	Continuing	Continuing
Subtotal			43.344	11.255		20.215		16.115		-		16.115	Continuing	Continuing	N/A
Remarks N/A															
			Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			43.344	11.255		20.215		21.339		-		21.339	Continuing	Continuing	N/A
Remarks Award Dates reflect date of first obligation. Additional obligations may incrementally occur throughout the year.															

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Missile Defense Agency															Date: April 2022																						
Appropriation/Budget Activity 0400 / 4										R-1 Program Element (Number/Name) PE 0603884C / Ballistic Missile Defense Sensors										Project (Number/Name) MC11 / Cyber Operations																	
Significant Event Complete ▲ Significant Event Planned △					Milestone Decision Complete ★ Milestone Decision Planned ☆					Element Test Complete ◆ Element Test Planned ◇					System Level Test Complete ● System Level Test Planned ○					Complete Activity ◆ Planned Activity ◇																	
										FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
Risk Management Framework (RMF) Assessment and Authorization (A&A) package preparation and submission										◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	
Cyber Security Program Policy / Risk Management										◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇		
Cyber Security Mitigation Monitoring and Tracking										◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	
BMDS Cyber Security Policy Development										◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇
Integrated Cyber Security Service Provider										◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Missile Defense Agency			Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603884C / <i>Ballistic Missile Defense Sensors</i>	Project (Number/Name) MC11 / <i>Cyber Operations</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Risk Management Framework (RMF) Assessment and Authorization (A&A) package preparation and submission	1	2021	4	2027
Cyber Security Program Policy / Risk Management	1	2021	4	2027
Cyber Security Mitigation Monitoring and Tracking	1	2021	4	2027
BMDS Cyber Security Policy Development	1	2021	4	2027
Integrated Cyber Security Service Provider	1	2021	4	2027

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency										Date: April 2022		
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0603884C / Ballistic Missile Defense Sensors				Project (Number/Name) MD40 / Program-Wide Support			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
MD40: Program-Wide Support	122.703	14.100	9.731	8.393	-	8.393	8.799	7.852	10.377	9.738	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Program Wide Support (PWS) is allocated on a pro-rata basis across multiple Agency program elements (PEs) each fiscal year based on the total Agency budget, and therefore fluctuates per PE by fiscal year.

A. Mission Description and Budget Item Justification

PWS contains non-headquarters management costs in support of MDA functions and activities across the entire MDS. These functions include Government Civilians and Contract Support Services. This effort provides integrity and oversight of the MDS as well as supports MDA in the development and evaluation of technologies that will respond to the changing threat. Additionally, PWS includes personnel to support global deployments performing deployment site preparation and activation, and provides facility capabilities for MDA Executing Agent locations worldwide. Other MDA wide costs include: physical and technical security; civilian drug testing; audit readiness; the Science, Technology, Engineering, and Mathematics (STEM) program; legal services and settlements; travel and agency training; office, equipment, vehicle, and warehouse leases; utilities and base operations across multiple geographic locations; commercial and ancillary facility services; management of all facility aspects regardless of lifecycle stage; supplies and maintenance; compliance with statutory environmental requirements; data and unified communications support; materiel and readiness and central property management of equipment; Facilities Sustainment, Restoration and Modernization (FSRM) program, (formerly Real Property Maintenance) to keep the Department's inventory of facilities in good working order; and similar operating expenses. PWS is allocated on a pro-rata basis across most Agency PEs and therefore fluctuates per PE by fiscal year based on the total Agency budget in that fiscal year.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2021	FY 2022	FY 2023
Title: Program Wide Support	14.100	9.731	8.393
Articles:	-	-	-
Description: PWS contains non-headquarters management costs in support of MDA functions and activities across the entire MDS. These functions include Government Civilians and Contract Support Services. This effort provides integrity and oversight of the MDS as well as supports MDA in the development and evaluation of technologies that will respond to the changing threat. Additionally, PWS includes personnel to support global deployments performing deployment site preparation and activation, and provides facility capabilities for MDA Executing Agent locations worldwide. Other MDA wide costs include: physical and technical security; civilian drug testing; audit readiness; the Science, Technology, Engineering, and Mathematics (STEM) program; legal services and settlements; travel and agency training; office, equipment, vehicle, and warehouse leases; utilities and base operations across multiple geographic locations; commercial and ancillary facility services; management of all facility aspects regardless of lifecycle stage; supplies and maintenance; compliance with statutory environmental requirements; data and unified communications support; materiel and readiness and central property management of equipment; Facilities Sustainment,			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency		Date: April 2022	
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603884C / <i>Ballistic Missile Defense Sensors</i>	Project (Number/Name) MD40 / <i>Program-Wide Support</i>	
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2021	FY 2022
<p>Restoration and Modernization (FSRM) program, (formerly Real Property Maintenance) to keep the Department's inventory of facilities in good working order; and similar operating expenses. PWS is allocated on a pro-rata basis across most Agency PEs and therefore fluctuates per PE by fiscal year based on the total Agency budget in that fiscal year.</p> <p><i>FY 2022 Plans:</i> - SEE ABOVE.</p> <p><i>FY 2023 Plans:</i> - SEE ABOVE.</p> <p><i>FY 2022 to FY 2023 Increase/Decrease Statement:</i> Decrease from FY 2022 to FY 2023 reflects the PWS allocation on a pro-rata basis across multiple Agency PE's each fiscal year based on the total Agency budget, and therefore fluctuates per PE by fiscal year.</p>			
Accomplishments/Planned Programs Subtotals		14.100	9.731
C. Other Program Funding Summary (\$ in Millions)			
N/A			
Remarks			
D. Acquisition Strategy			
N/A			

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603884C / Ballistic Missile Defense Sensors				Project (Number/Name) MD40 / Program-Wide Support					
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Wide Support - Agency Facilities and Maintenance	MIPR	Various Multi: : AL, CO, CA, VA	0.000	14.100	Nov 2020	0.000		0.000		-		0.000	0.000	14.100	0.000
Program Wide Support - Agency Operations Management	C/CPAF	Various : Multi: AL, CA, CO, VA	8.600	0.000		0.000		0.000		-		0.000	0.000	8.600	0.000
Program Wide Support - Agency Operations and Support Other Agency Services	MIPR	Various : AK, AL, CO, CA, HI, MD, VA	13.481	0.000		0.000		0.000		-		0.000	0.000	13.481	0.000
Program Wide Support - Agency Operations and Support Services	C/CPFF	Various : Multi: AK, AL, CO, CA, HI, MD, VA	85.491	0.000		9.731	Nov 2021	8.393	Nov 2022	-		8.393	Continuing	Continuing	Continuing
Program Wide Support - Prior year no longer funded in the FYDP	Various	Various : Various	15.131	0.000		0.000		0.000		-		0.000	0.000	15.131	0.000
Subtotal			122.703	14.100		9.731		8.393		-		8.393	Continuing	Continuing	N/A
Remarks N/A															
			Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			122.703	14.100		9.731		8.393		-		8.393	Continuing	Continuing	N/A
Remarks Award Date reflects date of first obligation. Additional obligations may incrementally occur throughout the year.															

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Missile Defense Agency														Date: April 2022									
Appropriation/Budget Activity 0400 / 4								R-1 Program Element (Number/Name) PE 0603884C / Ballistic Missile Defense Sensors								Project (Number/Name) MD40 / Program-Wide Support							
Significant Event Complete ▲ Significant Event Planned △				Milestone Decision Complete ★ Milestone Decision Planned ☆				Element Test Complete ◆ Element Test Planned ◇				System Level Test Complete ● System Level Test Planned ○				Complete Activity ◆ Planned Activity ◇							
								FY 2021		FY 2022		FY 2023		FY 2024		FY 2025		FY 2026		FY 2027			
MD40 Program-Wide Support								◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Missile Defense Agency			Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603884C / Ballistic Missile Defense Sensors	Project (Number/Name) MD40 / Program-Wide Support	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
MD40 Program-Wide Support	1	2021	4	2027

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Missile Defense Agency **Date:** April 2022

Appropriation/Budget Activity 0400: Research, Development, Test & Evaluation, Defense-Wide / BA 4: Advanced Component Development & Prototypes (ACD&P)	R-1 Program Element (Number/Name) PE 0603890C / BMD Enabling Programs
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COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
Total Program Element	3,809.950	607.167	623.644	591.847	-	591.847	613.589	625.761	635.633	640.374	Continuing	Continuing
MD24: System Engineering & Integration	1,373.774	172.650	155.478	176.122	-	176.122	182.501	181.596	178.066	180.298	Continuing	Continuing
MD21: Homeland Cruise Missile Defense Architecture	-	3.050	13.921	10.852	-	10.852	7.067	4.246	4.342	4.429	Continuing	Continuing
MT23: Enabling - Test	171.055	48.554	41.520	44.245	-	44.245	44.122	47.282	48.477	49.627	Continuing	Continuing
MD28: Intelligence & Security	322.365	42.890	39.550	42.036	-	42.036	45.880	56.409	54.428	53.161	Continuing	Continuing
MD30: BMD Information Management Systems	651.993	83.053	92.729	87.822	-	87.822	92.382	92.318	96.775	95.478	Continuing	Continuing
MC30: Cyber Operations	274.974	62.539	103.565	81.519	-	81.519	89.048	91.568	95.843	97.761	Continuing	Continuing
MD31: Modeling & Simulation	429.428	103.029	82.277	72.045	-	72.045	74.020	71.968	73.626	73.910	Continuing	Continuing
MC31: Engineering Cyber Operations	54.144	34.252	41.975	24.978	-	24.978	25.209	26.661	27.193	27.745	Continuing	Continuing
MD32: Quality, Safety, and Mission Assurance	324.320	29.926	29.527	30.737	-	30.737	31.767	32.494	33.120	33.782	Continuing	Continuing
MD40: Program-Wide Support	207.897	27.224	23.102	21.491	-	21.491	21.593	21.219	23.763	24.183	Continuing	Continuing

Program MDAP/MAIS Code: 362

Note

Decrease in funding from FY 2022 to FY2023 reflects the FY 2022 Congressional Plus-up for cybersecurity engineering, infrastructure improvements, and compliance with DOD Cybersecurity Discipline Implementation Plan.

A. Mission Description and Budget Item Justification

The Missile Defense System (MDS) Enabling Programs provide critical products and processes needed to combine element missile defense capabilities into a single, integrated and layered System to counter existing threats and provide new defensive capabilities against emerging threats. Specifically, the Enabling Programs:

- Assess architecture alternatives and new technologies to address advanced threats, define MDS functional requirements, conduct Analyses of Alternatives (AoA) for the DoD, and provide engineering requirements, execution support, and pre- and post-mission analysis for System-level tests
- Provide System-level engineering required to develop and demonstrate Cruise Missile Defense of the Homeland
- Provide validated models and simulations for System assessment
- Assess and document System performance (through data collection and analysis) and deliver capabilities to the Warfighter

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Missile Defense Agency				Date: April 2022		
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 0603890C I BMD Enabling Programs				
<ul style="list-style-type: none">- Provide multi-disciplinary security and intelligence support for acquisition, development, test, and deployment of current and future MDS capabilities- Identify potential threats and vulnerabilities to MDA and the MDS and develop and implement strategies to mitigate those risks- Provide Information Management tools and products supporting the development of MDS capabilities while safeguarding networks and critical program information- Provide MDA secure communication networks, IT systems, special purpose processing nodes, operations and monitoring centers, and disaster recovery and continuity of operations requirements- Evaluate quality, technical safeguards, and mission assurance effectiveness- Assess System ability to maintain integrity and superiority with advances in technology development <p>This Program Element also funds MDS threat discrimination capability development to enhance MDS effectiveness against the evolving adversary threat. The end result will be an MDS architecture more capable of identifying and destroying reentry vehicles with a higher degree of confidence, improving Warfighter shot doctrine, and more efficiently using interceptor inventory. MDS threat discrimination development is funded from the Enabling (0603890C); Midcourse (0603882C); BMD Sensors (0603884C); BMD Command, Control, Battle Management and Communications (C2BMC) (0603896C); and Aegis BMD (0603892C) PEs.</p>						
B. Program Change Summary (\$ in Millions)		FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Previous President's Budget		616.455	595.301	0.000	-	0.000
Current President's Budget		607.167	623.644	591.847	-	591.847
Total Adjustments		-9.288	28.343	591.847	-	591.847
• Congressional General Reductions		0.000	0.000			
• Congressional Directed Reductions		0.000	-16.487			
• Congressional Rescissions		0.000	0.000			
• Congressional Adds		0.000	44.830			
• Congressional Directed Transfers		0.000	0.000			
• Reprogrammings		0.000	0.000			
• SBIR/STTR Transfer		-11.688	0.000			
• Missile Defeat and Defense Enhancement		0.000	0.000	0.000	-	0.000
• Other Adjustment		2.400	0.000	591.847	-	591.847
Change Summary Explanation						
Increase of \$44.8 million in FY 2022 provides the Congressional Plus-up for cybersecurity engineering and infrastructure improvements to protect MDS and MDA assets in the highly-contested cybersecurity threat environment. Decrease of \$16.4 million in FY 2022 reflects the Congressional reduction for unjustified growth for Layered Homeland Defense lack of validated requirement and acquisition strategy.						
FY 2023 funding increase reflects the fact that the FY 2022 President's Budget request did not include out-year funding.						

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency										Date: April 2022		
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0603890C / BMD Enabling Programs				Project (Number/Name) MD24 / System Engineering & Integration			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
MD24: System Engineering & Integration	1,373.774	172.650	155.478	176.122	-	176.122	182.501	181.596	178.066	180.298	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Increase in funding from FY 2022 to FY 2023 provides the Department of Defense architecture solution for Defense of Guam, and Next Generation Interceptor (NGI) lethality analysis tool development.

A. Mission Description and Budget Item Justification

System Engineering & Integration (SE&I) defines, designs, tests and integrates the MDS, and provides analysis, decision support and planning activities for real-world operations to the National Command Authority, Joint Staff, Military Services, Combatant Commanders, Operational Test Agencies, Director of Operational Test and Evaluation, Allies, and others.

The SE&I Major Program Goals are:

- Plan, design, develop, integrate, and test a layered MDS that provides the required performance
- Provide system-level engineering support to the MDS Elements, and lead collaborative cross-Element, cross-Component engineering
- Analyze architecture alternatives and new technologies, and develop requirements to respond to the proliferation of short, medium, and long range advanced missile threats
- Provide a more effective missile defense capability for U.S. deployed forces, allies, and partners, and enhance homeland defense
- Develop discrimination improvements for the Homeland and Regional Defense missions
- As technical authority for Integrated Air and Missile Defense (IAMD), provide a consistent, disciplined systems engineering process using a multi-Service team to integrate Joint IAMD systems
- Provide technical direction to Element and Component developers and provide System-level forums to track, assess, and improve hardware and software reliability
- Identify MDS capabilities and limitations
- Develop performance assessment requirements, verify MDS performance through testing, and conduct assessments to form the basis for capability deliveries in support of fielding decisions
- Identify critical conditions and data required to develop test campaigns to demonstrate MDS performance
- Define the test objectives necessary to anchor System-level models and simulations and enable independent verification and validation
- Identify System issues occurring in ground and flight tests and lead the effort to resolve them
- Ensure the MDS is complementary to and interoperable with North Atlantic Treaty Organization (NATO) and other theater systems
- Develop anti-tamper approaches to enable international fielding

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency			Date: April 2022		
Appropriation/Budget Activity 0400 / 4		R-1 Program Element (Number/Name) PE 0603890C / BMD Enabling Programs	Project (Number/Name) MD24 / System Engineering & Integration		
The MDS threat discrimination improvements and countermeasures mitigation effort will develop and field integrated Element capabilities to improve the capability to identify lethal reentry vehicles and non-lethal threat objects. SE&I will conduct analysis and engineering to specify the MDS functional, performance, and interface requirements for achieving the improved capabilities.					
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)			FY 2021	FY 2022	FY 2023
Title: Requirements and Design			33.547	35.983	38.295
Articles:			-	-	-
<p>Description: The Requirements and Design effort develops Missile Defense System (MDS) level requirements and specifications and drives the integration of the MDS. Requirements and Design allocates requirements to MDS Elements and adjudicates Element level specifications to provide required capabilities for the Warfighter.</p> <ul style="list-style-type: none">- Define MDS technical content expectations and develop system requirements to address evolving threats- Develop and allocate functional performance, interface, and design suitability requirements to Programs, in collaboration with MDS element engineers- Maintain and update Phased Implementation Plan to document integrated requirements for improvements to, or augmentations of, current system capabilities- Deliver system technical baseline updates to document integrated system build content as identified in the R-4 summary- Identify and resolve technical disconnects through the requirements trace process and element certifications; conduct engineering analyses and perform trade studies- Participate in Element Requirements Reviews to assess compliance with MDS design- Develop Specification Change Notices (SCN) for future requirements changes, to include mitigation strategies to address discrepancy reports- Ensure accurate reporting of Element functionality and software / hardware integration in the Missile Defense System Accountability Report (MDAR) and Director's Program Reviews- Assess and add emerging threats to MDA's lethality prediction models- Incorporate updates to lethality assessments, collateral effects, and consequences of intercept into the MDS Lethality Program Plan <p>Specific and/or unique accomplishments to each FY are as follows:</p> <p>FY 2022 Plans:</p> <ul style="list-style-type: none">- Provide System-level engineering support for Next Generation Interceptor (NGI) development:<ul style="list-style-type: none">-- Ensure NGI designs meet lethality requirements and conduct risk reduction activities: Develop and conduct lethality modeling and simulation, plan and conduct Light Gas Gun testing, collect data to anchor and validate developed models, and conduct analysis <p>FY 2023 Plans:</p>					

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency		Date: April 2022		
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603890C / BMD Enabling Programs	Project (Number/Name) MD24 / System Engineering & Integration		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2021	FY 2022	FY 2023
- Conduct Next Generation Interceptor (NGI) lethality modeling and simulation to support performance assessment and test requirements development				
FY 2022 to FY 2023 Increase/Decrease Statement: N/A				
Title: Integrated Air and Missile Defense (IAMD)		15.789	17.991	21.576
Articles:		-	-	-
Description: The IAMD effort provides a consistent, disciplined systems engineering process using a joint service systems engineering team to develop the technical requirements and capabilities necessary to support integration of joint service IAMD systems, implementing capabilities required by the Geographic Combatant Commands and the Services. Provides modeling, simulation and analysis of cross-Service kill chains using high-fidelity software-in-the-loop program office system representations. Analyzes, assesses, and translates identified Engagement Coordination Initial Capability Document requirements in to technical requirements for implementation within Services and Agency programs to improve Engagement Coordination and implement advanced fire control capabilities across the Joint Integrated Air and Missile Defense kill-chain. This effort includes systems engineering analysis, development of technical and interface control requirements and documents, definition of candidate Joint IAMD increments, development and demonstration of candidate Joint IAMD capabilities, IAMD M&S model improvements, support for Wargames and exercises, and support for configuration control across the joint systems. IAMD provides capabilities to improve performance such as an improved Joint air picture and advanced Joint Combat Identification (CID) to enable engagement coordination, decision making, increase battlespace, and improve track continuity. These improvements and capabilities will enable right sensor to right shooter functionality across the Joint Services. Additional efforts will address critical joint Command and Control and interoperability needs such as Joint Tactical Integrated Fire Control (JTIFC) and the development of a Joint Integrated Fire Controls (IFC) Network to enable the capability to provide fire control quality data from the right sensor to the right shooter to engage the right target; this includes ensuring that all activities are in alignment with the Joint All Domain Command and Control (JADC2) efforts. Other efforts include the development of an IAMD Operational Architecture, development of Advanced Tracker Capabilities (Advanced Track Filters and Advanced Data Association algorithms) to defend against advanced threats, Automated Battle Management Aides (ABMAs) to support Engagement Coordination and Sensor/Weapon resource management. The IAMD Technical Authority also supports USCENTCOM with the integration of Counter - Unmanned Aerial Systems (C-UAS) capabilities into the IAMD architecture. Recurring activities include: - Continue integration of Navy Cooperative Engagement Capability (CEC) & Army Integrated Fire Control Network (IFCN) via JTMC Bridge, and demonstration in increasingly realistic environments and scenarios. - Continue to advance improvements in combat identification integration and interoperability among Joint Integrated Air and Missile Defense systems and to start the implementation of these advanced capabilities across the Army, Navy, Air Force and Marine Corps systems				

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency			Date: April 2022		
Appropriation/Budget Activity 0400 / 4		R-1 Program Element (Number/Name) PE 0603890C / BMD Enabling Programs	Project (Number/Name) MD24 / System Engineering & Integration		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)			FY 2021	FY 2022	FY 2023
<div><div><div>- Enhance Models and Simulations (M&S) to support participation in annual Nimble Fire exercises</div><div>- Continue engineering activities supporting critical Joint Command and Control and interoperability needs</div><div>- Work within JADC2 Working Groups and Integrated Product Teams to ensure IAMD Technical Authority efforts are in alignment and compatible with the direction of the other Services with respect to JADC2 capabilities</div></div><div>Specific and/or unique accomplishments to each FY are as follows:</div><div><div><div><div><div>FY 2022 Plans:</div><div><div>- Continue engineering investigations and evaluation of Advanced Association Algorithms to improve overall joint IAMD Tracking Capabilities to include radar and Electro-Optical / Infrared (EO/IR) data and start transition efforts to realize functionality</div><div>- Conduct analysis into existing and emerging IAMD capabilities to ensure they are appropriately represented during BMD and IAMD wargames/exercises. Continue to expand use of representative wargames and exercises</div><div>- Enhance Models and Simulations (M&S) to support participation in annual Nimble Fire exercises</div><div>- Continue engineering activities supporting critical Joint Command and Control and interoperability needs:</div><div><div>-- Continue to advance improvements in combat identification integration and interoperability among Joint Integrated Air and Missile Defense systems and to start the implementation of these advanced capabilities across the Army, Navy, Air Force and Marine Corps systems</div><div>-- Working with JIAMD, continue to analyze, assess and translate identified Engagement Coordination Initial Capability Document requirements in to technical requirements for implementation within Services and Agency existing and developing programs of record to improve Engagement Coordination and implement advanced fire control capabilities across the Joint Integrated Air and Missile Defense kill-chain</div></div></div><div>- Working within the various Joint All Domain Command and Control (JADC2) Working Groups and Integrated Product Teams, ensure IAMD Technical Authority efforts are in alignment and compatible with the direction of the other Services with respect to JADC2 capabilities</div><div>- Start working with the Army and USCENTCOM in support of the analysis, assessment and development of Counter - Unmanned Aerial Systems (C-UAS) capabilities</div></div><div><div><div>FY 2023 Plans:</div><div><div>- Integrate Multi-Source Correlator Tracker (MSCT) software with CEC/IFCN and Air Force and Marine Corps systems - integrate fire control networks with tactical level Command and Control nodes for battle management</div><div>- Incorporate ballistic and hypersonic missile tracking into the JTMC Bridge for cross-Service integrated fire control</div><div>- Incorporate / demonstrate contracting across the JTMC Bridge for integrated fire control sensor to weapon support across Services</div><div>- Use Army IAMD Battle Command System (IBCS), Navy CEC, USAF F-15 and other POR integration efforts to evaluate optimal solutions for distributed Joint Multi-Platform Advanced Combat Identification (JMAC) Architecture</div></div></div></div></div></div></div></div>					

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency			Date: April 2022		
Appropriation/Budget Activity 0400 / 4		R-1 Program Element (Number/Name) PE 0603890C / BMD Enabling Programs		Project (Number/Name) MD24 / System Engineering & Integration	
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)			FY 2021	FY 2022	FY 2023
<ul style="list-style-type: none"> - Demonstrate distributed JMAC capabilities in an integrated JTIFC scenario in Live, Virtual, Constructive (LVC) environment - Continue engineering investigations and evaluation of delivered multi-sensor Advanced Track Filters and Advanced Association Algorithms to improve overall Joint IAMD Tracking Capabilities - Develop demonstrations and live tracking events to show performance in more realistic IAMD environments; start transition planning - With the National Security Innovation Network, develop approaches to improve the algorithm evaluation process through the use of Artificial Intelligence and Machine Learning techniques - Conduct analysis into existing and emerging IAMD capabilities to ensure they are appropriately represented during wargames/ exercises - Continue to expand use of representative wargames and exercises in order to further enhance the capabilities being developed - Continue working with the Army and USCENTCOM in support of the analysis, assessment and development of C-UAS capabilities - Support integration of IAMD Technical Authority efforts into JADC2 and end-to end-capability development - Provide impact assessments for the JADC2 Reference Architecture and subsequent architecture and capability development efforts - Enable Right Sensor, Right Shooter capability with current service systems which will provide the capability to perform engagements utilizing remote sensors (engage on remote capabilities) which otherwise would not be available. This will also enable JTIFC to pass fire control quality information across all of the joint service systems. - Operate, maintain and update JTIFC Node, which is they key software utilized to connect the Army and Navy's composite tracking networks which allow the two services to pass fire control quality data from all connected sensors - Mature Hypersonic Defense Command and Control software and support JTIFC LVC/Flag Exercises. The LVC environment and exercises provide low cost opportunities with live systems/equipment and joint assets to continue to mature the JTIFC capabilities, which would otherwise be unaffordable for the IAMD TA efforts - Enable maturation and fielding of ABMAs for participation with JTIFC. This is a new effort which will enable the use of automated battle management aides to support the operators with cross service engagements. <p>FY 2022 to FY 2023 Increase/Decrease Statement: Increase in funding from FY 2022 to FY 2023 provides for the JADC2 integration and synchronization and the Joint IAMD Engagement Coordination of ABMA concepts into an IAMD/LVC environment.</p>					
Title: System-Level Verification and Assessment			21.953	25.703	26.591
Articles:			-	-	-
Description: This activity funds Missile Defense System Assessment and Verification, Validation, and Accreditation (VV&A) activities to support Operational Capability Baseline (OCB) delivery decisions, and anchor System modeling and simulation. - Develop and manage assessment plans and requirements for MDS capability increments:					

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency			Date: April 2022		
Appropriation/Budget Activity 0400 / 4		R-1 Program Element (Number/Name) PE 0603890C / BMD Enabling Programs	Project (Number/Name) MD24 / System Engineering & Integration		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)			FY 2021	FY 2022	FY 2023
<div>-- Map assessment requirements to data collection venues (i.e., ground tests, flight tests, and exercises)</div> <div>-- Evaluate current Modeling & Simulation (M&S) capability to address assessment requirements, and provide recommendations for new or improved M&S</div> <div>- Maintain assessment documentation per the R-4 summary</div> <div>- Conduct extensive analysis of data collected in MDS ground and flight test events to characterize MDS interoperability and performance, and anchor models and simulations</div> <div>- Identify mitigation approaches for system performance issues uncovered during the course of analysis and assessment</div> <div>- Monitor development and recommend improvements to the simulation enterprise based on an evaluation of the validity of Component, Element and System-level models (and frameworks) and participation in assessment activities and Modeling and Simulation events</div> <div>- Continue VV&A activities to meet and maintain Hardware-in-the-Loop (HWIL) model accreditation in accordance with the HWIL Accreditation plan</div> <div>- Conduct assessments of Missile Defense System capabilities and limitations prior to capability delivery decisions</div> <div>- Produce independent assessments of each incremental MDS Capability Delivery to support fielding readiness determinations</div> <div>- Verify MDS performance against specified requirements, and produce MDS verification reports</div> <div>- Maintain M&S VV&A database and toolkit</div> <div>- Maintain verification data for System Specification Change Notices</div> <div>- Recommend solutions to improve assessment confidence, including M&S and testing issue resolutions</div> <div>Specific and/or unique accomplishments to each FY are as follows:</div> <div>FY 2022 Plans:</div> <div>- Conduct VV&A of MDS Core Truth Models, to include debris and plume modeling.</div> <div>FY 2023 Plans:</div> <div>- SEE ABOVE.</div> <div>FY 2022 to FY 2023 Increase/Decrease Statement:</div> <div>N/A</div>					
<div>Title: Knowledge Centers</div> <div>Articles:</div> <div>Description: Knowledge Centers serve as independent technical advisors to MDA program offices in the C2BMC, Interceptor, Space, and Sensor areas to support development of technical approaches and improve reliability.</div> <div>- Provide Federally Funded Research and Development Centers (FFRDC) and University Affiliated Research Centers (UARC) subject matter expertise, to include reach-back capability as needed, for Element program managers:</div>			15.551 -	12.679 -	12.055 -

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency		Date: April 2022		
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603890C / BMD Enabling Programs	Project (Number/Name) MD24 / System Engineering & Integration		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2021	FY 2022	FY 2023
<div>-- Provide Subject Matter Expertise and analytical support for Independent Review Teams, mission assurance assessments, Failure Review Boards and Failure Investigation Teams</div> <div>-- Identify and provide recommendations to mitigate technical risks, including innovative and unconventional approaches</div> <div>-- Promote knowledge sharing between external technical sources and MDA</div> <div>- Perform independent technical assessments of critical System and Element program issues:</div> <div>-- Define element knowledge points (KPs), establish closure criteria, and provide closure recommendations</div> <div>-- Continue to provide System and Element performance assessments</div> <div>- Conduct assessments of emerging technologies as required</div> <div>Specific and/or unique accomplishments to each FY are as follows:</div> <div>FY 2022 Plans:</div> <div>- SEE ABOVE.</div> <div>FY 2023 Plans:</div> <div>- SEE ABOVE.</div> <div>FY 2022 to FY 2023 Increase/Decrease Statement:</div> <div>N/A</div>				
<div>Title: Future Concepts and Planning</div> <div>Articles:</div> <div>Description: This activity funds MDS architecture and future concept development, and efforts and studies to address the emergent threat, including DoD Analyses of Alternatives (AoA).</div> <div>- Participate in designated Office of the Secretary of Defense (OSD) activities or analyses, as directed by Congress</div> <div>- Perform MDS capability gap analysis, and analyze and document architecture alternatives and/or new technologies to address gaps</div> <div>- Develop architecture overviews, capability evolution plans, integrated system schedules, and top-level requirements</div> <div>- Develop Initial Requirements Documents (IRDs) to establish functional, performance and integration planning requirements for next generation weapons and sensors to counter future threats</div> <div>- Identify architecture alternatives that improve MDS performance and are complementary to and interoperable with North Atlantic Treaty Organization (NATO) systems and theaters around the world</div> <div>- Conduct technology development reviews for future/follow-on MDS Element development efforts</div> <div>- Update concept capability documentation based on architectural options, trade studies, and technology development experiments</div> <div>- Develop Preliminary Specification Change Notices for selected future MDS capabilities and technologies</div>		26.587 -	13.451 -	13.853 -

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency			Date: April 2022		
Appropriation/Budget Activity 0400 / 4		R-1 Program Element (Number/Name) PE 0603890C / BMD Enabling Programs	Project (Number/Name) MD24 / System Engineering & Integration		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)			FY 2021	FY 2022	FY 2023
<div>- Maintain a dialog with the Warfighter community for all MDS engineering and technical issues: -- Inform Warfighter development of the Prioritized Capabilities List (PCL) by providing relevant System data -- Develop updates to the Achievable Capabilities List (ACL) as required - Lead collaborative effort to improve foreign partners' understanding of existing system capabilities, architectural performance and operational concepts of the MDS Specific and/or unique accomplishments to each FY are as follows: FY 2022 Plans: - SEE ABOVE. FY 2023 Plans: - SEE ABOVE. FY 2022 to FY 2023 Increase/Decrease Statement: N/A</div>					
<div>Title: System Engineering, Engineering Analysis and Quick Response Team Articles: Description: This task provides rapid response, high quality systems engineering analysis products and supporting technical data to address external and internal Agency inquiries and decisions: - Conduct system level analyses to support ongoing MDS Architecture and Systems Engineering efforts - Analyze expected performance of MDS Architecture options: -- Analyze and predict the performance of future MDS capabilities -- Provide technical assessments, and collaborate with MDS Elements to define and track technical performance measures - Respond to Warfighter, Combatant Command (CCMD) and congressional requests for information and analysis - Provide analytical support for real-world events - Maintain analysis parameters database and standards per the R4 summary to ensure consistency - Develop analytical data to respond to information requests from MDA and DoD leadership Specific and/or unique accomplishments to each FY are as follows: FY 2022 Plans: - SEE ABOVE. FY 2023 Plans:</div>			9.399 -	11.061 -	10.712 -

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency		Date: April 2022	
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603890C / BMD Enabling Programs	Project (Number/Name) MD24 / System Engineering & Integration	
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2021	FY 2022
SEE ABOVE.			
FY 2022 to FY 2023 Increase/Decrease Statement: N/A			
Title: Discrimination		22.883	20.462
Articles:		-	-
Description: MDA designs, develops, tests, and delivers MDS discrimination improvements and countermeasures mitigation capabilities to address emerging adversary countermeasures. MDA is focused on providing the Warfighter with capability improvements to identify Reentry Vehicles (RVs) within a threat missile complex in the presence of decoys and with advanced capabilities to address other countermeasures. SE&I will lead and integrate the Threat Discrimination program across the entire MDS, establish performance goals for the product development phase, and develop functional, performance, and interface requirements to address the threat. SE&I will establish threat discrimination and countermeasures mitigation ground and flight test requirements, and develop updated high fidelity threat models to support analysis and testing activities. Other activities include: <ul style="list-style-type: none"> - Perform systems engineering support for threat discrimination and counter-countermeasures analysis and assessments - Conduct Threat Discrimination Program integration across the entire MDS - Perform threat discrimination systems engineering support for counter-countermeasures analysis and assessments - Conduct analysis on predicted performance of advanced capability development for definition of initial requirements for MDS - Develop Electronic Attack and Electronic Protection models to support MDS requirements definition for Electronic Protection techniques - Define operational concepts for improved counter-countermeasure techniques and technologies - Support Ground/Flight test data collection planning efforts - Develop models and simulations for Electronic Attack, Electronic Protection, Objective Debris Mitigation, electro-optical/infrared improvements, advanced/dynamic threat, and high fidelity scene generation to support test planning and execution - Develop updated high fidelity threat models - Provide technical support for fielding improved threat discrimination capabilities Specific and/or unique accomplishments to each FY are as follows: FY 2022 Plans: <ul style="list-style-type: none"> - Conduct Threat Discrimination Program integration across the entire MDS - Perform threat discrimination systems engineering support for counter-countermeasures analysis and assessments - Provide technical support for fielding improved discrimination capability - Conduct analysis on predicted performance of advanced capability development for definition of initial requirements for MDS 			16.658

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency		Date: April 2022		
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603890C / BMD Enabling Programs	Project (Number/Name) MD24 / System Engineering & Integration		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2021	FY 2022	FY 2023
<div>- Develop Electronic Attack and Electronic Protection models to support MDS requirements definition for Electronic Protection techniques</div> <div>- Define operational concepts for improved counter-countermeasure techniques and technologies</div> <div>- Support Ground/Flight test data collection planning efforts to enable MDS Increment 6C assessment</div> <div>- Develop models and simulations for Electronic Attack, Electronic Protection, Objective Debris Mitigation, electro-optical/infrared improvements, advanced/dynamic threat, and high fidelity scene generation to support test planning and execution</div> <div>- Develop updated high fidelity threat models</div> <div>- Develop Preliminary Change Notice, Functional Specification Change Notice, Performance Specification Change Notice, and Document Change Notice for threat discrimination improvements, Electronic Protection, and Objective Debris Mitigation</div> <div>FY 2023 Plans:</div> <div>- Develop Enhanced Electronic Protection Techniques</div> <div>- Produce Specification Change Notice, Trace Activities for flowdown to Element Specifications, and Document Change Notice</div> <div>FY 2022 to FY 2023 Increase/Decrease Statement:</div> <div>Decrease from FY 2022 to FY 2023 reflects completion of the bulk of Increment 6C/7 discrimination efforts per the approved plan.</div>				
<div>Title: Risk Management</div> <div>Articles:</div> <div>Description: The Risk Management task identifies MDS element and component technical risks, and tracks status and risk mitigation progress.</div> <div>- Convene and chair Risk Management Working Group</div> <div>- Execute the risk management and mission readiness working group process</div> <div>- Maintain a risk database using the Failure Reporting and Corrective Action System</div> <div>- Review and approve program element risks, on quarterly basis</div> <div>Specific and/or unique accomplishments to each FY are as follows:</div> <div>FY 2022 Plans:</div> <div>- SEE ABOVE.</div> <div>FY 2023 Plans:</div> <div>- SEE ABOVE.</div> <div>FY 2022 to FY 2023 Increase/Decrease Statement:</div> <div>N/A</div>		7.420 -	7.901 -	7.755 -
Title: Anti-Tamper & Engineering Manufacturing Readiness Level Development		5.152	5.367	5.282

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency			Date: April 2022		
Appropriation/Budget Activity 0400 / 4		R-1 Program Element (Number/Name) PE 0603890C / BMD Enabling Programs		Project (Number/Name) MD24 / System Engineering & Integration	
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)			FY 2021	FY 2022	FY 2023
<p align="right">Articles:</p> <p>Description: This task develops anti-tamper approaches to inhibit reverse engineering of critical technologies, and oversees the use of Engineering and Manufacturing Readiness Levels (EMRLs) to assess Element, Component, or System maturity.</p> <ul style="list-style-type: none"> - Develop anti-tamper approaches to enable international fielding, support coalition warfare, and extend the effective operational life of the System - Engage and support the Services in understanding and transitioning MDS Element Anti-Tamper activities - Participate in Element reviews to assess proposed Anti-Tamper solutions and assist programs in developing and implementing Anti-Tamper detection and response technologies to mitigate risk - Monitor application of EMRLs to evaluate engineering and manufacturing maturity of MDS elements, systems, and components - Assess and report readiness of MDA development efforts for transition to production <p>Specific and/or unique accomplishments to each FY are as follows:</p> <p>FY 2022 Plans:</p> <ul style="list-style-type: none"> - SEE ABOVE. <p>FY 2023 Plans:</p> <ul style="list-style-type: none"> - SEE ABOVE. <p>FY 2022 to FY 2023 Increase/Decrease Statement:</p> <p>N/A</p>			-	-	-
<p>Title: Manufacturing and Producibility</p> <p align="right">Articles:</p> <p>Description: This activity supports a system-level manufacturing and producibility team to address materials, key component, and subsystem design and development to reduce cycle time, part count, and risk. This activity also supports a system-level reliability team to reduce risk of test failures and performance shortcomings and drive reliability into system and component designs.</p> <ul style="list-style-type: none"> - Assess Missile Defense industrial base and determine critical manufacturing technologies: <ul style="list-style-type: none"> -- Conduct assessments of critical component supply base and update critical technologies database -- Collaborate with national security space components on investment strategies for critical technologies -- Develop engineering management tool to characterize industrial base risks - Utilize supply chain risk identification and mitigation tracking system to mitigate manufacturing supply issues for critical components - Assess the effectiveness of reliability programs for each MDA Product (Radar, Launcher, Missile/Interceptor, etc.) to achieve/sustain required reliability - Perform reliability, composite risk, and probability of mission success assessments for flight tests 			4.697 -	4.880 -	5.345 -

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency			Date: April 2022		
Appropriation/Budget Activity 0400 / 4		R-1 Program Element (Number/Name) PE 0603890C / BMD Enabling Programs		Project (Number/Name) MD24 / System Engineering & Integration	
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)			FY 2021	FY 2022	FY 2023
<ul style="list-style-type: none"> - Identify failure trends/modes and evaluate impact on the Probability of Mission Success; evaluate potential corrective actions - Provide element/program scorecard data to support reliability evaluations/assessments - With Logistics Support, develop MDA Reliability and Logistic Policies/Plans to promote integrated sustainability efforts - Ensure that Missile Defense products have achieved the required maturity in Reliability, Availability, and Maintainability (RAM) to support the transition from MDA to the appropriate service organization; provide RAM expertise as needed to Element Program Offices - Provide updates to MDA RAM policy and guidance <p>Specific and/or unique accomplishments to each FY are as follows:</p> <p>FY 2022 Plans: - SEE ABOVE.</p> <p>FY 2023 Plans: - SEE ABOVE.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: N/A</p>					
<p>Title: JEON Capability</p> <p align="right">Articles:</p> <p>Description: In conjunction with the Lower Tier Project Office (LTPO) for a Joint Emergent Operational Need (JEON), provide system-level engineering activities to develop, test and deploy an integrated solution for upper tier/lower tier integration by achieving enhanced interoperability between the Terminal High Altitude Area Defense (THAAD) and PATRIOT capabilities, including:</p> <ul style="list-style-type: none"> - Develop threat updates to inform requirements - Develop functional, performance, and interface requirements - Develop test requirements - Update Modeling and Simulation (M&S) frameworks and core truth models - Provide M&S integration for testing, and provide Wargame and training support - Develop requirements for capability assessments - Provide test and performance analysis - Perform Element integration <p>Specific and/or unique accomplishments to each FY are as follows:</p>			9.672 -	0.000 -	0.000 -

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency			Date: April 2022		
Appropriation/Budget Activity 0400 / 4		R-1 Program Element (Number/Name) PE 0603890C / BMD Enabling Programs	Project (Number/Name) MD24 / System Engineering & Integration		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)			FY 2021	FY 2022	FY 2023
FY 2022 Plans: No funding is requested for this activity in FY 2022.					
FY 2023 Plans: N/A					
FY 2022 to FY 2023 Increase/Decrease Statement: N/A					
Title: Guam Defense Integrated Air and Missile Defense (IAMD)			0.000	0.000	18.000
Articles:			-	-	-
Description: The Guam Defense IAMD provides the integration of the Joint Track Management Capability (JTMC) Bridge to establish an independent integrated fire control architecture in support of the Defense of Guam. This activity pulls from ongoing IAMD Technical Authority (TA) efforts that developed a bridge capability demonstration. This requirement would allow composite tracking networks to operate as a single joint composite tracking network in support of Guam Defense.					
FY 2022 Plans: N/A					
FY 2023 Plans: - Mature the JTMC Bridge with respect to Defense of Guam requirements - Initiate accreditation of JTMC Bridge to connect to tactical Cooperative Engagement Capability (CEC) networks for Live testing - Provide cyber security and accreditation packages - Mature the JTMC Bridge for Ballistic and Hypersonic Missile tracking and Combat Identification - Provide integration activities for existing JTMC Bridge into Integrated Air Defense System (IADS) architecture - Conduct integration of sensors and weapons into IBCS and interface of IBCS to Battle Control System - Fixed / command and control (BCS-F/C2) Pathfinder					
FY 2022 to FY 2023 Increase/Decrease Statement: Increase in funding from FY 2022 to FY 2023 provides for the initiation of the Department of Defense architecture solution for Defense of Guam.					
Accomplishments/Planned Programs Subtotals			172.650	155.478	176.122

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency	Date: April 2022
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Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603890C / BMD Enabling Programs	Project (Number/Name) MD24 / System Engineering & Integration
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C. Other Program Funding Summary (\$ in Millions)

Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• 0603881C: Ballistic Missile	305.081	213.382	190.216	-	190.216	196.279	213.945	224.146	238.269	Continuing	Continuing
Defense Terminal Defense Segment											
• 0603882C: Ballistic	1,195.853	724.028	667.524	-	667.524	870.817	802.617	781.973	765.733	Continuing	Continuing
Missile Defense Midcourse											
Defense Segment											
• 0603884C: Ballistic	259.605	254.962	231.134	-	231.134	250.028	274.705	276.254	257.575	Continuing	Continuing
Missile Defense Sensors											
• 0603892C: AEGIS BMD	861.809	639.549	600.072	-	600.072	658.798	574.014	570.018	580.496	Continuing	Continuing
• 0603896C: Ballistic Missile	639.027	564.946	589.374	-	589.374	575.883	588.824	612.853	605.801	Continuing	Continuing
Defense Command and											
Control, Battle Management											
& Communication											
• 0603914C: Ballistic	364.994	389.156	367.824	-	367.824	363.963	421.261	476.991	490.176	Continuing	Continuing
Missile Defense Test											
• 0604181C: Hypersonic Defense	267.589	287.796	225.477	-	225.477	108.540	110.220	287.535	449.590	Continuing	Continuing

Remarks

D. Acquisition Strategy

In order to optimize the performance of the MDS, MDA leverages the nation's engineering Centers of Excellence at government agencies and Military Services, FFRDCs, UARCs, and industry. The executing agents utilize various contracting strategies in a flexible manner to maximize their contribution. Products and Services will be acquired by competitive means to the extent that is possible and practical.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603890C / BMD Enabling Programs						Project (Number/Name) MD24 / System Engineering & Integration			
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	N/A
Remarks N/A															
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Requirements and Design - Reqts & Design - Lethality Spt - FFRDC/UARC	MIPR	Various : CA	4.869	0.522	Nov 2020	0.995	Nov 2021	0.795	Nov 2022	-		0.795	Continuing	Continuing	Continuing
Requirements and Design - Reqts & Design - Lethality Spt - CSS	C/CPFF	TEAMS : NC	2.932	1.091	Nov 2020	0.686	Nov 2021	1.560	Nov 2022	-		1.560	Continuing	Continuing	Continuing
Requirements and Design - Reqts & Design - NGI Lethality Analysis	Various	Various : TBD	0.000	0.000		0.000		5.697	Dec 2022	-		5.697	Continuing	Continuing	Continuing
Requirements and Design - Previous Year Reqts & Design Content No Longer in FYDP	Various	Various : Various	47.805	0.000		0.000		0.000		-		0.000	0.000	47.805	0.000
Requirements and Design - Reqts & Design	C/CPFF	TEAMS : AL, VA	52.392	6.602	Nov 2020	6.753	Nov 2021	7.369	Nov 2022	-		7.369	Continuing	Continuing	Continuing
Requirements and Design - Reqts & Design - FFRDC/UARC 1	MIPR	ORNL : TN	2.234	0.394	Nov 2020	0.423	Nov 2021	0.432	Nov 2022	-		0.432	Continuing	Continuing	Continuing
Requirements and Design - Reqts & Design - FFRDC/UARC 2	MIPR	MITRE : VA	6.595	0.618	Nov 2020	0.423	Nov 2021	0.432	Nov 2022	-		0.432	Continuing	Continuing	Continuing
Requirements and Design - Reqts & Design - HAENS Spt	MIPR	NSWC Crane : IN	4.233	0.782	Nov 2020	0.518	Nov 2021	0.528	Nov 2022	-		0.528	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603890C / BMD Enabling Programs				Project (Number/Name) MD24 / System Engineering & Integration					
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Requirements and Design - Reqts & Design - Industry	C/CPFF	Boeing : AL	129.733	7.340	Nov 2020	5.440	Nov 2021	10.082	Nov 2022	-		10.082	Continuing	Continuing	Continuing
Requirements and Design - Reqts & Design - MDA	Allot	MDA : AL, VA	71.160	7.602	Nov 2020	7.946	Oct 2021	9.100	Oct 2022	-		9.100	Continuing	Continuing	Continuing
Requirements and Design - Reqts & Design - NGI CSS support	Various	Various : AL	0.000	0.000		2.247	Nov 2021	0.000		-		0.000	Continuing	Continuing	Continuing
Requirements and Design - Reqts & Design - NGI Lab support	Various	Various : NM, CA, TX	0.000	0.000		5.091	Nov 2021	0.000		-		0.000	Continuing	Continuing	Continuing
Requirements and Design - Reqts & Design - NGI OGA support	MIPR	Various : AL, TN	0.000	0.000		2.700	Nov 2021	0.000		-		0.000	Continuing	Continuing	Continuing
Requirements and Design - Reqts & Design - OGA	MIPR	CCDC : AL	13.362	2.223	Nov 2020	0.461	Nov 2021	0.000		-		0.000	Continuing	Continuing	Continuing
Requirements and Design - Reqts & Design - Post Intercept Assessment	Various	Various : Various	19.141	6.373	Nov 2020	2.300	Nov 2021	2.300	Nov 2022	-		2.300	Continuing	Continuing	Continuing
Integrated Air and Missile Defense (IAMD) - IAMD - Engagement Coordination	MIPR	DOD - USA - COMBAT CAPABILITIES DEVELOPMENT COMMAND (CCDC) : AL	0.000	0.000		0.000		2.110	Dec 2022	-		2.110	Continuing	Continuing	Continuing
Integrated Air and Missile Defense (IAMD) - IAMD - JADC2 Integration	MIPR	DOD - USA - COMBAT CAPABILITIES DEVELOPMENT COMMAND (CCDC) : AL	0.000	0.000		0.000		1.210	Dec 2022	-		1.210	Continuing	Continuing	Continuing
Integrated Air and Missile Defense (IAMD) - IAMD - MDA	Allot	MDA : AL, VA, CO	0.000	0.739	Oct 2020	0.774	Oct 2021	0.805	Oct 2022	-		0.805	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603890C / BMD Enabling Programs				Project (Number/Name) MD24 / System Engineering & Integration					
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Integrated Air and Missile Defense (IAMD) - IAMD - OGA	MIPR	CCDC : AL	19.306	5.084	Nov 2020	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Integrated Air and Missile Defense (IAMD) - IAMD - Support	C/CPFF	TEAMS : AL, VA, CO	7.186	0.715	Nov 2020	1.301	Nov 2021	1.090	Nov 2022	-		1.090	Continuing	Continuing	Continuing
Integrated Air and Missile Defense (IAMD) - IAMD - Various	MIPR	DoD Activities : Various	61.917	9.251	Nov 2020	15.916	Nov 2021	16.361	Nov 2022	-		16.361	Continuing	Continuing	Continuing
Integrated Air and Missile Defense (IAMD) - Previous Year IAMD Content No Longer in FYDP	Various	Various : AL, VA, MD	6.520	0.000		0.000		0.000		-		0.000	0.000	6.520	0.000
System-Level Verification and Assessment - Previous Year Sys V&A content no longer in the FYDP	Various	Various : Various	12.236	0.000		0.000		0.000		-		0.000	0.000	12.236	0.000
System-Level Verification and Assessment - Sys V&A - CSS	C/CPFF	TEAMS : AL	15.823	2.642	Nov 2020	3.642	Nov 2021	2.604	Nov 2022	-		2.604	Continuing	Continuing	Continuing
System-Level Verification and Assessment - Sys V&A - FFRDC/UARC 1	MIPR	Aerospace : CA	23.374	1.579	Nov 2020	1.251	Nov 2021	1.825	Nov 2022	-		1.825	Continuing	Continuing	Continuing
System-Level Verification and Assessment - Sys V&A - FFRDC/UARC 2	MIPR	JHU/APL : MD, VA	12.058	0.830	Nov 2020	1.270	Nov 2021	1.282	Nov 2022	-		1.282	Continuing	Continuing	Continuing
System-Level Verification and Assessment - Sys V&A - FFRDC/UARC 3	MIPR	GTRI : AL	2.611	1.116	Nov 2020	1.175	Nov 2021	1.175	Nov 2022	-		1.175	Continuing	Continuing	Continuing
System-Level Verification and Assessment - Sys V&A - FFRDC/UARC 6	MIPR	MIT/LL : MA	22.748	0.000		0.829	Nov 2021	0.872	Nov 2022	-		0.872	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603890C / BMD Enabling Programs				Project (Number/Name) MD24 / System Engineering & Integration					
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
System-Level Verification and Assessment - Sys V&A - FFRDC/UARC 7	MIPR	MITRE : VA	22.933	1.778	Nov 2020	1.645	Nov 2021	1.645	Nov 2022	-		1.645	Continuing	Continuing	Continuing
System-Level Verification and Assessment - Sys V&A - M&S Accreditation	Various	CCDC : AL	21.117	2.365	Nov 2020	5.518	Nov 2021	5.622	Nov 2022	-		5.622	Continuing	Continuing	Continuing
System-Level Verification and Assessment - Sys V&A - MDA	Allot	MDA : VA, AL	17.057	6.353	Oct 2020	5.809	Oct 2021	6.652	Oct 2022	-		6.652	Continuing	Continuing	Continuing
System-Level Verification and Assessment - Sys V&A - OGA	MIPR	CCDC : AL	16.745	2.364	Nov 2020	4.090	Nov 2021	4.413	Nov 2022	-		4.413	Continuing	Continuing	Continuing
System-Level Verification and Assessment - Sys V&A - Various	Various	Various : Various	0.000	1.051	Dec 2020	0.000		0.000		-		0.000	0.000	1.051	0.000
System-Level Verification and Assessment - V&A Industry Support	C/CPFF	Boeing : AL	21.184	1.875	Nov 2020	0.474	Nov 2021	0.501	Nov 2022	-		0.501	Continuing	Continuing	Continuing
Knowledge Centers - KC - FFRDC/UARC 5	MIPR	Draper : VA	1.231	0.300	Nov 2020	0.665	Nov 2021	0.665	Nov 2022	-		0.665	Continuing	Continuing	Continuing
Knowledge Centers - KC - FFRDC/UARC 1	MIPR	Aerospace : CA	17.127	0.541	Nov 2020	1.732	Nov 2021	0.000		-		0.000	Continuing	Continuing	Continuing
Knowledge Centers - KC - FFRDC/UARC 2	MIPR	MIT/LL : MA	11.080	1.050	Nov 2020	1.090	Nov 2021	0.648	Nov 2022	-		0.648	Continuing	Continuing	Continuing
Knowledge Centers - KC - FFRDC/UARC 3	FFRDC	MITRE : VA	11.524	1.600	Nov 2020	1.106	Nov 2021	0.864	Nov 2022	-		0.864	Continuing	Continuing	Continuing
Knowledge Centers - KC - FFRDC/UARC 4	FFRDC	JHU/APL : VA	9.628	2.271	Nov 2020	0.728	Nov 2021	0.864	Nov 2022	-		0.864	Continuing	Continuing	Continuing
Knowledge Centers - KC - FFRDC/UARC 7	MIPR	GTRI : GA	5.509	1.220	Nov 2020	0.386	Nov 2021	0.864	Nov 2022	-		0.864	Continuing	Continuing	Continuing
Knowledge Centers - KC - Industry	C/CPFF	BOEING : AL	0.000	0.974	Nov 2020	0.000		0.000		-		0.000	0.000	0.974	0.974
Knowledge Centers - KC - MDA	Allot	MDA : AL, VA	43.176	2.255	Oct 2020	2.359	Oct 2021	2.828	Oct 2022	-		2.828	Continuing	Continuing	Continuing

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Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603890C / BMD Enabling Programs				Project (Number/Name) MD24 / System Engineering & Integration					
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Knowledge Centers - KC - TEAMS	C/CPFF	TEAMS : AL	8.322	2.445	Nov 2020	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Knowledge Centers - KC - Various	MIPR	Various : Various	11.241	2.895	Dec 2020	4.613	Dec 2021	5.322	Nov 2022	-		5.322	Continuing	Continuing	Continuing
Knowledge Centers - Previous Year KC Content No Longer In FYDP	Various	Various : AL, AK, CA, CO, HI, NM, VA	3.032	0.000		0.000		0.000		-		0.000	0.000	3.032	0.000
Future Concepts and Planning - Future Concepts - Architecture CSS	C/CPFF	TEAMS : AL, VA	23.181	5.931	Nov 2020	6.313	Nov 2021	1.363	Nov 2022	-		1.363	Continuing	Continuing	Continuing
Future Concepts and Planning - Architecture target simulation development	MIPR	USA CCDC AVIATION AND MISSILE CENTE : AL	0.000	10.000	May 2021	0.000		0.000		-		0.000	0.000	10.000	0.000
Future Concepts and Planning - Future Concepts - Architecture Support	Various	Various : VA, AL	13.392	3.212	Nov 2020	0.000		0.000		-		0.000	0.000	16.604	0.000
Future Concepts and Planning - Future Concepts - FFRDC / UARC 1	MIPR	SNL : CA	3.892	0.205	Nov 2020	0.212	Nov 2021	0.216	Nov 2022	-		0.216	Continuing	Continuing	Continuing
Future Concepts and Planning - Future Concepts - FFRDC / UARC 2	C/CPFF	GTRI (Georgia Tech Research Institute) : GA	0.000	0.000		0.000		1.279	Dec 2022	-		1.279	Continuing	Continuing	Continuing
Future Concepts and Planning - Future Concepts - FFRDC / UARC 3	MIPR	MIT/LL : MA	5.105	0.025	Nov 2020	0.000		0.000		-		0.000	0.000	5.130	0.000
Future Concepts and Planning - Future Concepts - FFRDC / UARC 4	MIPR	LLNL (Lawrence Livermore National Laboratory) : Various	0.000	0.000		0.000		0.317	Dec 2022	-		0.317	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603890C / BMD Enabling Programs				Project (Number/Name) MD24 / System Engineering & Integration					
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Future Concepts and Planning - Future Concepts - FFRDC / UARC 5	MIPR	MITRE : VA	4.589	0.841	Nov 2020	0.423	Nov 2021	2.888	Nov 2022	-		2.888	Continuing	Continuing	Continuing
Future Concepts and Planning - Future Concepts - FFRDC / UARC 6	MIPR	Aerospace : CA	5.438	0.558	Nov 2020	0.423	Nov 2021	0.455	Nov 2022	-		0.455	Continuing	Continuing	Continuing
Future Concepts and Planning - Future Concepts - Support	Allot	MDA : VA / AL	26.301	5.815	Oct 2020	6.080	Oct 2021	6.324	Oct 2022	-		6.324	Continuing	Continuing	Continuing
Future Concepts and Planning - Future Concepts - WHS	MIPR	RAND CORPORATION : Various	0.000	0.000		0.000		1.011	Dec 2022	-		1.011	Continuing	Continuing	Continuing
Future Concepts and Planning - Previous Year Future Concepts - No Longer in FYDP	Various	Various : Various	82.988	0.000		0.000		0.000		-		0.000	0.000	82.988	0.000
System Engineering, Engineering Analysis and Quick Response Team - Previous Year Sys Engrg, QRT - No Longer In FYDP	Various	Various : Various	6.253	0.000		0.000		0.000		-		0.000	0.000	6.253	0.000
System Engineering, Engineering Analysis and Quick Response Team - Sys Engrg, QRT - CSS	C/CPFF	TEAMS : AL	42.423	2.492	Nov 2020	2.485	Nov 2021	2.052	Nov 2022	-		2.052	Continuing	Continuing	Continuing
System Engineering, Engineering Analysis and Quick Response Team - Sys Engrg, QRT - CSS 2	C/CPFF	SAIC : VA, AL	39.044	6.276	Nov 2020	8.115	Nov 2021	8.177	Nov 2022	-		8.177	Continuing	Continuing	Continuing
System Engineering, Engineering Analysis and Quick Response Team - Sys Engrg, QRT - Industry Spt	C/CPFF	Boeing : VA, AL	1.084	0.631	Nov 2020	0.461	Nov 2021	0.483	Nov 2022	-		0.483	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603890C / BMD Enabling Programs				Project (Number/Name) MD24 / System Engineering & Integration					
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Discrimination - Discrimination - CSS	C/CPFF	TEAMS : AL	29.448	8.689	Nov 2020	5.635	Nov 2021	5.999	Nov 2022	-		5.999	Continuing	Continuing	Continuing
Discrimination - Discrimination - Industry	C/CPAF	Boeing : AL, VA	62.079	2.777	Nov 2020	12.971	Nov 2021	8.729	Nov 2022	-		8.729	Continuing	Continuing	Continuing
Discrimination - Discrimination - Support	Allot	MDA : AL, VA	34.571	5.789	Oct 2020	1.856	Oct 2021	1.930	Oct 2022	-		1.930	Continuing	Continuing	Continuing
Discrimination - Discrimination - Various	Various	Various : Various	0.000	5.628	Apr 2021	0.000		0.000		-		0.000	0.000	5.628	0.000
Discrimination - Prior Year Discrimination Improvements no longer funded in FYDP	Various	Various : Various	61.423	0.000		0.000		0.000		-		0.000	0.000	61.423	0.000
Risk Management - Risk Mgt - Analysis	Allot	MDA : VA, AL	39.196	6.676	Oct 2020	7.042	Oct 2021	5.975	Oct 2022	-		5.975	Continuing	Continuing	Continuing
Risk Management - Risk Mgt - Analysis Spt	C/CPAF	TEAMS : AL	4.274	0.222	Nov 2020	0.273	Nov 2021	0.273	Nov 2022	-		0.273	Continuing	Continuing	Continuing
Risk Management - Risk Mgt - FFRDC/UARC	MIPR	MITRE : VA	7.022	0.522	Nov 2020	0.586	Nov 2021	0.569	Nov 2022	-		0.569	Continuing	Continuing	Continuing
Risk Management - Risk Mgt - ICT	C/CPAF	Northrop Grumman : AL, AK, CA, CO, HI, NM, VA	2.125	0.000		0.000		0.000		-		0.000	0.000	2.125	0.000
Risk Management - Risk Mgt - Various	Various	Various : AL	0.000	0.000		0.000		0.938	Dec 2022	-		0.938	Continuing	Continuing	Continuing
Anti-Tamper & Engineering Manufacturing Readiness Level Development - AT & EMRL - Anti-Tamper	Various	Various : AL, VA, CO	1.929	0.465	Dec 2020	0.190	Dec 2021	0.557	Dec 2022	-		0.557	Continuing	Continuing	Continuing
Anti-Tamper & Engineering Manufacturing Readiness Level Development - AT & EMRL - Anti-Tamper OGA Support	MIPR	CCDC : AL	0.261	0.000		0.269	Nov 2021	0.000		-		0.000	Continuing	Continuing	Continuing
Anti-Tamper & Engineering Manufacturing Readiness Level Development - AT	MIPR	NSWC Crane : IN	7.467	0.251	Nov 2020	0.269	Nov 2021	0.274	Nov 2022	-		0.274	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603890C / BMD Enabling Programs				Project (Number/Name) MD24 / System Engineering & Integration					
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
& EMRL - Anti-Tamper Support															
Anti-Tamper & Engineering Manufacturing Readiness Level Development - AT & EMRL - MDA	Allot	MDA : AL, VA	33.939	4.436	Oct 2020	4.639	Oct 2021	4.451	Oct 2022	-		4.451	Continuing	Continuing	Continuing
Anti-Tamper & Engineering Manufacturing Readiness Level Development - Prior Year AT & EMRL no longer funded in FYDP	Various	Various : Various	2.983	0.000		0.000		0.000		-		0.000	0.000	2.983	0.000
Manufacturing and Producibility - Core Standards	C/CPFF	Boeing : AL	7.677	0.000		0.000		0.000		-		0.000	0.000	7.677	0.000
Manufacturing and Producibility - Mfg and Producibility	Allot	MDA : AL	6.438	3.236	Oct 2020	3.247	Oct 2021	3.002	Oct 2022	-		3.002	Continuing	Continuing	Continuing
Manufacturing and Producibility - Mfg and Producibility - CSS	C/CPFF	TEAMS : AL, VA	2.447	0.765	Nov 2020	1.095	Nov 2021	2.343	Nov 2022	-		2.343	Continuing	Continuing	Continuing
Manufacturing and Producibility - Mfg and Producibility - OGA Support	MIPR	CCDC : AL	12.878	0.585	Nov 2020	0.538	Nov 2021	0.000		-		0.000	0.000	14.001	0.000
Manufacturing and Producibility - Mfg and Producibility - Various	Various	Various : AL	1.889	0.111	Nov 2020	0.000		0.000		-		0.000	0.000	2.000	0.000
Manufacturing and Producibility - Previous Year Mfg and Producibility - No Longer In FYDP	Various	Various : Various	1.450	0.000		0.000		0.000		-		0.000	0.000	1.450	0.000
JEON Capability - CSS	C/CPFF	TEAMS : VA, AL	4.485	1.511	Nov 2020	0.000		0.000		-		0.000	0.000	5.996	0.000
JEON Capability - FFRDC/UARC	MIPR	MITRE : VA	1.341	0.000		0.000		0.000		-		0.000	0.000	1.341	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603890C / BMD Enabling Programs				Project (Number/Name) MD24 / System Engineering & Integration					
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
JEON Capability - Framework, Truth Models	Various	Various : CO, AL	3.758	0.285	Nov 2020	0.000		0.000		-		0.000	0.000	4.043	0.000
JEON Capability - Industry Support	C/CPFF	Boeing : AL, VA	2.106	0.000		0.000		0.000		-		0.000	0.000	2.106	0.000
JEON Capability - Industry Support - IRES	C/CPAF	Northrop Grumman : AL, VA	7.143	1.990	Nov 2020	0.000		0.000		-		0.000	0.000	9.133	0.000
JEON Capability - OGA	MIPR	CCDC : AL	4.268	1.776	Nov 2020	0.000		0.000		-		0.000	0.000	6.044	0.000
JEON Capability - Systems Engineering	Various	MDA Various : VA, AL, CO	5.429	1.110	Nov 2020	0.000		0.000		-		0.000	0.000	6.539	0.000
JEON Capability - Test & Performance Analysis	Various	Various : VA, AL	8.268	3.000	Nov 2020	0.000		0.000		-		0.000	0.000	11.268	0.000
JEON Capability - UARC	MIPR	JHU / APL : MD, VA	4.649	0.000		0.000		0.000		-		0.000	0.000	4.649	0.000
Guam Defense Integrated Air and Missile Defense (IAMD) - Guam Defense IAMD - AvMC	MIPR	DOD - USA - COMBAT CAPABILITIES DEVELOPMENT COMMAND (CCDC) AVIATION AND MISSILE CENTER (AVMC) : AL	0.000	0.000		0.000		0.996	Dec 2022	-		0.996	Continuing	Continuing	Continuing
Guam Defense Integrated Air and Missile Defense (IAMD) - Guam Defense IAMD - JHU/APL	FFRDC	JOHNS HOPKINS UNIVERSITY APPLIED PHYSICS LABORATORY LLC, THE : MD	0.000	0.000		0.000		2.675	Dec 2022	-		2.675	Continuing	Continuing	Continuing
Guam Defense Integrated Air and Missile Defense (IAMD) - Guam Defense IAMD - Lockheed Martin	C/CPFF	LOCKHEED MARTIN CORPORATION : Various	0.000	0.000		0.000		0.835	Dec 2022	-		0.835	Continuing	Continuing	Continuing
Guam Defense Integrated Air and Missile Defense (IAMD) - Guam Defense IAMD - MDA	Allot	DOD - MISSILE DEFENSE AGENCY (MDA) : Various	0.000	0.000		0.000		0.817	Oct 2022	-		0.817	Continuing	Continuing	Continuing
Guam Defense Integrated Air and Missile Defense	MIPR	DOD - USN - NAVAL SURFACE	0.000	0.000		0.000		0.484	Dec 2022	-		0.484	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603890C / BMD Enabling Programs				Project (Number/Name) MD24 / System Engineering & Integration					
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
(IAMD) - Guam Defense IAMD - NSWC Corona		WARFARE CENTER (NSWC) CORONA DIVISION : CA													
Guam Defense Integrated Air and Missile Defense (IAMD) - Guam Defense IAMD - NSWC Dahlgren	MIPR	DOD - USN - NAVAL SURFACE WARFARE CENTER (NSWC) DAHLGREN DIVISION (NSWCDD) : VA	0.000	0.000		0.000		0.392	Dec 2022	-		0.392	Continuing	Continuing	Continuing
Guam Defense Integrated Air and Missile Defense (IAMD) - Guam Defense IAMD - Northrop Grumman	C/CPFF	NORTHROP GRUMMAN : Various	0.000	0.000		0.000		6.727	Dec 2022	-		6.727	Continuing	Continuing	Continuing
Guam Defense Integrated Air and Missile Defense (IAMD) - Guam Defense IAMD - Numerica	C/CPFF	NUMERICA CORPORATION : CO	0.000	0.000		0.000		0.974	Dec 2022	-		0.974	Continuing	Continuing	Continuing
Guam Defense Integrated Air and Missile Defense (IAMD) - Guam Defense IAMD 0 Raytheon	C/CPFF	RAYTHEON : Various	0.000	0.000		0.000		4.100	Dec 2022	-		4.100	Continuing	Continuing	Continuing
Subtotal			1,373.774	172.650		155.478		176.122		-		176.122	Continuing	Continuing	N/A
Remarks N/A															
Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	N/A
Remarks N/A															

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022		
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603890C / BMD Enabling Programs				Project (Number/Name) MD24 / System Engineering & Integration				

Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	N/A

Remarks N/A															
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	Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	1,373.774	172.650		155.478		176.122		-		176.122	Continuing	Continuing	N/A

Remarks Funding in the All Prior Years column represents a summary of Prior Years Total Costs for active contracts, Military Interdepartmental Purchase Requests, and civilian salaries on the R-3. Award Dates reflect date of first obligation. Additional obligations may incrementally occur throughout the year.													
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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Missile Defense Agency															Date: April 2022									
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0603890C / BMD Enabling Programs										Project (Number/Name) MD24 / System Engineering & Integration									
Significant Event Complete ▲ Significant Event Planned △					Milestone Decision Complete ★ Milestone Decision Planned ☆					Element Test Complete ◆ Element Test Planned ◇					System Level Test Complete ● System Level Test Planned ○					Complete Activity ◆ Planned Activity ◇				
SS - FY 2021																								
MDS Engineering Review - FY 2021																								
Update MIP - FY 2021																								
Update to SDD - FY 2021																								
Update to IMAP - FY 2021																								
E/CCA - 4Q FY 2021																								
Update MIP - FY 2022																								
Update to SDD - FY 2022																								
Updates to IMAP -FY 2022																								
SEP Update FY 2022																								
Update Achievable Capabilities List - FY 2022																								
SS - FY 2022																								
MDS Engineering Review - FY 2022																								
E/CCA - 4Q FY 2022																								
Update MIP - FY 2023																								
Update to SDD - FY 2023																								
SS - FY 2023																								
Update to IMAP - FY 2023																								
E/CCA - 4Q - FY 2023																								
Update MIP - FY 2024																								
Update to SDD - FY 2024																								
SS - 2024																								
Update to IMAP - FY 2024																								
Update Achievable Capabilities List - FY 2024																								

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Missile Defense Agency										Date: April 2022														
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0603890C / BMD Enabling Programs										Project (Number/Name) MD24 / System Engineering & Integration									
Significant Event Complete ▲		Milestone Decision Complete ★		Element Test Complete ◆		System Level Test Complete ●		Complete Activity ◆																
Significant Event Planned △		Milestone Decision Planned ☆		Element Test Planned ◇		System Level Test Planned ○		Planned Activity ◇																
					FY 2021		FY 2022		FY 2023		FY 2024		FY 2025		FY 2026		FY 2027							
E/CCA - 4Q - FY 2024													△											
Update MIP - FY 2025													△											
Update to SDD - FY 2025													△											
SS - 2025													△											
Update to IMAP - FY 2025													△											
E/CCA - 4Q - FY 2025														△										
Update MIP - FY 2026															△									
Update to SDD - FY 2026															△									
SS - 2026															△									
Update to IMAP - FY 2026															△									
Update Achievable Capabilities List - FY 2026															△									
E/CCA - 4Q - FY 2026																△								
Update to SDD - FY 2027																	△							
SS - 2027																	△							
Update MIP - FY 2027																	△							
Update to IMAP - FY 2027																		△						
E/CCA - 4Q - FY 2027																		△						

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Missile Defense Agency			Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603890C / BMD Enabling Programs	Project (Number/Name) MD24 / System Engineering & Integration	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
SS - FY 2021	3	2021	3	2021
MDS Engineering Review - FY 2021	3	2021	3	2021
Update MIP - FY 2021	3	2021	3	2021
Update to SDD - FY 2021	4	2021	4	2021
Update to IMAP - FY 2021	4	2021	4	2021
E/CCA - 4Q FY 2021	4	2021	4	2021
Update MIP - FY 2022	1	2022	1	2022
Update to SDD - FY 2022	2	2022	2	2022
Updates to IMAP -FY 2022	2	2022	2	2022
SEP Update FY 2022	2	2022	2	2022
Update Achievable Capabilities List - FY 2022	2	2022	2	2022
SS - FY 2022	2	2022	2	2022
MDS Engineering Review - FY 2022	3	2022	3	2022
E/CCA - 4Q FY 2022	4	2022	4	2022
Update MIP - FY 2023	1	2023	1	2023
Update to SDD - FY 2023	1	2023	1	2023
SS - FY 2023	2	2023	2	2023
Update to IMAP - FY 2023	2	2023	2	2023
E/CCA - 4Q - FY 2023	4	2023	4	2023
Update MIP - FY 2024	1	2024	1	2024
Update to SDD - FY 2024	1	2024	1	2024
SS - 2024	1	2024	1	2024
Update to IMAP - FY 2024	2	2024	2	2024

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Missile Defense Agency	Date: April 2022
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Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603890C / BMD Enabling Programs	Project (Number/Name) MD24 / System Engineering & Integration
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Events	Start		End	
	Quarter	Year	Quarter	Year
Update Achievable Capabilities List - FY 2024	2	2024	2	2024
E/CCA - 4Q - FY 2024	4	2024	4	2024
Update MIP - FY 2025	1	2025	1	2025
Update to SDD - FY 2025	1	2025	1	2025
SS - 2025	1	2025	1	2025
Update to IMAP - FY 2025	2	2025	2	2025
E/CCA - 4Q - FY 2025	4	2025	4	2025
Update MIP - FY 2026	1	2026	1	2026
Update to SDD - FY 2026	1	2026	1	2026
SS - 2026	1	2026	1	2026
Update to IMAP - FY 2026	2	2026	2	2026
Update Achievable Capabilities List - FY 2026	2	2026	2	2026
E/CCA - 4Q - FY 2026	4	2026	4	2026
Update to SDD - FY 2027	1	2027	1	2027
SS - 2027	1	2027	1	2027
Update MIP - FY 2027	1	2027	1	2027
Update to IMAP - FY 2027	2	2027	2	2027
E/CCA - 4Q - FY 2027	4	2027	4	2027

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency										Date: April 2022		
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0603890C / BMD Enabling Programs				Project (Number/Name) MD21 / Homeland Cruise Missile Defense Architecture			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
MD21: Homeland Cruise Missile Defense Architecture	-	3.050	13.921	10.852	-	10.852	7.067	4.246	4.342	4.429	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Decrease from FY 2022 to FY 2023 reflects the completion of hardware purchase to support the Joint Tactical Integrated Fire Control (JTIFC) demonstration.

A. Mission Description and Budget Item Justification

In response to USNORTHCOM's requirements for Cruise Missile Defense of the Homeland (CMD-H), the Missile Defense Agency (MDA) will develop systems architecture and conduct a Joint Tactical Integrated Fire Control (JTIFC) demonstration. The effort includes developing systems engineering requirements, software modifications, models and simulations, and integration of joint sensors and shooters into a fire control network for the demonstration of cruise missile defense capability.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2021	FY 2022	FY 2023
Title: Homeland Cruise Missile Defense Architecture	3.050	13.921	10.852
Articles:	-	-	-
Description: Perform architecture and systems engineering activities required to evolve Cruise Missile Defense of the Homeland, to include architecture analysis, capability roadmap development, and initial requirements analysis. An initial Joint Tactical Integrated Fire Control (JTIFC) demonstration is planned.			
FY 2022 Plans: - Conduct architecture definition and systems engineering, including system requirements analysis and modeling and simulation -- Conduct the engineering and design of a JTIFC demonstration to integrate Joint sensors and weapons into an integrated fire control network -- Obtain hardware critical to capability demonstration, including Integrated Air and Missile Defense (IAMD) Battle Command System (IBCS) radios and dismounted Engagement Operations Center (EOC), and Cooperative Engagement Capability (CEC) hardware -- Build software adaptive layers for sensors and weapons to integrate into composite tracking / integrated fire control networks			
FY 2023 Plans: - Continue to conduct architecture definition and systems engineering, including systems requirements analysis and modeling and simulation - Continue the engineering and design of a JTIFC demonstration to integrate Joint sensors and weapons into an integrated fire control network			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency		Date: April 2022	
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603890C / <i>BMD Enabling Programs</i>	Project (Number/Name) MD21 / <i>Homeland Cruise Missile Defense Architecture</i>	
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2021	FY 2022
<ul style="list-style-type: none"> - Continue to build software adaptive layers for sensors and weapons to integrate into composite tracking / integrated fire control networks - Integrate software adaptive layers into Integrated Air and Missile Defense (IAMD) Battle Command System (IBCS) dismounted Engagement Operations Center (EOC) - Perform integration testing on the IBCS EOC and adaptive layers with the sensors and weapons with the integrated fire control network - Conduct the JTIFC demonstration <p><i>FY 2022 to FY 2023 Increase/Decrease Statement:</i> Decrease from FY 2022 to FY 2023 reflects the completion of hardware purchase to support the JTIFC demonstration.</p>			
Accomplishments/Planned Programs Subtotals		3.050	13.921
C. Other Program Funding Summary (\$ in Millions)			
N/A			
Remarks			
D. Acquisition Strategy			
MDA leverages the nation's engineering Centers of Excellence at government agencies and Military Services, FFRDCs, UARCs, and industry. The executing agents utilize various contracting strategies in a flexible manner to maximize their contribution. Products and Services will be acquired by competitive means to the extent that is possible and practical.			

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603890C / BMD Enabling Programs				Project (Number/Name) MD21 / Homeland Cruise Missile Defense Architecture					
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Homeland Cruise Missile Defense Architecture - CMD-H Architecture Design	Various	Various : VA, MD, MA, CO	0.000	3.050	Jan 2021	3.521	Dec 2021	3.808	Nov 2022	-		3.808	Continuing	Continuing	Continuing
Homeland Cruise Missile Defense Architecture - CMD-H Demonstration (Prime-1)	C/CPFF	Raytheon : MD, FL, CA, MA	0.000	0.000		7.800	Dec 2021	1.139	Nov 2022	-		1.139	Continuing	Continuing	Continuing
Homeland Cruise Missile Defense Architecture - CMD-H Demonstration (Prime-2)	C/CPFF	Numerica : CO	0.000	0.000		1.000	Dec 2021	1.238	Nov 2022	-		1.238	Continuing	Continuing	Continuing
Homeland Cruise Missile Defense Architecture - CMD-H Demonstration (Prime-3)	C/CPFF	Northrop Grumman : AL	0.000	0.000		0.400	Dec 2021	4.014	Nov 2022	-		4.014	Continuing	Continuing	Continuing
Homeland Cruise Missile Defense Architecture - CMD-H Demonstration (Prime-4)	C/CPFF	Leidos : VA	0.000	0.000		1.200	Dec 2021	0.653	Nov 2022	-		0.653	Continuing	Continuing	Continuing
Subtotal			0.000	3.050		13.921		10.852		-		10.852	Continuing	Continuing	N/A
Remarks															
Award Dates reflect date of first obligation. Additional obligations may incrementally occur throughout the year.															
			Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			0.000	3.050		13.921		10.852		-		10.852	Continuing	Continuing	N/A
Remarks															
N/A															

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Missile Defense Agency														Date: April 2022																			
Appropriation/Budget Activity 0400 / 4										R-1 Program Element (Number/Name) PE 0603890C / BMD Enabling Programs										Project (Number/Name) MD21 / Homeland Cruise Missile Defense Architecture													
Significant Event Complete ▲ Significant Event Planned △					Milestone Decision Complete ★ Milestone Decision Planned ☆					Element Test Complete ◆ Element Test Planned ◇					System Level Test Complete ● System Level Test Planned ○					Complete Activity ◆ Planned Activity ◇													
										FY 2021			FY 2022			FY 2023			FY 2024			FY 2025			FY 2026			FY 2027					
IFC CMD-H Demonstration										◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇												
CMD-H Increment 1 System Architecture														◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Missile Defense Agency			Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603890C / BMD Enabling Programs	Project (Number/Name) MD21 / Homeland Cruise Missile Defense Architecture	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
IFC CMD-H Demonstration	2	2021	4	2023
CMD-H Increment 1 System Architecture	1	2022	4	2027

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency										Date: April 2022		
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0603890C / BMD Enabling Programs				Project (Number/Name) MT23 / Enabling - Test			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
MT23: Enabling - Test	171.055	48.554	41.520	44.245	-	44.245	44.122	47.282	48.477	49.627	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

N/A

A. Mission Description and Budget Item Justification

The Enabling Test project includes the System Engineering & Integration (SE&I) that drives Missile Defense System (MDS) test planning, execution, and post-test analysis and assessment, and the Modeling & Simulation (M&S) tools and framework required to prepare for and execute ground and flight tests.

SE&I allocates test requirements to individual test events, designs test architectures, defines target requirements, and generates ground and flight test scenarios to collect data essential for model validation and system verification. SE&I works with the Service Operational Test Agencies (OTA) to incorporate operational test requirements into MDS events to ensure the incremental capability being transferred to the Warfighter will be operationally effective, suitable, and survivable. The resulting data ensures MDS requirements are being met by the system under test and confirms proper System operation. It also helps to anchor system and element M&S for use in simulations to characterize System performance across the battle space, including areas where no live-fire-testing is performed.

Ground test (GT) responsibilities include System performance sensitivity analysis; scenario design and optimization; analysis to mitigate test data collection risks; test architecture certification analysis; and test result analysis. Flight test (FT) responsibilities include pre-mission scenario analysis to identify and mitigate test execution risk in advance; range safety analysis; mission analysis during test execution; extensive post-mission analysis; and event analysis reporting products. These efforts inform senior leaders' decisions on MDS development and evolution and underpin the capability declarations that deliver new capabilities to the Warfighter.

Pre-mission predictions use the test framework and Hardware in the Loop (HWIL) and digital models of the test configuration to exercise system interfaces, calculate expected System performance, and gauge readiness for test execution. Post-mission, MDA uses test results to anchor System and element M&S and provide confidence in their ability to correctly predict System behavior and performance.

Reliability, Availability and Maintainability data collected through MDS test events increases confidence in System performance over the entire lifecycle. SE&I documents any abnormal System behavior observed during tests and alerts MDA to issues with test article reliability. SE&I leads test failure review boards, identifies data collection shortfalls, and reallocates objectives to future test events as needed until all required model validation data is collected. The Failure Reporting, Analysis, and Corrective Action System provides a framework to investigate test failures and anomalies and identify solutions that will ultimately improve System performance and reliability.

MDA's M&S systems and products provide the Agency, the Warfighter, and the OTA with the capability to evaluate individual System components and the overall system-of-systems. MDA validates and accredits System-level models and simulations to support accurate and comprehensive assessments. M&S System and product testing follows the test program outlined in MDA's IMTP and serves as a necessary precursor to conducting System-level testing. Resources for the planning, design, execution and management of this testing are provided in accordance with the most current version of the IMTP.

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency			Date: April 2022		
Appropriation/Budget Activity 0400 / 4		R-1 Program Element (Number/Name) PE 0603890C / BMD Enabling Programs	Project (Number/Name) MT23 / Enabling - Test		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)			FY 2021	FY 2022	FY 2023
Title: Engineering and Analysis			31.245	24.513	26.978
Articles:			-	-	-
Description: The Engineering and Analysis effort provides essential System ground and flight test event planning, execution, and evaluation activities for each test event: - Design test architecture, define test objectives and evaluation criteria, define target requirements, and generate ground and flight test scenarios appropriate to the data collection requirements to assess System performance and anchor Models and Simulations (M&S) - Produce threat data for System ground and flight tests - Coordinate with MDS Operational Test Agency (OTA) to address test issues, disposition them, coordinate them, and recommend action plans to achieve closure - Deliver M&S integration test cases - Conduct M&S Integration Benchmarking and integrate the MDS M&S framework with MDA and non-MDA Elements into the event architectures that support assessment activities - Integrate, test, and deliver end-to-end System-level simulations supporting ground test missions - Deploy and maintain M&S Simulation Interface Units (SIUs) for testing, including cybersecurity compliance, configuration management authority, and sustainment of the SIU fleet - Analyze System-level interoperability - Conduct modeling and technical analysis for Combatant Command wargames and exercises - Utilize M&S for pre-test assessment, post-test review, and M&S updates - Provide test configuration management; risk assessments; and anomaly/deficiency review, assessment and closure - Analyze test results to identify verification and validation data collection shortfalls and reassign objectives to future test events as required - Perform event architecture certification - Provide Federation reporting for VV&A of M&S architectures - Document test observations for System-level test anomalies and coordinate the resulting Discrepancy Reports within the Failure Reporting, Analysis, and Corrective Action System (FRACAS) - Upgrade test analysis tools in concert with the MDS evolution (e.g., Modular Analysis and Reporting Suite (MARS)) to enhance analysis capability and efficiency Specific and/or unique accomplishments to each FY are as follows: FY 2022 Plans: - SEE ABOVE. FY 2023 Plans:					

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency			Date: April 2022		
Appropriation/Budget Activity 0400 / 4		R-1 Program Element (Number/Name) PE 0603890C / BMD Enabling Programs		Project (Number/Name) MT23 / Enabling - Test	
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)			FY 2021	FY 2022	FY 2023
- SEE ABOVE.					
FY 2022 to FY 2023 Increase/Decrease Statement: Increase from FY 2022 to FY 2023 is in accordance with current Integrated Master Test Plan (IMTP).					
Title: Continuous Integration and Agile Test (CI/CAT)			11.227	11.323	11.499
Articles:			-	-	-
Description: Provide test planning, analysis, M&S integration, M&S execution, threat development, and post-event analysis for integrated ground testing, M&S Continuous Developmental Integration, and M&S engineering activities. Execute agency ground test plan in accordance with approved IMTP and maintain integration across concurrent ground test and flight test activities					
Specific and/or unique accomplishments to each FY are as follows:					
FY 2022 Plans: - SEE ABOVE.					
FY 2023 Plans: - SEE ABOVE.					
FY 2022 to FY 2023 Increase/Decrease Statement: N/A					
Title: Continuous Development & Integration (CDI) Environment			6.082	5.684	5.768
Articles:			-	-	-
Description: Provide M&S integration technical expertise and risk reduction process for MDS Element integration activities and event planning within a Continuous Development and Integration (CDI) environment, to include support to IMTP testing and M&S engineering activities; a venue for integrating new Elements, interfaces, connectivity and functionality to support MDS capability increment upgrades; and cybersecurity monitoring and automation to the CDI environment. It also supports Element modeling capabilities for advance concept analysis in CDI architectures. This is a critical enabler to achieve the Ground Test Concept of Operations. Conduct Early Integration activities such as scenario refinement and early checkout of Element software for Ground Test sprints.					
FY 2022 Plans: - SEE ABOVE.					
FY 2023 Plans:					

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency										Date: April 2022		
Appropriation/Budget Activity 0400 / 4				R-1 Program Element (Number/Name) PE 0603890C / BMD Enabling Programs				Project (Number/Name) MT23 / Enabling - Test				
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)										FY 2021	FY 2022	FY 2023
- SEE ABOVE.												
FY 2022 to FY 2023 Increase/Decrease Statement: N/A												
Accomplishments/Planned Programs Subtotals										48.554	41.520	44.245
C. Other Program Funding Summary (\$ in Millions)												
Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost	
• 0603914C: <i>Ballistic Missile Defense Test</i>	364.994	389.156	367.824	-	367.824	363.963	421.261	476.991	490.176	Continuing	Continuing	
• 0604878C: <i>Aegis BMD Test</i>	71.481	111.206	182.776	-	182.776	173.492	159.125	203.851	187.494	Continuing	Continuing	
Remarks												
D. Acquisition Strategy												
In order to optimize System performance, MDA leverages the nation's engineering Centers of Excellence at government agencies and Military Services, FFRDCs, UARCs, and industry. The executing agents utilize various contracting strategies in a flexible manner to maximize their contribution. MDA will acquire products and services by competitive means to the extent practical.												

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603890C / BMD Enabling Programs				Project (Number/Name) MT23 / Enabling - Test					
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	N/A
Remarks N/A															
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Engineering and Analysis - Engineering & Analysis - CSS Support	C/CPFF	TEAMS : AL	11.876	4.248	Nov 2020	3.717	Nov 2021	5.132	Nov 2022	-		5.132	Continuing	Continuing	Continuing
Engineering and Analysis - Engineering & Analysis - FFRDC	MIPR	Aerospace : AL	1.832	0.395	Nov 2020	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Engineering and Analysis - Engineering & Analysis - Industry	C/CPAF	Boeing : VA, AL	26.209	5.948	Nov 2020	3.926	Nov 2021	2.978	Nov 2022	-		2.978	Continuing	Continuing	Continuing
Engineering and Analysis - Engineering & Analysis - Integration Support CSS	C/CPAF	COLSA : AL, CO	21.744	0.000		0.000		0.000		-		0.000	0.000	21.744	0.000
Engineering and Analysis - Engineering & Analysis - Non-MDA Element Support for IMTP Events	Various	Various : AL, CO	8.949	2.282	Nov 2020	2.137	Nov 2021	0.700	Nov 2022	-		0.700	Continuing	Continuing	Continuing
Engineering and Analysis - Engineering & Analysis - OGA Support	MIPR	CCDC : AL	59.974	17.776	Nov 2020	13.753	Nov 2021	17.532	Nov 2022	-		17.532	Continuing	Continuing	Continuing
Engineering and Analysis - Engineering & Analysis - OGA Support - NME	MIPR	LTPO : AL	4.287	0.000		0.000		0.000		-		0.000	0.000	4.287	0.000
Engineering and Analysis - Engineering & Analysis - Technical Support	C/CPAF	Northrop Grumman : VA, AL	5.554	0.000		0.000		0.000		-		0.000	0.000	5.554	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603890C / BMD Enabling Programs				Project (Number/Name) MT23 / Enabling - Test					
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Engineering and Analysis - Engineering & Analysis - Test Engineering Support	Various	Various : AL, CO, VA	4.079	0.596	Nov 2020	0.980	Nov 2021	0.636	Nov 2022	-		0.636	Continuing	Continuing	Continuing
Continuous Integration and Agile Test (CI/CAT) - CI/ CAT Analysis (OGA)	MIPR	CCDC : AL	0.000	0.000		2.990	Dec 2021	1.956	Dec 2022	-		1.956	Continuing	Continuing	Continuing
Continuous Integration and Agile Test (CI/CAT) - CI/ CAT M&S Integration	Various	Various : AL, CO	7.979	7.506	Dec 2020	5.708	Dec 2021	5.797	Dec 2022	-		5.797	Continuing	Continuing	Continuing
Continuous Integration and Agile Test (CI/CAT) - CI/ CAT Test & Performance Analysis	Various	Various : AL, CO	4.567	2.364	Dec 2020	0.000		0.778	Dec 2022	-		0.778	0.000	7.709	0.000
Continuous Integration and Agile Test (CI/CAT) - CI/ CAT Test Requirements Engineering	C/CPFF	TEAMS : AL, CO	1.053	1.357	Nov 2020	2.625	Nov 2021	2.968	Nov 2022	-		2.968	Continuing	Continuing	Continuing
Continuous Integration and Agile Test (CI/CAT) - CSS	Various	Various : Various	1.962	0.000		0.000		0.000		-		0.000	0.000	1.962	0.000
Continuous Integration and Agile Test (CI/CAT) - Hardware	C/CPFF	TBE : AL	1.689	0.000		0.000		0.000		-		0.000	0.000	1.689	0.000
Continuous Development & Integration (CDI) Environment - Continuous Development & Integration (CDI) Environment - CSS	Various	Various : Various	0.000	1.284	May 2021	0.000		0.000		-		0.000	0.000	1.284	0.000
Continuous Development & Integration (CDI) Environment - Continuous Development and Integration Environment	MIPR	CCDC : AL, CO	9.301	4.798	Dec 2020	5.684	Dec 2021	5.768	Dec 2022	-		5.768	Continuing	Continuing	Continuing
Subtotal			171.055	48.554		41.520		44.245		-		44.245	Continuing	Continuing	N/A
Remarks N/A															

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022		
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603890C / BMD Enabling Programs				Project (Number/Name) MT23 / Enabling - Test				

Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	N/A

Remarks N/A															
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Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	N/A

Remarks N/A															
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			Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			171.055	48.554		41.520		44.245		-		44.245	Continuing	Continuing	N/A

Remarks Award Dates reflect date of first obligation. Additional obligations may incrementally occur throughout the year.															
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PE 0603890C: *BMD Enabling Programs*
Missile Defense Agency

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Missile Defense Agency			Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603890C / <i>BMD Enabling Programs</i>	Project (Number/Name) MT23 / <i>Enabling - Test</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
IMTP Engineering Inputs - 1Q - FY 2021	1	2021	1	2021
IMTP Engineering Inputs - 3Q - FY 2021	3	2021	3	2021
IMTP Engineering Inputs - 1Q - FY 2022	1	2022	1	2022
IMTP Engineering Inputs - 3Q - FY 2022	3	2022	3	2022
IMTP Engineering Inputs - 1Q - FY 2023	1	2023	1	2023
IMTP Engineering Inputs - 3Q - FY 2023	3	2023	3	2023
IMTP Engineering Inputs - 1Q - FY 2024	1	2024	1	2024
IMTP Engineering Inputs - 3Q - FY 2024	3	2024	3	2024
IMTP Engineering Inputs - 1Q - FY 2025	1	2025	1	2025
IMTP Engineering Inputs - 3Q - FY 2025	3	2025	3	2025
IMTP Engineering Inputs - 1Q - FY 2026	1	2026	1	2026
IMTP Engineering Inputs - 3Q - FY 2026	3	2026	3	2026
IMTP Engineering Inputs - 1Q - FY 2027	1	2027	1	2027
IMTP Engineering Inputs - 3Q - FY 2027	3	2027	3	2027

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency										Date: April 2022		
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0603890C / BMD Enabling Programs				Project (Number/Name) MD28 / Intelligence & Security			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
MD28: <i>Intelligence & Security</i>	322.365	42.890	39.550	42.036	-	42.036	45.880	56.409	54.428	53.161	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

N/A

A. Mission Description and Budget Item Justification

The Intelligence and Security program provides multi-disciplinary intelligence and security for the Missile Defense System (MDS) acquisition, development, test and deployment. The Intelligence and Security Major Program Goals are:

- Ensure the Intelligence Community (IC) understands and fulfills MDA's current and future prioritized intelligence requirements; advocate Missile Defense test intelligence requirements; and work closely with the IC.
- Leverage available National and DoD Counterintelligence resources. Ensure counterintelligence products and services are fully integrated into all RDT&E programs and activities to protect classified information and critical technologies and to protect Missile Defense Agency (MDA) and MDS personnel, facilities, information and activities.
- Define cybersecurity systems engineering requirements for MDS assets. Identify cybersecurity systems engineering and infrastructure intelligence requirements to focus IC collection, analysis and production to target MDA/MDS cyber vulnerabilities. Incorporate cybersecurity engineering requirements into the MDS systems engineering process.
- Provide cross-Agency acquisition security oversight and support for the identification and protection of Critical Program Information (CPI). Provide physical security for MDS weapons/sensor system deployments, including Foreign Military Sales (FMS). Implement MDA's information security and declassification programs. Strengthen Test and Operations Security (OPSEC) across the Agency.

The Security and Intelligence Project captures five specific areas: 1) Intelligence 2) Counterintelligence 3) Cybersecurity Engineering 4) Program Protection, and 5) Threat Systems Engineering. Collectively, these efforts provide critical information regarding threat ballistic missile system capabilities; protection of personnel, activities, and technology from espionage and terrorism; and identification and mitigation of MDS system vulnerabilities.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2021	FY 2022	FY 2023
Title: Intelligence	11.477	7.983	8.030
Articles:	-	-	-
Description: The Intelligence program provides expertise to develop intelligence products on threat system capabilities, and leverages unique intelligence-community developed, owned, and operated capabilities for the benefit and advocacy of the missile defense community. Program goals include: <ul style="list-style-type: none"> - Serve as designated intelligence liaison between MDA and the Intelligence Community: -- Maintain and communicate prioritized, specific Missile Defense intelligence requirements to the Intelligence Community 			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency		Date: April 2022		
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603890C / BMD Enabling Programs	Project (Number/Name) MD28 / Intelligence & Security		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2021	FY 2022	FY 2023
<p>-- Maintain a focused dialogue with members of the Intelligence Community to ensure understanding, urgency and context of MDA intelligence requirements</p> <p>- Provide Current, Technical, Acquisition, Collection and Cyber intelligence to the MDS throughout the acquisition life cycle</p> <p>- Maintain and update MDA's knowledge base of foreign ballistic missile threats, including development, enhancement, and population of the Missile Threat Portals with Intelligence Community produced documents at the appropriate security classification levels</p> <p>- Characterize all missile threat systems from adversaries for use by the MDA Systems Engineer, Program Managers, and Director for Test to perform modeling, simulation, and testing of the MDS</p> <p>- Maintain Missile Intelligence Secure Link (MISL) classified portal (full operational capability)</p> <p>Specific and/or unique accomplishments to each FY are as follows:</p> <p>FY 2022 Plans:</p> <p>- SEE ABOVE.</p> <p>FY 2023 Plans:</p> <p>- SEE ABOVE.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement:</p> <p>N/A</p>				
<p>Title: Counterintelligence</p> <p>Articles:</p> <p>Description: The Counterintelligence Program detects, mitigates or neutralizes espionage, foreign intelligence collection activities and terrorist activities conducted for or on behalf of foreign powers, organizations, persons, or their agents directed against U.S. national security interests, or DoD/MDA and its personnel, information, material, facilities, and activities. Program goals include:</p> <p>- Serve as MDA Liaison with Federal, State and Local Law Enforcement and Counterintelligence (CI) Organizations to report and resolve incidents involving MDA personnel, information and technologies</p> <p>-- Engage National, Combatant Command and DoD CI resources to share and obtain threat information impacting MDA personnel, facilities, information, technologies, programs and activities, worldwide</p> <p>-- Provide CI, technical and cyber threat support to MDA flight tests, conferences, and deployment activities worldwide, including FMS Programs, to detect, deter, or neutralize criminal, terrorist and foreign intelligence collection threats targeting MDA and Missile Defense technologies, personnel, facilities and activities</p> <p>- Execute life cycle replacement of outdated technical surveillance countermeasures and cyber forensics gear to employ the latest technologies during conferences, flight tests and other classified activities to detect, deter and prevent the loss or compromise of classified or sensitive information to foreign adversary collection activities</p>		8.136 -	6.936 -	7.216 -

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency			Date: April 2022		
Appropriation/Budget Activity 0400 / 4		R-1 Program Element (Number/Name) PE 0603890C / BMD Enabling Programs		Project (Number/Name) MD28 / Intelligence & Security	
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)			FY 2021	FY 2022	FY 2023
<ul style="list-style-type: none"> - Conduct CI in Cyberspace activities to detect malicious and insider threat activities targeting MDA administrative and fire control networks - Provide required CI Awareness and Reporting training to MDA workforce - Provide CI research and assistance for cyber forensics and analysis to identify insider and foreign entity cyber threats to MDA computer networks and Missile Defense fire control systems - Conduct CI research and analysis to produce CI threat products that address foreign intelligence, cyber and international terrorist threats to MDA personnel, facilities, information, systems and activities worldwide - Maintain technical surveillance countermeasures and cyber forensic gear to detect, identify and neutralize adversary collection platforms and capabilities used to gain unauthorized access to MDA classified and controlled unclassified information <p>Specific and/or unique accomplishments to each FY are as follows:</p> <p>FY 2022 Plans: - SEE ABOVE.</p> <p>FY 2023 Plans: - SEE ABOVE.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: N/A</p>					
<p>Title: Cybersecurity Engineering Program</p> <p align="right">Articles:</p> <p>Description: Cybersecurity Engineering is focused on developing designs and solutions to protect the MDS from existing and emerging cyber threats through coherent cybersecurity systems engineering. Program goals include:</p> <ul style="list-style-type: none"> - Ensure Cybersecurity is integrated into the Acquisition Process - Assess the Cybersecurity Architecture to address gaps/disconnects, enhance interoperability, and realize efficiencies across all mission systems; define the "As Built" and "To Be" Cybersecurity Systems Engineering concepts to strengthen technical assessments and cybersecurity design solutions and implementation recommendations impacted by the change in requirements: <ul style="list-style-type: none"> -- Develop and coordinate near-term and long-term engineering changes to the MDS -- Develop requirements for building cybersecurity into incremental MDS hardware and software builds -- Monitor allocation of these requirements to the Elements -- Recommend updates to MDA's Technical Core Standards, including Cyber-related requirements specified by the Agency, the Combatant Commanders (CCMDs), the DoD, and the Federal Government -- Perform cybersecurity systems engineering assessments for proposed System Specification and interface changes and additions 			3.505 -	4.255 -	4.541 -

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency			Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603890C / BMD Enabling Programs	Project (Number/Name) MD28 / Intelligence & Security	

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023
<ul style="list-style-type: none"> - Develop target requirements to ensure flight test targets meet operationally realistic conditions - Produce Target Assessment and Certification Reports - Assess threat representation of flight test targets - Develop target system specifications and guide targets requirements development, planning, and certification for MDS flight tests - Analyze flight test target performance relative to threat intelligence assessments to support target system verification and certification - Provide Technical Data for major reviews (System Requirements Reviews, Critical Design Reviews, etc.) - Complete Target Specification builds - Update MDA INS 5000.06, Target Class Capabilities and Requirements documents, as necessary <p>Specific and/or unique accomplishments to each FY are as follows:</p> <p>FY 2022 Plans: - SEE ABOVE.</p> <p>FY 2023 Plans: - SEE ABOVE.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: N/A</p>			
Accomplishments/Planned Programs Subtotals	42.890	39.550	42.036

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

<u>Line Item</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u> <u>Base</u>	<u>FY 2023</u> <u>OCO</u>	<u>FY 2023</u> <u>Total</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• 0305103C: Cyber Security Initiative	1.122	1.142	1.165	-	1.165	1.207	1.236	1.262	1.287	Continuing	Continuing

Remarks

D. Acquisition Strategy

This project leverages expertise in the intelligence community, counterintelligence community, and information assurance community, including the Military Services, Federally Funded Research and Development Centers (FFRDCs), University Affiliated Research Centers (UARCs), and industry. The executing agents utilize various contracting strategies in a flexible manner to maximize their contribution. Products and Services will be acquired by competitive means to the extent that is beneficial and practical.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603890C / BMD Enabling Programs						Project (Number/Name) MD28 / Intelligence & Security			
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	N/A
Remarks N/A															
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Intelligence - Intelligence Analysis & Support	Allot	MDA : VA, AL, CO	33.745	5.070	Oct 2020	3.555	Oct 2021	3.697	Oct 2022	-		3.697	Continuing	Continuing	Continuing
Intelligence - Intelligence Analysis & Support - Special Prog	Various	Various : Various	0.000	1.948	Dec 2020	0.000		0.000		-		0.000	0.000	1.948	0.000
Intelligence - Intelligence Support	C/CPFF	TEAMS : AL, VA, CO	36.589	4.104	Nov 2020	4.428	Nov 2021	4.333	Nov 2022	-		4.333	Continuing	Continuing	Continuing
Intelligence - Intelligence Support - IT Maintenance	C/CPFF	Northrop Grumman : AL, CO	2.927	0.355	Nov 2020	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Intelligence - Prior year Intelligence Support no longer funded in FYDP	Various	Various : Various	7.770	0.000		0.000		0.000		-		0.000	0.000	7.770	0.000
Counterintelligence - CI Analysis & Support	Allot	MDA : AL, CO, VA	17.642	3.932	Oct 2020	2.598	Oct 2021	2.702	Oct 2022	-		2.702	Continuing	Continuing	Continuing
Counterintelligence - CI Analysis and Support	C/CPFF	TEAMS : AL, CO, VA	28.272	3.855	Nov 2020	3.897	Nov 2021	4.064	Nov 2022	-		4.064	Continuing	Continuing	Continuing
Counterintelligence - CI Surveillance Gear	Various	Various : Various	1.484	0.349	Dec 2020	0.441	Dec 2021	0.450	Nov 2022	-		0.450	Continuing	Continuing	Continuing
Counterintelligence - Prior Year Counterintelligence Support no longer funded in FYDP	C/CPFF	MIDAESS : VA	1.069	0.000		0.000		0.000		-		0.000	0.000	1.069	0.000
Cybersecurity Engineering Program - Cybersecurity - FFRDC	FFRDC	Aerospace : CA, VA	3.663	0.000		0.000		0.000		-		0.000	0.000	3.663	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603890C / BMD Enabling Programs				Project (Number/Name) MD28 / Intelligence & Security					
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Cybersecurity Engineering Program - Cybersecurity - FFRDC (2)	FFRDC	MITRE : VA, AL	3.858	0.000		0.000		0.000		-		0.000	0.000	3.858	0.000
Cybersecurity Engineering Program - Cybersecurity Engineering	Allot	MDA : VA, AL	17.792	1.352	Oct 2020	1.429	Oct 2021	2.606	Oct 2022	-		2.606	Continuing	Continuing	Continuing
Cybersecurity Engineering Program - Cybersecurity Engineering - Hardware	Various	Various : AL, CO, VA	1.107	0.498	Nov 2020	0.588	Nov 2021	0.598	Nov 2022	-		0.598	Continuing	Continuing	Continuing
Cybersecurity Engineering Program - Cybersecurity Engineering CSS	C/CPFF	TEAMS : VA, AL	5.303	1.655	Nov 2020	2.238	Nov 2021	1.337	Nov 2022	-		1.337	Continuing	Continuing	Continuing
Program Protection - Declassification Analysis	C/CPFF	TEAMS : VA, AL	11.869	1.225	Nov 2020	2.202	Nov 2021	0.000		-		0.000	Continuing	Continuing	Continuing
Program Protection - Program Protection Analysis	Allot	MDA : VA, AL	33.285	4.566	Oct 2020	4.514	Oct 2021	4.694	Oct 2022	-		4.694	Continuing	Continuing	Continuing
Program Protection - Program Protection Analysis & Support	C/CPFF	TEAMS : AL, AK, CA, CO, VA	32.522	3.365	Nov 2020	2.526	Nov 2021	5.930	Nov 2022	-		5.930	Continuing	Continuing	Continuing
Program Protection - Program Protection Support	Various	Various : AL, VA, CO	4.353	1.005	Nov 2020	0.870	Nov 2021	1.142	Nov 2022	-		1.142	Continuing	Continuing	Continuing
Threat Systems Engineering - Prior Year Threat Systems Engineering Support no longer funded in FYDP	Various	Various : AL, MD, VA	19.225	0.000		0.000		0.000		-		0.000	0.000	19.225	0.000
Threat Systems Engineering - Threat Systems Engineering	Allot	MDA : VA, AL, CO	26.316	1.509	Oct 2020	3.282	Oct 2021	3.491	Oct 2022	-		3.491	Continuing	Continuing	Continuing
Threat Systems Engineering - Threat Systems Engineering - CSS	C/CPFF	TEAMS, Various : VA, AL	13.516	1.775	Nov 2020	3.787	Nov 2021	4.079	Nov 2022	-		4.079	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603890C / BMD Enabling Programs						Project (Number/Name) MD28 / Intelligence & Security			
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Threat Systems Engineering - Threat Systems Engineering - CSS 2	C/CPFF	Various : VA, AL	0.000	0.000		3.195	Nov 2021	2.913	Nov 2022	-		2.913	Continuing	Continuing	Continuing
Threat Systems Engineering - Threat Systems Engineering - FFRDC	FFRDC	MIT/LL : MA	5.425	0.506	Nov 2020	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Threat Systems Engineering - Threat Systems Engineering - OGA	MIPR	Various : CA, VA, AL	7.669	4.361	Dec 2020	0.000		0.000		-		0.000	0.000	12.030	0.000
Threat Systems Engineering - Threat Systems Engineering - UARC	FFRDC	JHU/APL : MD	6.964	1.460	Nov 2020	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Subtotal			322.365	42.890		39.550		42.036		-		42.036	Continuing	Continuing	N/A
Remarks N/A															
Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	N/A
Remarks N/A															

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022		
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603890C / BMD Enabling Programs				Project (Number/Name) MD28 / Intelligence & Security				

Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	N/A

Remarks N/A															
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	Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	322.365	42.890		39.550		42.036		-		42.036	Continuing	Continuing	N/A

Remarks Funding in the All Prior Years column represents a summary of Prior Years Total Costs for active contracts, Military Interdepartmental Purchase Requests, and civilian salaries on the R-3. Award Dates reflect date of first obligation. Additional obligations may incrementally occur throughout the year.													
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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Missile Defense Agency **Date:** April 2022

Appropriation/Budget Activity 0400 / 4										R-1 Program Element (Number/Name) PE 0603890C / BMD Enabling Programs										Project (Number/Name) MD28 / Intelligence & Security																	
Significant Event Complete ▲ Significant Event Planned △					Milestone Decision Complete ★ Milestone Decision Planned ☆					Element Test Complete ◆ Element Test Planned ◇					System Level Test Complete ● System Level Test Planned ○					Complete Activity ◆ Planned Activity ◇																	
										FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
MD28 Intelligence & Security										◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	
Annual Declassification Review - 2021											◇	◇	◇																								
Adversary Data Package (ADP) - 2021													▲																								
ADP - 2022																	△																				
MDA OPSEC Report to USD(I) - 2022																	△																				
Annual Declassification Review - 2022																	△																				
Annual Report to Congress for SAPs (FY 2022)																	△																				
Annual Declassification Review - 2023																		◇	◇	◇	◇																
Adversary Data Package (ADP) - 2023																			△																		
MDA OPSEC Report to USD(I) - 2024																				△																	
Annual Declassification Review - 2024																				◇	◇	◇	◇														
Adversary Data Package (ADP) - 2024																						△															
Annual Declassification Review - 2025																							◇	◇	◇	◇											
Adversary Data Package (ADP) - 2025																									△												
MDA OPSEC Report to USD(I) - 2026																										△											
Annual Declassification Review - 2026																											◇	◇	◇	◇							
Adversary Data Package (ADP) - 2026																												△									
Annual Declassification Review - 2027																															◇	◇	◇				
Adversary Data Package (ADP) - 2027																																	△				

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Missile Defense Agency			Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603890C / BMD Enabling Programs	Project (Number/Name) MD28 / Intelligence & Security	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
MD28 Intelligence & Security	1	2021	4	2027
Annual Declassification Review - 2021	2	2021	4	2021
Adversary Data Package (ADP) - 2021	4	2021	4	2021
ADP - 2022	4	2022	4	2022
MDA OPSEC Report to USD(I) - 2022	4	2022	4	2022
Annual Declassification Review - 2022	4	2022	4	2022
Annual Report to Congress for SAPs (FY 2022)	4	2022	4	2022
Annual Declassification Review - 2023	2	2023	1	2024
Adversary Data Package (ADP) - 2023	4	2023	4	2023
MDA OPSEC Report to USD(I) - 2024	1	2024	1	2024
Annual Declassification Review - 2024	2	2024	1	2025
Adversary Data Package (ADP) - 2024	4	2024	4	2024
Annual Declassification Review - 2025	2	2025	1	2026
Adversary Data Package (ADP) - 2025	4	2025	4	2025
MDA OPSEC Report to USD(I) - 2026	1	2026	1	2026
Annual Declassification Review - 2026	2	2026	1	2027
Adversary Data Package (ADP) - 2026	4	2026	4	2026
Annual Declassification Review - 2027	2	2027	1	2028
Adversary Data Package (ADP) - 2027	4	2027	4	2027

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency										Date: April 2022		
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0603890C / BMD Enabling Programs				Project (Number/Name) MD30 / BMD Information Management Systems			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
MD30: BMD Information Management Systems	651.993	83.053	92.729	87.822	-	87.822	92.382	92.318	96.775	95.478	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Decrease from FY 2022 to FY 2023, reflects Network Optimization and contract support efficiencies.

A. Mission Description and Budget Item Justification

The MDS Information Management Systems budget project funds information technology mission critical functions necessary for the efficient operations and safeguarding of MDS information in compliance with DoD policies and in keeping with the President's declaration on 29 May 2009, "cyber threat is one of the most serious economic and national security challenges we face as a nation". Information Technology (IT) is critical to the day-to-day functions of MDA personnel to communicate (classified and unclassified) with each other, Congress, senior DoD and other U.S. Government agency personnel, Combatant Commander's, NATO partners, and other industry partners. Communication among these organizations facilitates the MDA mission of developing and fielding an integrated MDS to defend the United States, our deployed forces, allies, and friends against all ranges of enemy ballistic missiles in all phases of flight.

MDA information management systems capabilities support rigorous missile defense Research, Development, Test and Engineering (RDT&E) and facilitate the development of technologies to guard against evolving missile threat. Communications are vital for missile defense to continue a viable homeland defense against rogue threats and to provide the integration required to defend deployed forces, allies, and friends against theater threats. MDS information management consists of MDA Special Purpose Processing Nodes (SPPNs), IT systems, data centers, operations and monitoring centers which are vital to support the strategic mission of the Agency and necessary to meet disaster recovery and continuity of operations requirements. This infrastructure is required to sustain access to the Secret Internet Protocol Router Network (SIPRNET), Non secure Internet Protocol Router Network (NIPRNET), MDA classified and unclassified networks, classified and unclassified video teleconferencing services, test and business knowledge data centers, and the Defense Research Engineering Network (DREN). These mission critical functions provide for the efficient operation and safeguarding of all agency information in locations supporting MDA around the world.

Project MD30 is aligned into the following inter-agency mission critical IT services and the associated plans in accordance with the Federal Information Technology Shared Services Strategy.

1. End User Support
2. Special Purpose Processing Nodes (SPPNs)
3. IT Planning and Solutions
4. Unified Communications
5. Portal and Data Services
6. Business Automation Services

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency			Date: April 2022		
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603890C / BMD Enabling Programs	Project (Number/Name) MD30 / BMD Information Management Systems			
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)			FY 2021	FY 2022	FY 2023
Title: End User Support			26.159	24.149	12.605
Articles:			-	-	-
Description: Provides Information Technology (IT) operations, support and maintenance (24 hours a day, 7 days a week, 365 days a year) to over 10,500 MDA worldwide users (classified and unclassified) executing the MDS Research, Development, Test and Engineering (RDT&E) mission. Services include Integrated Service Desk support (Help Desk and Client Support Services); management of hardware and software maintenance and licensing; and monitoring network activity to ensure users comply with DoD policies for the proper use of information systems. Services also include printing and copying; email and file; directory and authentication services. Includes investments in equipment at end-of-life to comply with Federal and DoD mandated cybersecurity policies. Plans, engineers and implements sustainment projects for common-use IT services and business systems consistent with the IT architecture road map. Provides life-cycle management of over 190,000 IT assets including IT procurement, receiving, shipping/transportation, warehousing, transfers and disposal using the Defense Property Accountability System (DPAS). Increase Joint Worldwide Intelligence Communications System (JWICS) capability to provide connectivity and interoperability with intelligence community via Common Operating Environment (COE).					
Specific and/or unique accomplishments to each FY are as follows:					
FY 2022 Plans: -SEE ABOVE.					
FY 2023 Plans: - SEE ABOVE.					
FY 2022 to FY 2023 Increase/Decrease Statement: Decrease from FY 2022 to FY 2023, reflects Network Optimization and reduction of contract support.					
Title: Special Purpose Processing Nodes (SPPN)			6.771	4.809	6.779
Articles:			-	-	-
Description: Provides for the developmental/specialty engineering and operational strategies and concepts; and planning, design, implementation and maintenance for MDA Research, Development, Test and Evaluation (RDT&E) Special Purpose Processing Nodes (SPPNs) in Huntsville, AL and Colorado Springs, CO. The SPPN infrastructure consists of routers, switches, firewalls, compute, storage and intrusion detection systems that provide Information Technology (IT) support to over 10,500 MDA classified/unclassified users worldwide. The SPPNs support dynamic and rapid modifications and reconfigurations of network infrastructure in support of RDT&E mission and event unique configurations. Funds provide for network operations and performance monitoring; development of detailed solutions, designs, and plans; Disaster Recovery and Continuity of Operations (DR and COOP) rehearsals; Internet access management; and web filtering. Sustains core communications distribution services					

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency			Date: April 2022		
Appropriation/Budget Activity 0400 / 4		R-1 Program Element (Number/Name) PE 0603890C / BMD Enabling Programs	Project (Number/Name) MD30 / BMD Information Management Systems		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)			FY 2021	FY 2022	FY 2023
across the MDA Enterprise. Includes investments in equipment at end-of-life to comply with Federal and DoD mandated cybersecurity policies.					
Specific and/or unique accomplishments to each FY are as follows:					
FY 2022 Plans: -SEE ABOVE.					
FY 2023 Plans: - SEE ABOVE.					
FY 2022 to FY 2023 Increase/Decrease Statement: The increase from FY 2022 to FY 2023 provides additional government support for Cloud-first policy (DoD Mandate).					
Title: Information Technology (IT) Planning and Solutions			10.998	13.796	16.444
Articles:			-	-	-
Description: Provides Information Technology (IT) engineering support for new requirements analysis, design, planning and implementation of IT solutions for real-world issues. Addresses the increasing demand for more complex IT products and highly specialized IT services. Manages the prioritization and integration of investments in the MDA IT Portfolio to ensure compliance with Federal and DoD polices. Supports the MDA Chief Information Officer Enterprise Architecture Board, Project Steering Committee and the Change Control Board. Ensures compliance with Federal Laws, DoD policies, directives and regulations including: Clinger-Cohen Act, the Federal Information Security Management Act (FISMA), and the Office of Management and Budget (OMB) IT budget reporting policies.					
Specific and/or unique accomplishments to each FY are as follows:					
FY 2022 Plans: -SEE ABOVE.					
FY 2023 Plans: - SEE ABOVE.					
FY 2022 to FY 2023 Increase/Decrease Statement: Increase from FY 2022 to FY 2023 provides additional Contract Support Services (CSS) to meet increased demand for IT services.					
Title: Unified Communications			21.108	23.481	23.333

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency			Date: April 2022		
Appropriation/Budget Activity 0400 / 4		R-1 Program Element (Number/Name) PE 0603890C / BMD Enabling Programs		Project (Number/Name) MD30 / BMD Information Management Systems	
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)			FY 2021	FY 2022	FY 2023
<p align="right">Articles:</p> <p>Description: Provides for the management, operations and sustainment of classified and unclassified globally deployed video teleconferencing capabilities and equipment. Also includes unclassified desktop instant messaging, wireless services, and collaboration capabilities. Provides and implements engineering solutions for all unified communications services. Supports MDA global Research, Development, Test and Engineering (RDT&E) mission for classified and unclassified voice services and interfaces with the Defense Information System Network (DISN) Video Services Global (DVSG), the Defense Research and Engineering Network (DREN), Joint Service Provider (JSP) and commercial vendors. Maintenance agreements and licenses for MDA Enterprise telecommunications equipment classified and unclassified mobile and desktop telephony devices.</p> <p>Specific and/or unique accomplishments to each FY are as follows:</p> <p>FY 2022 Plans: -SEE ABOVE.</p> <p>FY 2023 Plans: - SEE ABOVE.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: N/A</p>			-	-	-
<p>Title: Portal and Data Services</p> <p align="right">Articles:</p> <p>Description: Provides for the management, operation and maintenance support for the classified and unclassified MDA Portal application and the Information Technology (IT) portal infrastructure. The support includes web-based developmental engineering and operations, planning, design, application implementation, content management and training. Also provides MDA Privacy Office and Civil Liberties compliance and reporting, and provides data management services to accommodate MDA users.</p> <p>Specific and/or unique accomplishments to each FY are as follows:</p> <p>FY 2022 Plans: -SEE ABOVE.</p> <p>FY 2023 Plans: - SEE ABOVE.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement:</p>			9.879 -	14.384 -	12.763 -

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency			Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603890C / BMD Enabling Programs	Project (Number/Name) MD30 / BMD Information Management Systems	

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023
Decrease FY 2022 to FY 2023 reflects realignment of requirements in support of program reorganization.			
Title: Business Automation Services Description: Provides for the management, operation and maintenance of enterprise business applications for the MDA community to access and share various sources of available data, information and knowledge and enable improved organization, retrieval, manipulation, and storage. Develop and implement an unclassified and classified Qlik Sense business intelligence capability. Operate and maintain nine Defense Business Systems that meet the reporting requirements of Title 10 United States Code section 2222; these include Electronic Learning Management System (Cloud LMS), Program Resource Internet Database Environment (PRIDE), Information Management Program Activity control Tool (IMPACT), Standard Procurement System (SPS), Human Resource Tracking System/Personnel Tracking System (HRTS/PTS), TEAMMATE, TASK MANAGEMENT TOOL (TMT), Electronic Content and Records Tool (Cloud ECART), and MDA's enterprise data visualization tool (QLIK Sense) for business intelligence and data integration. Specific and/or unique accomplishments to each FY are as follows: FY 2022 Plans: -SEE ABOVE. FY 2023 Plans: - SEE ABOVE. FY 2022 to FY 2023 Increase/Decrease Statement: The increase from FY2022 to FY2023 provides funding for the QLIK Sense application.	8.138 -	12.110 -	15.898 -
Accomplishments/Planned Programs Subtotals	83.053	92.729	87.822

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

<u>Line Item</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u> <u>Base</u>	<u>FY 2023</u> <u>OCO</u>	<u>FY 2023</u> <u>Total</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• 0603176C: <i>Advanced Concepts and Performance Assessment</i>	49.069	40.000	16.737	-	16.737	17.265	17.693	18.109	18.477	Continuing	Continuing
• 0603180C: <i>Advanced Research</i>	29.621	47.966	22.023	-	22.023	22.758	23.296	23.851	24.335	Continuing	Continuing
• 0603881C: <i>Ballistic Missile</i>	305.081	213.382	190.216	-	190.216	196.279	213.945	224.146	238.269	Continuing	Continuing
<i>Defense Terminal Defense Segment</i>											

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency									Date: April 2022		
Appropriation/Budget Activity 0400 / 4				R-1 Program Element (Number/Name) PE 0603890C / BMD Enabling Programs				Project (Number/Name) MD30 / BMD Information Management Systems			
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• 0603882C: Ballistic Missile Defense Midcourse Defense Segment	1,195.853	724.028	667.524	-	667.524	870.817	802.617	781.973	765.733	Continuing	Continuing
• 0603884C: Ballistic Missile Defense Sensors	259.605	254.962	231.134	-	231.134	250.028	274.705	276.254	257.575	Continuing	Continuing
• 0603892C: AEGIS BMD	861.809	639.549	600.072	-	600.072	658.798	574.014	570.018	580.496	Continuing	Continuing
• 0603896C: Ballistic Missile Defense Command and Control, Battle Management & Communication	639.027	564.946	589.374	-	589.374	575.883	588.824	612.853	605.801	Continuing	Continuing
• 0603898C: Ballistic Missile Defense Joint Warfighter Support	49.261	50.594	50.269	-	50.269	51.849	55.960	56.488	54.980	Continuing	Continuing
• 0603904C: Missile Defense Integration and Operations Center (MDIOC)	54.026	52.403	49.367	-	49.367	51.744	56.502	57.833	59.006	Continuing	Continuing
• 0603907C: Sea Based X-Band Radar (SBX)	120.063	147.241	164.668	-	164.668	174.934	215.367	198.956	179.622	Continuing	Continuing
• 0603913C: Israeli Cooperative Programs	300.000	300.000	300.000	-	300.000	300.000	300.000	300.000	300.000	Continuing	Continuing
• 0603914C: Ballistic Missile Defense Test	364.994	389.156	367.824	-	367.824	363.963	421.261	476.991	490.176	Continuing	Continuing
• 0603915C: Ballistic Missile Defense Targets	534.348	560.478	559.513	-	559.513	555.341	623.995	628.146	632.072	Continuing	Continuing
• 0604880C: Land Based SM-3 (LBSM3)	52.804	43.158	27.678	-	27.678	26.896	26.021	26.842	27.385	Continuing	Continuing
• 0901598C: Management HQ - MDA	26.902	24.102	25.259	-	25.259	25.836	26.438	26.984	27.524	Continuing	Continuing
Remarks											

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency		Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603890C / BMD Enabling Programs	Project (Number/Name) MD30 / BMD Information Management Systems
<p>D. Acquisition Strategy</p> <p>This acquisition strategy to provide IT services for MDA consists of three MDA issued contracts. The Integrated Research and Development for Enterprise Solutions (IRES) provides IT design, engineering, implementation and sustainment services. The Research and Development Enterprise Collaboration Services (RECS) provides Video Teleconferencing, Portal, Data and Business Automation Services.</p> <p>MDA issues multiple Military Interdepartmental Purchase Requests (MIPRs) for leased communications including the Defense Information Systems Agency (DISA), DREN and the US Army.</p>		

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603890C / BMD Enabling Programs						Project (Number/Name) MD30 / BMD Information Management Systems			
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	N/A
Remarks N/A															
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
End User Support - End User Consolidated Support Logistics/Asset Mgmt	C/CPFF	Venturi : AL, CO	0.897	0.457	Nov 2020	0.358	Nov 2021	0.365	Nov 2022	-		0.365	Continuing	Continuing	Continuing
End User Support - End User Civilian Pay	Allot	MDA : AL, CO, NM, VA	23.044	3.157	Oct 2020	4.120	Oct 2021	2.324	Oct 2022	-		2.324	Continuing	Continuing	Continuing
End User Support - End User IT Hardware Support	C/CPAF	Jacobs Engineering : AL, AK, CA, CO, HI, NM, VA	41.954	4.779	Nov 2020	7.334	Nov 2021	2.102	Nov 2022	-		2.102	Continuing	Continuing	Continuing
End User Support - End User IT Software / Licenses	C/CPAF	Jacobs Engineering : AL, AK, CA, CO, HI, NM, VA	22.909	12.128	Nov 2020	5.994	Nov 2021	4.042	Nov 2022	-		4.042	Continuing	Continuing	Continuing
End User Support - End User Operational Support	C/CPAF	Jacobs Engineering : AL, AK, CA, CO, HI, NM, VA	56.696	5.638	Oct 2020	6.343	Oct 2021	3.772	Oct 2022	-		3.772	Continuing	Continuing	Continuing
Special Purpose Processing Nodes (SPPN) - SPPN Civilian Pay	Allot	MDA : AL, CO, VA	9.087	1.041	Oct 2020	1.512	Oct 2021	3.501	Oct 2022	-		3.501	Continuing	Continuing	Continuing
Special Purpose Processing Nodes (SPPN) - SPPN Licenses	C/CPAF	Jacobs Engineering : AL, CO, VA	89.362	1.983	Nov 2020	2.087	Nov 2021	2.023	Nov 2022	-		2.023	Continuing	Continuing	Continuing
Special Purpose Processing Nodes (SPPN) - SPPN Operational Support	C/CPAF	Various : AL, CO, VA	100.735	3.747	Jan 2021	1.210	Jan 2022	1.255	Jan 2023	-		1.255	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603890C / BMD Enabling Programs						Project (Number/Name) MD30 / BMD Information Management Systems			
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Information Technology (IT) Planning and Solutions - IT Planning and Solutions Travel / PCS	Allot	MDA Civilian Travel : AL, CO, VA	0.000	0.068	Oct 2020	0.333	Oct 2021	0.237	Oct 2022	-		0.237	Continuing	Continuing	Continuing
Information Technology (IT) Planning and Solutions - IT Planning and Solutions Civilian Pay	Allot	MDA : AL, CO, VA	9.983	1.539	Oct 2020	2.236	Oct 2021	3.569	Oct 2022	-		3.569	Continuing	Continuing	Continuing
Information Technology (IT) Planning and Solutions - IT Planning and Solutions Consolidated Support	C/CPFF	Five Stones, Yorktown, Peopletec : AL, CO, VA	31.251	6.610	Aug 2021	6.402	Aug 2022	7.221	Aug 2023	-		7.221	Continuing	Continuing	Continuing
Information Technology (IT) Planning and Solutions - IT Planning and Solutions Operational Support	C/CPAF	Jacobs Engineering : AL, CO, VA	41.223	2.781	Mar 2021	2.377	Mar 2022	5.417	Mar 2023	-		5.417	Continuing	Continuing	Continuing
Information Technology (IT) Planning and Solutions - IT Planning and Solutions SWDC PNT	C/CPFF	Northrup Grumman : AL, CO, VA	6.896	0.000		2.448	Mar 2022	0.000		-		0.000	0.000	9.344	6.896
Unified Communications - Unified Communications Civilian Pay	Allot	MDA : AL, CO, VA	9.438	0.996	Oct 2020	1.450	Oct 2021	1.076	Oct 2022	-		1.076	Continuing	Continuing	Continuing
Unified Communications - Unified Communications Hardware Licenses	C/CPIF	Jacobs Engineering : AL, CO, VA	4.386	1.391	Nov 2020	1.405	Nov 2021	1.419	Nov 2022	-		1.419	Continuing	Continuing	Continuing
Unified Communications - Unified Communications Leased Communications/ Licenses	MIPR	DISA/DREN/IT2S : AL, AK, CA, CO, HI, NM, VA	30.789	8.067	Oct 2020	9.107	Oct 2021	8.859	Oct 2022	-		8.859	Continuing	Continuing	Continuing
Unified Communications - Unified Communications Operational Support	C/CPAF	Jacobs Engineering : AL, CO, VA	14.133	0.558	Dec 2020	3.118	Nov 2021	1.828	Nov 2022	-		1.828	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603890C / BMD Enabling Programs						Project (Number/Name) MD30 / BMD Information Management Systems			
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Unified Communications - Unified Communications VTC Operations Support	C/CPIF	NETWORK MANAGEMENT RESOURCES, INC. : AL, AK, CO, NM, VA	40.308	8.767	Apr 2021	7.006	Apr 2022	8.742	Apr 2023	-		8.742	Continuing	Continuing	Continuing
Unified Communications - Unified Communications Wireless Services	C/FFP	AT&T MOBILITY LLC : AL, CO, VA	9.584	1.329	Oct 2020	1.395	Oct 2021	1.409	Oct 2022	-		1.409	Continuing	Continuing	Continuing
Unified Communications - VTC HW/Break-Fix	C/CPIF	NETWORK MANAGEMENT RESOURCES, INC. : AL, CO, VA	3.185	0.000		0.000		0.000		-		0.000	0.000	3.185	0.000
Portal and Data Services - Portal and Data Services Civilian Pay	Allot	MDA : AL, CO, VA	7.743	0.831	Oct 2020	1.208	Oct 2021	0.497	Oct 2022	-		0.497	Continuing	Continuing	Continuing
Portal and Data Services - Portal and Data Services Operational	C/CPAF	Online Subscriptions Services : AL, CO, VA	3.129	0.539	Oct 2020	0.354	Oct 2021	0.357	Oct 2022	-		0.357	Continuing	Continuing	Continuing
Portal and Data Services - Portal and Data Services Operational Support	C/FFP	Network Management Resources : AL, CO, VA	30.802	5.984	Apr 2021	6.086	Apr 2022	6.191	Apr 2023	-		6.191	Continuing	Continuing	Continuing
Portal and Data Services - Portal and Data Services Operations and Support	C/CPAF	Jacobs Engineering : AL, CO, VA	15.699	2.525	Jan 2021	6.736	Jan 2022	5.718	Jan 2023	-		5.718	Continuing	Continuing	Continuing
Business Automation Services - Business Automation Cloud E Cart	MIPR	TBD : AL, CO, VA	0.000	0.000		0.613	Sep 2022	0.622	Sep 2023	-		0.622	Continuing	Continuing	Continuing
Business Automation Services - Business Automation Civilian Pay	Allot	MDA : AL, CO, VA	4.350	0.331	Oct 2020	0.485	Oct 2021	0.665	Oct 2022	-		0.665	Continuing	Continuing	Continuing
Business Automation Services - Business Automation E-Tasker/ Accenture Task Mgt Tool	Various	TBD : AL, CO, VA	0.000	0.000		0.234	Oct 2021	0.237	Oct 2022	-		0.237	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603890C / BMD Enabling Programs						Project (Number/Name) MD30 / BMD Information Management Systems			
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Business Automation Services - Business Automation ELMS/ USA Learning	MIPR	TBD : AL, CO, VA	0.000	0.000		0.291	Oct 2021	0.294	Oct 2022	-		0.294	Continuing	Continuing	Continuing
Business Automation Services - Business Automation Human Resources Tracking System	Various	TBD : AL, CO, VA	0.000	0.000		0.557	Oct 2021	0.568	Oct 2022	-		0.568	Continuing	Continuing	Continuing
Business Automation Services - Business Automation Licenses	C/CPAF	Jacobs Engineering : AL, CO, VA	7.412	0.000		0.000		0.000		-		0.000	0.000	7.412	0.000
Business Automation Services - Business Automation Operational Support	C/CPAF	Jacobs Engineering : AL, CO, VA	32.199	7.807	Jan 2021	6.208	Jan 2022	8.343	Jan 2023	-		8.343	Continuing	Continuing	Continuing
Business Automation Services - Business Automation QLIK	C/CPAF	NETWORK MANAGEMENT RESOURCES, INC. : AL, CO, VA	0.000	0.000		3.132	Jun 2022	3.782	Apr 2023	-		3.782	Continuing	Continuing	Continuing
Business Automation Services - Business Automation Service Support	C/FFP	NETWORK MANAGEMENT RESOURCES, INC. : AL, CO, VA	0.000	0.000		0.590	Mar 2022	0.601	Apr 2023	-		0.601	Continuing	Continuing	Continuing
Business Automation Services - Business Automation Services Support	MIPR	CACI : AL, CO, VA	0.124	0.000		0.000		0.786	Oct 2022	-		0.786	0.000	0.910	0.000
CARES Act Funding (COVID 19) - CARES IT Hardware Support	C/CPAF	Jacobs Engineering : AL, AK, CA, CO, HI, NM, VA	4.675	0.000		0.000		0.000		-		0.000	0.000	4.675	0.000
Subtotal			651.993	83.053		92.729		87.822		-		87.822	Continuing	Continuing	N/A
Remarks N/A															

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency													Date: April 2022		
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603890C / BMD Enabling Programs				Project (Number/Name) MD30 / BMD Information Management Systems					
Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	N/A
Remarks N/A															
Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	N/A
Remarks N/A															
			Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			651.993	83.053		92.729		87.822		-		87.822	Continuing	Continuing	N/A
Remarks Award Date reflects date of first obligation. Additional obligations may incrementally occur throughout the year.															

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Missile Defense Agency															Date: April 2022														
Appropriation/Budget Activity 0400 / 4										R-1 Program Element (Number/Name) PE 0603890C / BMD Enabling Programs										Project (Number/Name) MD30 / BMD Information Management Systems									
Significant Event Complete ▲ Significant Event Planned △					Milestone Decision Complete ★ Milestone Decision Planned ☆					Element Test Complete ◆ Element Test Planned ◇					System Level Test Complete ● System Level Test Planned ○					Complete Activity ◆ Planned Activity ◇									
										FY 2021		FY 2022		FY 2023		FY 2024		FY 2025		FY 2026		FY 2027							
Operate, Monitor and Sustain Recurring Operations for Video Teleconferencing for Unified Communications Follow-On										◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇					
Manage DoD Mandated Business Applications and Sustain MDA Financial and Contractual Support Systems - Follow-On										◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇					
Operate and Maintain General Information Technology Services 18 hours per day, 6 days per week - Follow-On										◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇					
Revise and Test Contingency Plans for Information Technology Systems - Follow-On										◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇					
Operate and Maintain Classified and Unclassified MDA Knowledge Online Services - Follow-On										◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇					
Procure, Implement, and Asset Control for Information Technology Operational Systems -Follow-On										◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇					
Provide 18 hours per day, 6 days per week Network and Helpdesk Services for General Information Technology Services for MDA Workforce - Follow-On										◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇					
Fund Recurring Leased Circuits, Maintenance Agreements and Licenses for MDA Enterprise - Follow-On										◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇					
Operate, Monitor and Sustain Recurring Classified and Unclassified Telecommunication Requirements for Unified Communications - Follow-On										◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇					
Sustain the BMDS Integrated Master Schedule and the Ballistic Missile Defense Asset Management Tool - Follow-On										◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇					
Perform Analysis, Track, and Report Metrics on Equipment Lifecycle - Follow-On										◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇					
Sustain the Information Technology Infrastructure Across the MDA Enterprise - Follow-On										◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇						

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Missile Defense Agency			Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603890C / BMD Enabling Programs	Project (Number/Name) MD30 / BMD Information Management Systems	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Operate, Monitor and Sustain Recurring Operations for Video Teleconferencing for Unified Communications Follow-On	1	2021	4	2027
Manage DoD Mandated Business Applications and Sustain MDA Financial and Contractual Support Systems - Follow-On	1	2021	4	2027
Operate and Maintain General Information Technology Services 18 hours per day, 6 days per week - Follow-On	1	2021	4	2027
Revise and Test Contingency Plans for Information Technology Systems - Follow-On	1	2021	4	2027
Operate and Maintain Classified and Unclassified MDA Knowledge Online Services - Follow-On	1	2021	4	2027
Procure, Implement, and Asset Control for Information Technology Operational Systems -Follow-On	1	2021	4	2027
Provide 18 hours per day, 6 days per week Network and Helpdesk Services for General Information Technology Services for MDA Workforce - Follow-On	1	2021	4	2027
Fund Recurring Leased Circuits, Maintenance Agreements and Licenses for MDA Enterprise - Follow-On	1	2021	4	2027
Operate, Monitor and Sustain Recurring Classified and Unclassified Telecommunication Requirements for Unified Communications - Follow-On	1	2021	4	2027
Sustain the BMDS Integrated Master Schedule and the Ballistic Missile Defense Asset Management Tool - Follow-On	1	2021	4	2027
Perform Analysis, Track, and Report Metrics on Equipment Lifecycle - Follow-On	1	2021	4	2027
Sustain the Information Technology Infrastructure Across the MDA Enterprise - Follow-On	1	2021	4	2027

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency										Date: April 2022		
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0603890C / BMD Enabling Programs				Project (Number/Name) MC30 / Cyber Operations			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
MC30: Cyber Operations	274.974	62.539	103.565	81.519	-	81.519	89.048	91.568	95.843	97.761	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Accomplishments map to the Office of Management and Budget (OMB) and Office of the Secretary of Defense (OSD) approved Cybersecurity Taxonomy including 1) Preventing Malicious Activity, 2) Detect, Analyze and Mitigate Intrusions, 3) Planning, Policy Development and Workforce Management, 4) Continuous Monitoring and 5) Outside Federal Outreach, Defense Industrial Base.

The decrease from FY2022 to FY2023 reflects FY2022 Congressional Plus-up providing improvements to cybersecurity of BMDS critical infrastructure and compliance with DOD Cybersecurity Discipline Implementation Plan.

A. Mission Description and Budget Item Justification

A number of key Information Technology (IT) strategies were identified in the DoD Information Technology Enterprise Strategy and Roadmap issued by the Deputy Secretary of Defense in 2011. The IT Roadmap specifically addresses the need to improve Cybersecurity. It states that DoD networks are under constant attack from cybersecurity threats launched from various sources. MDA must meet the National Command Authority Directives for rapid deployment of the MDS while complying with the key principles of the Cybersecurity standards to ensure MDA remains a secure member of the DoD Information Network (DODIN).

DoD Instruction 8500.01 Cybersecurity issued in March 2014, requires continuous monitoring, data analysis, reporting and incident mitigation of DoD classified and unclassified, mission, test and administrative networks. To comply with the Instruction, MDA must implement a multi-tiered cybersecurity risk management capability to protect critical Missile Defense System (MDS) data and systems from rapidly evolving internal and external threats.

The issuance of DoD Instruction 8510.01, Risk Management Framework (RMF) Information Technology in March 2014 requires additional resources to implement, manage, monitor and report as a result of a thirty-five percent increase in controls (237 controls with 817 enhancements). DoD 8510.01 also states that resources for implementing the RMF must be identified and allocated as part of the Defense planning, programming, budgeting, and execution process. The Controls must be tested on all IT supporting research, development, test and evaluation and DoD-controlled IT operated by a contractor or other entity on behalf of DoD and reported.

This project provides funds to sustain the Risk Management Framework (RMF) and Controls Validation Testing (CVT) activities, analysis of validation results, risk assessments and reviews of proposed Program Manager/Information Systems Security Manager (PM/ISSM) Plan of Action and Milestones (POA&M) for the MDA mission, test and common-use IT systems. Maintains the Authorization and Assessment (A&A) data repository, capturing the RMF documentation (artifacts, validation results, and Cybersecurity Risk Assessment results, and Authorizing Official (AO) decisions) and POA&M on all MDA information systems. Supports the monitoring and tracking of Cybersecurity mitigations detailed in IT cybersecurity POA&Ms. Activities include preparation of A&A documentation and authorization recommendations to the MDA PM/ISSM and AO. Independent Verification and Validation (IV&V) team actions ensure the availability, integrity, confidentiality and non-repudiation of the MDA mission, test and common-use IT systems. Activities in the Project are necessary to comply with Federal Information Security Management Act (FISMA).

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency		Date: April 2022		
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603890C / BMD Enabling Programs	Project (Number/Name) MC30 / Cyber Operations		
<p>This project funds the MDA Global Network Operations and Security Center(GNOSC) responsible for monitoring, managing, patching, and maintaining MDA network and core IT services; issuing and tracking Technical Compliance Orders; and coordinating overarching Enterprise NetOps. The GNOSC provides the network security operations centers and supporting processes to protect and defend the MDA Enterprise information and information systems.</p> <p>The MDA Computer Emergency Response Team (CERT), MDA's Tier 2 Cybersecurity Service Provider (CSSP) monitors the MDA classified and unclassified information technology RDT&E and common-use IT networks and reports vulnerabilities. The MDA CERT coordinates with U.S. Cyber Command to identify and implement network vulnerability updates and patches to comply with U.S. Cyber Command vulnerabilities identified for DoD networks. During FY 2020 began the development of the MDS (Weapons Systems) Cybersecurity Service provider (CSSP) as a fully accredited Tier II in accordance with CJCSI 6510.01F, DoD O-8530.1, and the DoD Cybersecurity Discipline Implementation Plan.</p> <p>The project funds Cybersecurity governance management and administrative management support, annual Agency-wide computer-based IA training and metrics reporting, implementation of Public Key Infrastructure and Enabling Communication Security (COMSEC) related activities.</p> <p>Facility-related control systems (FRCS) include building management systems (BMS), electronic security systems (ESS), industrial control systems (ICS) and supervisory control and data acquisition (SCADA) systems in support of facility operations.</p> <p>This project provides for the management of MDA's FRCS cybersecurity program, cybersecurity engineering for FRCS incorporated in MDA facility plans for construction and upgrades, as well as the implementation of RMF and Computer Network Defense (CND) on FRCS in MDA facilities.</p>				
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2021	FY 2022	FY 2023
<p>Title: Preventing Malicious Cybersecurity Activity</p> <p style="text-align: right;">Articles:</p> <p>Description: Provide: Federal Information Security Management Activity Act (FISMA)-related activities; Intrusion Prevention Systems; Trusted Internet Connections; Identity Management and Authentication; Supply Chain Management; Network & Data Protection and Insider Threat Mitigation Activities.</p> <p>This effort includes integration and test capabilities for element interface verification and provide operations and sustainment of the deployed Position, Navigation, and Timing (PNT) Last Mile integration capabilities at MDS locations.</p> <p>Recurring Activities for Preventing Malicious Cyber Attacks:</p> <p>-Maintain a current Cybersecurity risk and residual risk assessment of the MDS.</p> <p>-Coordinate Cybersecurity compliance for all IT projects and remote sites.</p> <p>-Implement measures to prevent unauthorized access to MDA Information Systems (IS) based on analysis of threat vectors.</p> <p>Evaluate known threats against vulnerabilities to determine mitigation strategies.</p> <p>-Track ports, protocols, and services.</p> <p>-Coordinate with private partnerships to ensure the Defense Industrial Base protects MDA data.</p>		15.421	43.660	17.646
		-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency		Date: April 2022	
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603890C / BMD Enabling Programs	Project (Number/Name) MC30 / Cyber Operations	
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2021	FY 2022
<p>FY 2022 Plans: Implement a Defensive Cyber Operations Capability through providing improvements to cybersecurity of BMDS critical infrastructure and compliance with DOD Cybersecurity Discipline Implementation Plan.</p> <p>-Plan and execute Cyber VISUM events and implement MDS Cybersecurity Resilience Strategy. -Expand User Activity Monitoring and implement technology protection to improve cybersecurity, insider threat, and software assurance posture of the MDS; and provide increased ability to detect insider threats. -Recapitalization of Data Center/IT, addition of server/storage capability to support TS level processing. -Implement Mission and RDT&E Software Assurance tools and processes. -Provide Unclassified Virtual Desktop Infrastructure, to include telework remote access and standardized desktop. -Conduct Cyber Assistance Team Threat Hunting for classified DIB environments. * Optimization of MDA Integration and Operations Center (MDIOC) Infrastructure Special Use Space</p> <p>FY 2023 Plans: - SEE ABOVE.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: The decrease from FY2022 to FY2023 reflects FY2022 Congressional Plus-up providing improvements to cybersecurity of BMDS critical infrastructure and compliance with DOD Cybersecurity Discipline Implementation Plan.</p>			
<p>Title: Planning, Policy Development, Workforce Training & Force Management</p> <p align="right">Articles:</p> <p>Description: Provide National Initiative for Cybersecurity Education (NICE); Workforce Development; Security Training for Employees with Significant Security Responsibilities; and Cybersecurity Strategic Planning, Policy, Oversight and Management.</p> <p>Recurring Activities for the Planning, Policy Development, Workforce Training and Force Management Accomplishment: -Document and maintain Standard Operating Instructions/Procedures for consistent interface with the MDA MDS Network Operations Support Center (BNOSC) and the MDS elements. -Publish MDA policies to incorporate new requirements stated in DoDI 8510.01 Risk Management Framework (RMF) to comply with 237 new controls and 817 control enhancements into controls validation testing of MDS elements and networks. -Manage the Information Assurance Workforce Improvement Program to certify Cybersecurity professionals and report compliance in accordance with Federal Information Management Security Act (FISMA) and Information Assurance Workforce Improvement Program (DoD Manual 8570.1), achieving the DoD certification goal; reports IA Risk Assessments, Primary RMF artifacts. -Interface with other combatant commands to provide MDS Mission RMF package.</p>		3.171 -	4.794 -
		4.873 -	

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency			Date: April 2022		
Appropriation/Budget Activity 0400 / 4		R-1 Program Element (Number/Name) PE 0603890C / BMD Enabling Programs		Project (Number/Name) MC30 / Cyber Operations	
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)			FY 2021	FY 2022	FY 2023
<p>-Conduct an annual IA Security review of the MDS in accordance with DoDI 8510.01 and provide an analysis of changes in IA posture.</p> <p>-Collect, analyze, and report vulnerability and cyber warfare attack metrics to the MDA CIO, MDA leadership, and U.S. Cyber Command.</p> <p>-Provide Cybersecurity engineering and planning guidance and vulnerability assessment for all MDA Information Technology acquisition programs.</p> <p>Specific and/or unique accomplishments to each FY are as follows:</p> <p>FY 2022 Plans: -SEE ABOVE.</p> <p>FY 2023 Plans: - SEE ABOVE.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: N/A</p>					
<p>Title: Continuous Monitoring</p> <p>Description: Provide Information Technology (IT) Security Tools and Other Continuous Monitoring.</p> <p>Recurring Activities for the Continuous Monitoring Accomplishment:</p> <p>-Manage data-at-rest encryption to ensure compliance with DoD mandated policies.</p> <p>-Procure/renew cybersecurity software licensing agreements for IT Security Tools.</p> <p>-Procure/renew cybersecurity hardware maintenance for hardware.</p> <p>Specific and/or unique accomplishments to each FY are as follows:</p> <p>FY 2022 Plans: -SEE ABOVE.</p> <p>FY 2023 Plans: - SEE ABOVE.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement:</p>			8.230	8.228	8.282
Articles:			-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency			Date: April 2022		
Appropriation/Budget Activity 0400 / 4		R-1 Program Element (Number/Name) PE 0603890C / BMD Enabling Programs		Project (Number/Name) MC30 / Cyber Operations	
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)			FY 2021	FY 2022	FY 2023
N/A					
Title: Detect, Analyze and Mitigate Intrusions			35.546	45.786	48.921
Articles:			-	-	-
<p>Description: Provide cybersecurity activities including: Federal Incident Response Centers; National Institute of Standards for Technology (NIST) SP 800.53 Implementation; Cyber Threat Analysis; Cyber Continuity of Operations (COOP); Incident Response and Remediation; Forensics and Damage Assessment; and Computer Emergency Response Teams.</p> <p>Recurring Activities for the Detect, Analyze and Mitigate Intrusions Accomplishment:</p> <ul style="list-style-type: none"> -Test Risk Management Framework (RMF) controls on all IT supporting research, development, test and evaluation and DoD-controlled Information Technology (IT) operated by a contractor or other entity on behalf of DoD and reported. -Conduct RMF analysis and reporting for the MDS such as evaluation of residual risk by incorporating current and proposed MDS monitoring and mitigations. -Maintain MDA Computer Emergency Response Team (MDA CERT) as a fully accredited Tier II Cybersecurity Service provider (CSSP) in accordance with CJCSI 6510.01F and DoD O-8530.1. -Perform CSSP services (protect, detect, respond and sustain) for all MDA Common-use IT Services, MDA Mission and test networks and enclaves 24 hours a day, 7 days a week, 365 days a year. -Conduct application testing that looks for vulnerabilities and issues using a number of tactics, technical and procedures. -Conduct vulnerability scanning of MDA network to assess risks to MDA data from inside and outside sources. -Conduct monthly cybersecurity vulnerability audits. -Issue and track implementation of Information Assurance Vulnerability Alerts (IAVA), Bulletins and Technical Advisories. -Implement Information Assurance Vulnerability Alerts (IAVA) and Communication Tasking Orders remediation and patches. -Perform network security monitoring of all MDA subscriber networks and enclaves. -Conduct system forensic analysis, review content of compromised system, document files and data, and identify tactics, techniques and procedures used by an attacker to gain access. -Develop and maintain the RMF package for the MDS Mission System to support a full Authorization to Operation (ATO). -Compile and validate MDS Mission Element-level authorization and assessment documents to include MDS Element-level System Security Plans (SSPs), Security Controls Traceability Matrix (SCTM), Plan of Action and Milestone (POA&M) artifacts and support conduct of Control Validation Testing (CVT). Execute controls validation integration testing as part of developmental testing efforts for the MDS. -Ensure MDA mission, test, and common-use IT systems are operated securely in accordance with DoD Risk Management Framework policies. -Prepare and maintain current RMF documentation for MDA networks and systems reported to DoD and Office of Management and Budget (OMB). 					

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency			Date: April 2022		
Appropriation/Budget Activity 0400 / 4		R-1 Program Element (Number/Name) PE 0603890C / BMD Enabling Programs	Project (Number/Name) MC30 / Cyber Operations		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)			FY 2021	FY 2022	FY 2023
Specific and/or unique accomplishments to each FY are as follows: FY 2022 Plans: -Develop and maintain the MDS (Weapons Systems) Cybersecurity Service provider (CSSP) as a fully accredited Tier II in accordance with CJCSI 6510.01F, DoD O-8530.1, and the DoD Cybersecurity Discipline Implementation Plan. FY 2023 Plans: - SEE ABOVE. FY 2022 to FY 2023 Increase/Decrease Statement: N/A					
Title: Outside Federal Outreach - Defense Industrial Base Articles: Description: Review current Cybersecurity Policies and coordinating with MDA Missile Defense System (MDS) Programs to ensure all applicable Cybersecurity clauses are included into MDA contracts with MDA Industry partners in the Defense Industrial Base (DIB) to ensure protection of MDS Controlled Unclassified Information (CUI). Specific and/or unique accomplishments to each FY are as follows: FY 2022 Plans: -SEE ABOVE. FY 2023 Plans: - SEE ABOVE. FY 2022 to FY 2023 Increase/Decrease Statement: Increase from FY 2022 to FY 2023, provides additional government cybersecurity outreach support to MDA Defense Industrial Base (DIB) based on MDA mission requirements (NIST 800-171).			0.171 -	0.159 -	0.832 -
Title: Facility Related Control Systems (FRCS) Articles: Description: Provide Facility-Related Control Systems (FRCS) program oversight to include policies, procedures, plans, reports and budgets to support agency FRCS. - Systems development, inventory, assessment, mitigation and sustainment IAW DoDI 8500.01 Cybersecurity and DoDI 8510.01 Risk Management Framework (RMF) throughout the life cycle of each FRCS.			0.000 -	0.938 -	0.965 -

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency		Date: April 2022	
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603890C / BMD Enabling Programs	Project (Number/Name) MC30 / Cyber Operations	
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2021	FY 2022
<p>- Manage the cybersecurity activities to protect the FRCS, including vulnerability assessment and management, malware protection, information system continuous monitoring (ISCM), cyber incident handling, and auditing to detect, deter, and mitigate insider threats, IAW DoDI 8530.01 Cybersecurity Activities Support to DoD Information Network Operations.</p> <p>- Oversee the development of FRCS in facilities to ensure cybersecurity is designed and built into the system IAW Unified Facilities Criteria (UFC) 4-010-06 Cybersecurity Of Facility-Related Control Systems to reduce cybersecurity risk and ensure compliance with applicable National Institute of Standards and Technology (NIST) Special Publication (SP) 800-53 security controls.</p> <p>- Manage the training and development of the FRCS cybersecurity workforce to ensure all personnel are qualified to perform assigned cybersecurity duties IAW DoDD 8140.01 Cyberspace Workforce Management.</p> <p>FY 2022 Plans: -SEE ABOVE</p> <p>FY 2023 Plans: - SEE ABOVE.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: N/A</p>			
Accomplishments/Planned Programs Subtotals		62.539	103.565
C. Other Program Funding Summary (\$ in Millions) N/A			
Remarks			
D. Acquisition Strategy The Integrated Research and Development for Enterprise Solutions (IRES) provides IT design, engineering, implementation and sustainment services.			

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603890C / BMD Enabling Programs						Project (Number/Name) MC30 / Cyber Operations			
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	N/A
Remarks N/A															
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Preventing Malicious Cybersecurity Activity - COMSEC	MIPR	National Security Agency : AL, CO, VA	0.200	0.221	Apr 2021	0.223	Apr 2022	0.225	Apr 2023	-		0.225	Continuing	Continuing	Continuing
Preventing Malicious Cybersecurity Activity - Civilian Pay	Allot	MDA : AL, CO, VA, NM	4.888	1.361	Oct 2020	2.602	Oct 2021	1.502	Oct 2022	-		1.502	Continuing	Continuing	Continuing
Preventing Malicious Cybersecurity Activity - Consolidated Support CSM	C/CPFF	BOOZ ALLEN HAMILTON INC. : AL, CO, VA	2.175	0.000		0.689	Mar 2022	0.702	Nov 2022	-		0.702	Continuing	Continuing	Continuing
Preventing Malicious Cybersecurity Activity - Cyber CSS	C/CPAF	Jacobs Engineering : AL, COL, VA	49.521	13.839	Nov 2020	40.146	Nov 2021	15.217	Nov 2022	-		15.217	Continuing	Continuing	Continuing
Planning, Policy Development, Workforce Training & Force Management - A&AS Cyber BMDS CSM/CND	C/CPFF	BOOZ ALLEN HAMILTON INC. : AL, CO, VA	5.413	2.465	Nov 2020	1.914	Nov 2021	2.842	Nov 2022	-		2.842	Continuing	Continuing	Continuing
Planning, Policy Development, Workforce Training & Force Management - Civilian Pay	Allot	MDA : AL, CO, NM, VA	3.878	0.706	Oct 2020	1.763	Oct 2021	1.573	Oct 2022	-		1.573	Continuing	Continuing	Continuing
Planning, Policy Development, Workforce Training & Force Management - FFRDC	MIPR	MITRE : VA	0.000	0.000		0.449	Nov 2021	0.458	Nov 2022	-		0.458	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603890C / BMD Enabling Programs				Project (Number/Name) MC30 / Cyber Operations					
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Planning, Policy Development, Workforce Training & Force Management - JWIC	MIPR	DIA : VA	0.000	0.000		0.668	Jan 2022	0.000		-		0.000	Continuing	Continuing	Continuing
Continuous Monitoring - Continuous Monitoring - IT Security Tools	C/CPAF	Jacobs Engineering : AL, CO, VA	29.391	8.230	Jan 2021	8.228	Jan 2022	8.282	Jan 2023	-		8.282	Continuing	Continuing	Continuing
Detect, Analyze and Mitigate Intrusions - A&AS, BMDs CSM/CND	C/CPFF	BOOZ ALLEN HAMILTON INC. : AL, CO, VA	3.982	2.489	Aug 2021	2.538	Aug 2022	2.107	Aug 2023	-		2.107	Continuing	Continuing	Continuing
Detect, Analyze and Mitigate Intrusions - A&AS, Cyber Risk Mgmt	C/CPFF	Decisive Analytics Corporation : AL, CO, VA	10.676	3.985	Mar 2021	4.065	Mar 2022	4.146	Mar 2023	-		4.146	Continuing	Continuing	Continuing
Detect, Analyze and Mitigate Intrusions - Civilian Pay	Allot	MDA : AL, CO, NM,, VA	8.398	2.402	Oct 2020	3.695	Oct 2021	4.640	Oct 2022	-		4.640	Continuing	Continuing	Continuing
Detect, Analyze and Mitigate Intrusions - Civilian Travel / PCS	Allot	Civilian Travel : AL, CO, NM,, VA	0.000	0.200	Oct 2020	0.404	Nov 2021	0.408	Nov 2022	-		0.408	Continuing	Continuing	Continuing
Detect, Analyze and Mitigate Intrusions - Cyber CSS	C/CPAF	Jacobs Engineering : AL, CO, VA	142.894	26.470	Jan 2021	26.611	Jan 2022	27.084	Jan 2023	-		27.084	Continuing	Continuing	Continuing
Detect, Analyze and Mitigate Intrusions - Cyber Customer Support	C/CPAF	Network Management Resources : AL, CO, VA	8.775	0.000		0.000		0.000		-		0.000	0.000	8.775	8.775
Detect, Analyze and Mitigate Intrusions - Cyber Threat Hunting	C/CPAF	TBD : TBD	0.000	0.000		0.200	Aug 2022	0.000		-		0.000	Continuing	Continuing	Continuing
Detect, Analyze and Mitigate Intrusions - Network/System assessment and authorization contract support services	C/FFP	BOOZ ALLEN HAMILTON INC. : VA	4.450	0.000		0.000		0.000		-		0.000	0.000	4.450	4.450

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603890C / BMD Enabling Programs				Project (Number/Name) MC30 / Cyber Operations					
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Detect, Analyze and Mitigate Intrusions - Tier II CSSP	C/FFP	FIVE STONES RESEARCH CORPORATION : CO	0.000	0.000		8.273	Apr 2022	10.536	Apr 2023	-		10.536	Continuing	Continuing	Continuing
Outside Federal Outreach - Defense Industrial Base - Civilian Pay	Allot	MDA : AL, CO, NM, VA	0.333	0.171	Oct 2020	0.159	Oct 2021	0.832	Oct 2022	-		0.832	Continuing	Continuing	Continuing
Facility Related Control Systems (FRCS) - Cyber Security and Cyber Resiliency	MIPR	BOOZ ALLEN HAMILTON INC. : AL, VA	0.000	0.000		0.938	Nov 2021	0.965	Nov 2022	-		0.965	Continuing	Continuing	Continuing
Subtotal			274.974	62.539		103.565		81.519		-		81.519	Continuing	Continuing	N/A
Remarks N/A															
			Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			274.974	62.539		103.565		81.519		-		81.519	Continuing	Continuing	N/A
Remarks Award Date reflects date of first obligation. Additional obligations may incrementally occur throughout the year.															

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Missile Defense Agency										Date: April 2022														
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0603890C / BMD Enabling Programs										Project (Number/Name) MC30 / Cyber Operations									
Significant Event Complete ▲ Significant Event Planned △		Milestone Decision Complete ★ Milestone Decision Planned ☆		Element Test Complete ◆ Element Test Planned ◇		System Level Test Complete ● System Level Test Planned ○					Complete Activity ◆ Planned Activity ◇													
					FY 2021		FY 2022			FY 2023			FY 2024			FY 2025			FY 2026			FY 2027		
PNT Operations and Maintenance					◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇
Report Vulnerability and Cyber Warfare Attack Metrics to the MDA Chief Information Officer, MDA Leadership, and Cyber Command - Follow-On					◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇
Monitor Networks and Systems to Defend Mission, Test, and Administrative Systems on a 24 hours per day, 7 days per week, 365 days per year basis for Information Assurance - Follow-On					◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇
Provide Information Assurance Engineering and Planning Guidance and Vulnerability Assessment for Information Technology Acquisition Programs - Follow-On					◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇
Conduct Information Assurance Certification Evaluation of Mission, Test, and Administrative Systems - Follow-On					◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇
Complete Annual Information Assurance user Training for MDA Workforce - Follow-On					◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇
Implement Information Assurance Vulnerability Alert Control Improvements for General Information Technology Services - Follow-On					◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇
Procure, Implement, and Asset Control of Hardware maintenance and Software Licenses for Monitoring Systems of Information Assurance - Follow-On					◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Missile Defense Agency **Date:** April 2022

Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603890C / BMD Enabling Programs	Project (Number/Name) MC30 / Cyber Operations
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Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
PNT Operations and Maintenance	1	2021	4	2027
Report Vulnerability and Cyber Warfare Attack Metrics to the MDA Chief Information Officer, MDA Leadership, and Cyber Command - Follow-On	1	2021	4	2027
Monitor Networks and Systems to Defend Mission, Test, and Administrative Systems on a 24 hours per day, 7 days per week, 365 days per year basis for Information Assurance - Follow-On	1	2021	4	2027
Provide Information Assurance Engineering and Planning Guidance and Vulnerability Assessment for Information Technology Acquisition Programs - Follow-On	1	2021	4	2027
Conduct Information Assurance Certification Evaluation of Mission, Test, and Administrative Systems - Follow-On	1	2021	4	2027
Complete Annual Information Assurance user Training for MDA Workforce - Follow-On	1	2021	4	2027
Implement Information Assurance Vulnerability Alert Control Improvements for General Information Technology Services - Follow-On	1	2021	4	2027
Procure, Implement, and Asset Control of Hardware maintenance and Software Licenses for Monitoring Systems of Information Assurance - Follow-On	1	2021	4	2027

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency										Date: April 2022		
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0603890C / BMD Enabling Programs				Project (Number/Name) MD31 / Modeling & Simulation			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
MD31: Modeling & Simulation	429.428	103.029	82.277	72.045	-	72.045	74.020	71.968	73.626	73.910	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Decrease from FY 2022 to FY 2023 reflects a shift from development of initial EDISS and GTISS capabilities to their employment and ongoing capability improvements.

A. Mission Description and Budget Item Justification

MDA's Modeling and Simulation (M&S) program develops system-level models, frameworks, truth, simulations, and operational representations as missile defense technologies continually advance and the threat changes, and evaluates performance of the Elements, Components, and overall Missile Defense System for verification, validation and accreditation purposes. MDA's M&S program provides a cost effective means to assess and examine Missile Defense performance space beyond what can be physically tested under current test range conditions and within the Agency's fiscal constraints. M&S future concept simulation activities provide the capability to design and develop technologies to hedge against future missile threats. MDA's M&S systems and products provide analysis, decision-making, and planning capabilities for Real-World Operations to inform the National Command Authority, Joint Staff, Military Services, NATO, Combatant Commanders (CCMDs), Operational Test Authority (OTAs), Director of Operational Test & Evaluation (DOT&E), and Allies.

The strategy of MDA's M&S Program is 1) to execute a single, integrated, and synchronized program to manage M&S development and sustainment, 2) to improve System Flight and Ground Test execution and provide digital assessment venue, 3) to leverage MDA test activities to collect data to anchor M&S, and 4) to perform Warfighter training and tactics validation. The strategy also incorporates key elements to address DOT&E assessments; Ensure that future M&S architectures are composable and flexible, and simplify the integration process to conserve resources and improve capabilities; Ensure that future M&S architectures incorporate and require the use of consistent truth representations (phenomenology, lethality, environmental factors, threat simulations, etc.); Improve cross-organizational system engineering processes to optimize requirements generation and ensure the inclusion of all stakeholders; Develop refined M&S accreditation criteria between MDA and the OTA; Enable top-down systems engineering and management of agency-wide M&S federations.

MDA's M&S Program consists of system and product planning, development, integration, and operation; threat model development, verification, and analysis; and integration and deployment of MDA's distributed real-time Hardware-in-the-Loop (HWIL) and digital M&S simulation capabilities. Models and simulations are tailored to the specific needs of the Agency's test events and to match MDS components in their various stages of development, ranging from low-to-medium fidelity analyses supporting concept definitions studies, to high-fidelity models used to support engineering level activities. MDA validates and accredits System-level models and simulations by anchoring them to ground and flight test events, per the Integrated Master Test Plan (IMTP), to enable accurate and comprehensive assessments.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2021	FY 2022	FY 2023
Title: M&S Requirements, Design Support, Scenario Optimization	11.005	9.795	8.865
Articles:	-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency			Date: April 2022		
Appropriation/Budget Activity 0400 / 4		R-1 Program Element (Number/Name) PE 0603890C / BMD Enabling Programs	Project (Number/Name) MD31 / Modeling & Simulation		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)			FY 2021	FY 2022	FY 2023
<p>Description: This activity provides the integrated program lifecycle planning and requirements definition of all MDS M&S models and capabilities to enable assessment of capability deliveries. M&S capability development executes an integrated, synchronized program to manage M&S development in support of MDS development, testing, and assessment. The following actions are required on a continuing basis to accomplish the M&S lifecycle planning and requirements definition mission:</p> <ul style="list-style-type: none">- Maintain traceability between the M&S Systems Requirements Documents and M&S product development- Produce capability documents and specifications for M&S product development to enable all Digital assessment, System flight and HWIL tests, training events, exercises, wargames, concept evaluation and development engineering- Support MDA response to export requests for M&S software and technical data to nations or international organizations- Participate in Technical Interchange Meetings and provide support for bilateral agreements with allies and partners- Support system engineering capability trades for all MDS capability deliveries- Provide integrated program lifecycle planning and scheduling of all System-level M&S models and capabilities to enable assessment of capability deliveries for Homeland and Regional Defense- Execute M&S planning, development, framework and test integration; threat model development, verification, and analysis; and integration and deployment of MDA's distributed real-time Hardware-in-the-Loop (HWIL) and digital M&S simulation capabilities- Develop/sustain models and simulations tailored to the specific needs of the Agency's test events; match MDS components in their various stages of development or sustainment as required for the test venue <p>Specific and/or unique accomplishments to each FY are as follows:</p> <p>FY 2022 Plans: - SEE ABOVE.</p> <p>FY 2023 Plans: - SEE ABOVE.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: N/A</p>					
<p>Title: BMDS Simulations & Tools</p> <p>Articles:</p> <p>Description: This activity funds the development and sustainment of digital products and the architecture framework, and delivery/maintenance of infrastructure for Missile Defense performance assessments, Warfighter events, engineering studies/ analyses, and International Simulation events. The following actions are required on a continuing basis: Event Integration/Support Operations:</p>			12.943 -	11.109 -	11.381 -

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency			Date: April 2022		
Appropriation/Budget Activity 0400 / 4		R-1 Program Element (Number/Name) PE 0603890C / BMD Enabling Programs		Project (Number/Name) MD31 / Modeling & Simulation	
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)			FY 2021	FY 2022	FY 2023
<ul style="list-style-type: none"> - Deliver integrated architecture instantiations of the MDS to support Performance Assessments and integration of new capabilities into the Operational Capability Baseline - Integrate, test, and verify the M&S enterprise supporting System-level testing, assessment, exercises, and wargaming, including testing infrastructure - Integrate, test, functionally qualify, and deliver M&S tools and complex test architectures to provide system test capabilities to support MDA IMTP based test events, wargames, and exercises - Maintain simulations for System and Element M&S development laboratories - Conduct integration, testing and system-level verification per the digital System Requirements Document (SRD); operate the testbed to mature the OSF-based digital system simulation - Provide Event Integration Support for non-MDA Missile Defense component and weapon system models for M&S, threat, and Element developmental integration activities - Provide HWIL/M&S benchmarking/integration, documentation and coordination; sustain, integrate and execute ground tests, and Exercises/Wargames - Provide communications emulation (Multicast Tactical Digital Information Link (TADIL-J) (MTJ), Satellite Tactical Digital Information Link (TADIL-J) (STJ), and Link-16) and network analysis support via the Tactical Communications Environment Segment (TCES) for M&S, threat, and Element developmental integration activities - Perform operational planning for planned MDS assessment events - Conduct M&S system integration and verification and conduct developmental integration testing <p>M&S Operations:</p> <ul style="list-style-type: none"> - Provide digital representations of MDS elements/components using MDA's International Simulation (I-SIM) in support of Combatant Command and International Wargames, conceptual planning, visualizations, training/orientation, M&S demonstrations, and the Warfighter's Modification & Fielding Requirements List (MFRL) for exercises and training - Implement I-SIM architecture requirements and emerging capability requirements to adapt to growing distributed event requirements - Sustain the Missile Defense Space Warning Tool (MDST) and related tools to pace fielded Overhead Persistent Infrared (OPIR) Architectures in support of Warfighter training and exercise events, and Element development engineering - Provide software operations/maintenance support to the Extended Air Defense Simulation (EADSIM) code base for use in Warfighter exercises, training venues, and Combatant Command planning tools - Upgrade models and develop new designs or software as required to support System simulations - Provide threat representations (trajectories, radar cross sections, and signatures data) for use in real-world events, simulations, exercises, wargames, and test and evaluation activities across the DoD - Develop products that meet digital and HWIL requirements and allow M&S participation across multiple intended uses <p>Specific and/or unique accomplishments to each FY are as follows:</p>					

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency			Date: April 2022		
Appropriation/Budget Activity 0400 / 4		R-1 Program Element (Number/Name) PE 0603890C / BMD Enabling Programs	Project (Number/Name) MD31 / Modeling & Simulation		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)			FY 2021	FY 2022	FY 2023
FY 2022 Plans: - SEE ABOVE.					
FY 2023 Plans: - SEE ABOVE.					
FY 2022 to FY 2023 Increase/Decrease Statement: N/A					
Title: M&S Objective Simulation Framework (OSF)			11.157	12.882	12.510
Articles:			-	-	-
Description: The following actions are required on a continuing basis to accomplish the OSF mission: - Develop and implement OSF upgrades to incorporate advanced tracking, discrimination, engagement and associated upper tier debris mitigation capabilities, as well as other requirements and capabilities to meet MDA's evolving M&S Enterprise needs - Perform testing and integration of Core Truth Model capabilities into the OSF framework - Sustain and enhance framework and products to maintain capabilities to support stakeholders and to keep pace with the IMTP - Develop plans, procedures and documentation for scheduled events including Wargames and Combatant Command Exercises and the Distributed, Focused and Integrated HWIL Events as presented in the IMTP; provide event architecture integration and checkout of Wargames for these same IMTP scheduled events - Provide the integration expertise to meet the assessment requirements (includes the IMTP); support delivery of integrated architectures across all venues using the System test framework to integrate architectures - Develop, maintain, test, and field model representations for use in IMTP events and other MDA M&S stakeholder application areas; deploy hardware and software updates to distributed sites; perform regular maintenance and critical repairs of hardware and software - Maintain the M&S Integration and Development Laboratories for Element M&S; maintain venue for stakeholders to conduct early M&S integration efforts and identification of issues prior to event architecture integration to support system development - Continue maintenance of SSF in the required venues until the transition to OSF in the venues completes - Develop M&S products to keep pace with evolving requirements in all digital and test venues - Prototype, develop and deliver new OSF capabilities to support agency efforts in the Concept Evaluation and Developmental Engineering Intended Uses					
Specific and/or unique accomplishments to each FY are as follows:					
FY 2022 Plans:					

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency			Date: April 2022		
Appropriation/Budget Activity 0400 / 4		R-1 Program Element (Number/Name) PE 0603890C / BMD Enabling Programs	Project (Number/Name) MD31 / Modeling & Simulation		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)			FY 2021	FY 2022	FY 2023
- SEE ABOVE.					
FY 2023 Plans: - SEE ABOVE.					
FY 2022 to FY 2023 Increase/Decrease Statement: N/A					
Title: M&S Core Truth Modeling			11.207	12.044	12.182
Articles:			-	-	-
Description: The Core Truth Model (CTM) program provides consistent and common Phenomenology, Lethality, Environment, Communications, and Threat models for M&S venues utilized in all digital and Ground Test events and wargaming exercises. The CTM efforts are critical in the assessment of all Missile Defense capability deliveries. The following actions are required on a continuing basis to accomplish the CTM mission: - Implement next generation truth representations for signatures and lethality to address advanced MDS capability needs for tracking, discrimination and engagement - Maintain legacy truth representations (e.g., Parametric Endoatmospheric-Exoatmospheric Lethality Simulation (PEELS), Kinetic Intercept Debris Distribution (KIDD) and Optical Signatures Code/Optical Signature Inline Generator (OSC/OPTISIG)) until fully transitioned - Support integration of all applicable CTM functions into the OSF framework - Provide support for scheduled events including training, exercises, Wargames, and the Distributed, Focused and Integrated HWIL Events as presented in the IMTP - Deliver CTM Toolkit for integrated truth representations across the M&S enterprise - Produce and deliver high quality, credible, and cost-effective Threat Data Products (Integrated Threat Packages (IPTs)) - Deliver updated vehicle characteristics during flight utilizing mature production processes - Deliver infrared (IR) Hardbody and BMDS Overhead Persistent Infrared (OPIR) Architecture (BOA) data production essential to future MDS testing - Provide V&V evidence for radio frequency (RF) and IR Signatures to support accreditation decisions - Maintain an Environments Program that will provide consistent environment models for system and element level simulations - Continue development of Truth Interaction which includes IR and RF propagation; this will provide consistent models and truth to system and element level simulations - Generate CTM Sensitivity analysis to identify the sensitivity within system simulation of Core Truth Models and boundary - Develop and maintain CTM design to support system and element level simulations across the entire M&S portfolio Specific and/or unique accomplishments to each FY are as follows:					
FY 2022 Plans:					

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency			Date: April 2022		
Appropriation/Budget Activity 0400 / 4		R-1 Program Element (Number/Name) PE 0603890C / BMD Enabling Programs	Project (Number/Name) MD31 / Modeling & Simulation		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)			FY 2021	FY 2022	FY 2023
- SEE ABOVE.					
FY 2023 Plans: - SEE ABOVE.					
FY 2022 to FY 2023 Increase/Decrease Statement: N/A					
Title: M&S Improvements			56.717	36.447	27.107
Articles:			-	-	-
Description: This effort funds MDS Enterprise-wide M&S improvements that will enhance digital and ground test capabilities. Investigate improvements to the M&S program to support flight testing. Planned improvements include an experimental, developmental M&S prototype capability necessary to achieve a System-level integrated, high-fidelity end-to-end digital simulation. The prototype effort designs and develops a digital simulation capability that will provide assessment data, supplemental to Ground- and Flight tests, in areas that those venues cannot address. The End-to-end Digital Integrated System-level Simulation (EDISS) will eventually replace the current stand-alone approach to digital predictive pre-mission analysis. MDA is also implementing Ground Test Re-architecture to address accreditation and assessment limitations, increased Hardware-in-the-Loop (HWIL) complexity and reduced available integration times. The Ground Test Integrated System-level Simulation (GTISS) will make truth data consistent, implement standard framework interfaces, and provide common data formats to correct ground test simulation inadequacies in threat uncertainty as well as debris modeling. Specific and/or unique accomplishments to each FY are as follows:					
FY 2022 Plans: - Continue Software Development of EDISS v2-4: -- Continue systems engineering for EDISS v3 -- Complete software development for EDISS v2, including Spiral In-Progress Reviews -- Continue integration and testing for EDISS v2 -- Perform M&S data production in support of Long Range Discrimination Radar (LRDR) assessment - Deploy Phase 2 of GTISS (Ground Test Integrated System-level Simulation) improvements to the MDA Ground Test Architecture: -- Complete requirements development -- Continue software development -- Provide Threat Data Production improvements -- Conduct M&S Integration, Test, and Verification					

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency								Date: April 2022			
Appropriation/Budget Activity 0400 / 4				R-1 Program Element (Number/Name) PE 0603890C / BMD Enabling Programs				Project (Number/Name) MD31 / Modeling & Simulation			
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)								FY 2021	FY 2022	FY 2023	
<div>- Continue Engineering and Development of GTISS Phase 3: -- Continue software development, including in-progress technical reviews -- Integrate and Test GTISS Phase 2 M&S</div> <div>- Perform post-GTISS Phase 3 sustainment planning</div> <div>FY 2023 Plans: - Complete development and delivery of EDISS v3.0, including engineering, integration, and testing - Continue software development of EDISS v4.0: -- Continue systems engineering -- Conduct integration and testing -- Perform M&S data production to support MDS Increment builds</div> <div>- Complete GTISS Phase 2 improvements to the MDA Ground Test Architecture: -- Complete software development -- Provide Threat Data Production improvements -- Complete M&S integration, test and verification, and checkout -- Deliver Phase 2 Improvements to the MDA Ground Test architecture</div> <div>- Continue engineering and development of GTISS Phase 3: -- Continue software development, including in-progress technical reviews -- Conduct, integrate, test and verify, and checkout GTISS Phase 3 M&S</div> <div>FY 2022 to FY 2023 Increase/Decrease Statement: Decrease from FY 2022 to FY 2023 reflects a shift from development of initial EDISS and GTISS capabilities to their employment, and ongoing capability improvements.</div>											
Accomplishments/Planned Programs Subtotals								103.029	82.277	72.045	
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• 0603881C: Ballistic Missile	305.081	213.382	190.216	-	190.216	196.279	213.945	224.146	238.269	Continuing	Continuing
Defense Terminal Defense Segment											

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency	Date: April 2022
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Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603890C / BMD Enabling Programs	Project (Number/Name) MD31 / Modeling & Simulation
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C. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u> <u>Base</u>	<u>FY 2023</u> <u>OCO</u>	<u>FY 2023</u> <u>Total</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• 0603882C: <i>Ballistic Missile Defense Midcourse Defense Segment</i>	1,195.853	724.028	667.524	-	667.524	870.817	802.617	781.973	765.733	Continuing	Continuing
• 0603892C: <i>AEGIS BMD</i>	861.809	639.549	600.072	-	600.072	658.798	574.014	570.018	580.496	Continuing	Continuing

Remarks

D. Acquisition Strategy

The M&S acquisition strategy utilizes full and open competition to develop, acquire and deliver the integrated architectures/frameworks while the Elements, using the same open competition methods, develop and deliver models of their systems. The Digital and HWIL product centers integrate the suite of M&S into a composite simulation capability, all based on an open architecture. M&S achieves this end-state via close collaboration between its integrating contractor teams (Digital and HWIL) and those of the Element prime contractors, with additional technical standards and engineering oversight provided by FFRDCs and UARCs.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603890C / BMD Enabling Programs						Project (Number/Name) MD31 / Modeling & Simulation			
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
M&S Requirements, Design Support, Scenario Optimization - FFRDC & UARC	MIPR	Various : CO, AL	9.792	0.909	Nov 2020	0.618	Nov 2021	0.632	Nov 2022	-		0.632	Continuing	Continuing	Continuing
M&S Requirements, Design Support, Scenario Optimization - Prior Yr Requirements & Scenario Design no longer funded in FYDP	Various	Various : AL	13.032	0.000		0.000		0.000		-		0.000	0.000	13.032	0.000
M&S Requirements, Design Support, Scenario Optimization - Requirements & Design - CSS	C/CPFF	TEAMS : CO, AL	34.403	8.962	Nov 2020	9.177	Nov 2021	8.233	Nov 2022	-		8.233	Continuing	Continuing	Continuing
M&S Requirements, Design Support, Scenario Optimization - Requirements & Design - Industry	Various	Various : Various	0.000	1.134	Jun 2021	0.000		0.000		-		0.000	0.000	1.134	0.000
M&S Requirements, Design Support, Scenario Optimization - Science and Technology Council	Various	Various : VA, AL	0.500	0.000		0.000		0.000		-		0.000	0.000	0.500	0.000
M&S Requirements, Design Support, Scenario Optimization - Threat Modeling	Various	Various : CO, AL	3.544	0.000		0.000		0.000		-		0.000	0.000	3.544	0.000
BMD Simulations & Tools - Digital Framework Development	C/CPAF	Northrop Grumman : CO	34.671	0.000		0.000		0.000		-		0.000	0.000	34.671	0.000
BMD Simulations & Tools - Digital Simulation Development / Support	MIPR	SMDC : AL	5.819	1.750	Nov 2020	1.506	Nov 2021	0.000		-		0.000	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603890C / BMD Enabling Programs				Project (Number/Name) MD31 / Modeling & Simulation					
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
BMDS Simulations & Tools - M&S / Digital Framework Development	C/CPAF	SWDC : CO	8.144	8.659	Nov 2020	9.302	Nov 2021	10.031	Nov 2022	-		10.031	Continuing	Continuing	Continuing
BMDS Simulations & Tools - M&S / Digital Framework Support	Various	MDA : CO, AL	3.427	0.132	Apr 2021	0.000		0.000		-		0.000	0.000	3.559	0.000
BMDS Simulations & Tools - M&S / Digital Framework Support - CSS	C/CPFF	TEAMS : CO	6.494	0.000		0.301	Nov 2021	1.350	Nov 2022	-		1.350	Continuing	Continuing	Continuing
BMDS Simulations & Tools - M&S / Digital Framework Support - Industry	C/CPFF	TBE : AL	1.850	0.000		0.000		0.000		-		0.000	0.000	1.850	0.000
BMDS Simulations & Tools - M&S / Digital Framework Support - OGA	MIPR	CCDC : AL	16.459	0.000		0.000		0.000		-		0.000	0.000	16.459	0.000
BMDS Simulations & Tools - Science & Technology Council	Various	Various : VA, AL	1.000	2.402	Nov 2020	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
M&S Objective Simulation Framework (OSF) - Continuous Integration Requirements Development	Various	Various : CO, AL	1.744	2.034	Nov 2020	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
M&S Objective Simulation Framework (OSF) - M&S HWIL - CSS	C/CPFF	TEAMS / Jacobs : CO, AL	8.334	0.417	Nov 2020	6.874	Nov 2021	6.656	Nov 2022	-		6.656	Continuing	Continuing	Continuing
M&S Objective Simulation Framework (OSF) - M&S HWIL - Industry	C/CPAF	Northrop Grumman : CO	6.540	0.000		0.000		0.000		-		0.000	0.000	6.540	0.000
M&S Objective Simulation Framework (OSF) - M&S HWIL Framework Development and Support	C/CPFF	LOCKHEED MARTIN CORP. : AL, CO	40.975	5.175	Mar 2021	0.000		0.000		-		0.000	0.000	46.150	0.000
M&S Objective Simulation Framework (OSF) - M&S	Various	Various : CO, AL	2.426	3.531	Dec 2020	1.475	Dec 2021	1.721	Dec 2022	-		1.721	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603890C / BMD Enabling Programs				Project (Number/Name) MD31 / Modeling & Simulation					
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
HWIL Simulations / Models - Various															
M&S Objective Simulation Framework (OSF) - M&S HWIL Simulations / Models Development	MIPR	CCDC : AL	28.911	0.000		4.533	Nov 2021	4.133	Nov 2022	-		4.133	Continuing	Continuing	Continuing
M&S Objective Simulation Framework (OSF) - M&S HWIL Support / GT re-architecture	Various	MDA : AL, CO	8.855	0.000		0.000		0.000		-		0.000	0.000	8.855	0.000
M&S Objective Simulation Framework (OSF) - Science & Technology Council	Various	Various : VA, AL	1.000	0.000		0.000		0.000		-		0.000	0.000	1.000	0.000
M&S Core Truth Modeling - M&S Core Truth Modeling - OGA	MIPR	AFRL : CO	4.100	0.000		0.000		0.000		-		0.000	0.000	4.100	0.000
M&S Core Truth Modeling - Core Truth Modeling - Engineering	C/CPAF	PEOPLETEC, INC. : AL	4.282	0.000		5.876	Nov 2021	0.000		-		0.000	Continuing	Continuing	Continuing
M&S Core Truth Modeling - Core Truth Models Validation	Various	MDA : CO, AL	9.655	1.010	Nov 2020	0.700	Nov 2021	0.700	Nov 2022	-		0.700	Continuing	Continuing	Continuing
M&S Core Truth Modeling - M&S Core Truth Modeling	C/CPAF	DECIBEL RESEARCH, INC : AL	0.000	4.479	Nov 2020	0.000		5.844	Nov 2022	-		5.844	Continuing	Continuing	Continuing
M&S Core Truth Modeling - M&S Core Truth Modeling - CSS	C/CPFF	Peopletec : AL, CO	4.497	0.000		0.000		0.000		-		0.000	0.000	4.497	0.000
M&S Core Truth Modeling - M&S Core Truth Modeling - CSS 2	C/CPFF	TEAMS : AL, CO	1.683	0.000		0.000		0.000		-		0.000	0.000	1.683	0.000
M&S Core Truth Modeling - M&S Core Truth Modeling - Lethality/ Phenomenology Modeling	MIPR	CCDC : AL	34.822	0.000		0.000		0.000		-		0.000	0.000	34.822	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency													Date: April 2022		
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603890C / BMD Enabling Programs				Project (Number/Name) MD31 / Modeling & Simulation					
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
M&S Core Truth Modeling - M&S Core Truth Modeling Simulation System	C/CPAF	Northrop Grumman : CO	50.706	0.000		0.000		0.000		-		0.000	0.000	50.706	0.000
M&S Core Truth Modeling - M&S Core Truth Modeling Simulation System 2	C/CPAF	SWDC : CO	5.684	5.718	Nov 2020	5.468	Nov 2021	5.638	Nov 2022	-		5.638	Continuing	Continuing	Continuing
M&S Improvements - Enterprise-wide ground test re-architecture improvements	Various	Various : CO, AL	20.869	19.995	Dec 2020	12.145	Dec 2021	12.284	Dec 2022	-		12.284	Continuing	Continuing	Continuing
M&S Improvements - M&S Improvement - Enterprise-wide digital capability development	Various	Various : CO, AL	55.210	36.722	Nov 2020	24.302	Nov 2021	14.823	Nov 2022	-		14.823	Continuing	Continuing	Continuing
Subtotal			429.428	103.029		82.277		72.045		-		72.045	Continuing	Continuing	N/A
Remarks N/A															
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	N/A
Remarks N/A															

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency													Date: April 2022		
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603890C / BMD Enabling Programs				Project (Number/Name) MD31 / Modeling & Simulation					

Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	N/A

Remarks
N/A

Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	N/A

Remarks
N/A

	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	429.428	103.029	82.277	72.045	-	72.045	Continuing	Continuing	N/A

Remarks
Funding in the All Prior Years column represents a summary of Prior Years Total Costs for active contracts, Military Interdepartmental Purchase Requests, and civilian salaries on the R-3.
Award Dates reflect date of first obligation. Additional obligations may incrementally occur throughout the year.

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Missile Defense Agency										Date: April 2022																			
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0603890C / BMD Enabling Programs					Project (Number/Name) MD31 / Modeling & Simulation																			
Significant Event Complete ▲		Milestone Decision Complete ★		Element Test Complete ◆		System Level Test Complete ●		Complete Activity ◆																					
Significant Event Planned △		Milestone Decision Planned ☆		Element Test Planned ◇		System Level Test Planned ○		Planned Activity ◇																					
					FY 2021		FY 2022			FY 2023			FY 2024			FY 2025			FY 2026			FY 2027							
International Simulation v8.8 - 1Q FY 2021					▲																								
MDST Update - FY 2021					▲																								
Initial GTISS Delivery						▲																							
Release Update to OSF - FY 2021								▲																					
Release Update to OSF - FY 2022									▲																				
International Simulation v8.9 - 1Q FY 2022									▲																				
MDST Update - FY 2022									▲																				
Early Digital Product										△																			
GTISS Update (2022)											△																		
International Simulation v8.10 - 1Q FY 2023												△																	
Release Update to OSF - FY 2023													△																
MDST Update - FY 2023														△															
Deliver EDISS v3.0															△														
Release Update to OSF - FY 2024																△													
International Simulation v8.11 - 1Q FY 2024																	△												
GTISS Update (2024)																		△											
MDST Update - FY 2024																			△										
Deliver EDISS v4.0																				△									
Release Update to OSF - FY 2025																					△								
International Simulation v8.12 - 1Q FY 2025																						△							
MDST Update - FY 2025																							△						
Release Update to OSF - FY 2026																								△					
International Simulation v8.13 - 1Q FY 2026																									△				
MDST Update - FY 2026																										△			

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Missile Defense Agency														Date: April 2022						
Appropriation/Budget Activity						R-1 Program Element (Number/Name)						Project (Number/Name)								
0400 / 4						PE 0603890C / BMD Enabling Programs						MD31 / Modeling & Simulation								
Significant Event Complete ▲		Milestone Decision Complete ★		Element Test Complete ◆		System Level Test Complete ●		Complete Activity ◆												
Significant Event Planned △		Milestone Decision Planned ☆		Element Test Planned ◇		System Level Test Planned ○		Planned Activity ◇												
						FY 2021		FY 2022		FY 2023		FY 2024		FY 2025		FY 2026		FY 2027		
International Simulation v8.14 - 1Q FY 2027																		△		
MDST Update - FY 2027																		△		

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Missile Defense Agency			Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603890C / BMD Enabling Programs	Project (Number/Name) MD31 / Modeling & Simulation	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
International Simulation v8.8 - 1Q FY 2021	1	2021	1	2021
MDST Update - FY 2021	1	2021	1	2021
Initial GTISS Delivery	2	2021	2	2021
Release Update to OSF - FY 2021	4	2021	4	2021
Release Update to OSF - FY 2022	1	2022	1	2022
International Simulation v8.9 - 1Q FY 2022	1	2022	1	2022
MDST Update - FY 2022	1	2022	1	2022
Early Digital Product	2	2022	2	2022
GTISS Update (2022)	4	2022	4	2022
International Simulation v8.10 - 1Q FY 2023	1	2023	1	2023
Release Update to OSF - FY 2023	1	2023	1	2023
MDST Update - FY 2023	1	2023	1	2023
Deliver EDISS v3.0	3	2023	3	2023
Release Update to OSF - FY 2024	1	2024	1	2024
International Simulation v8.11 - 1Q FY 2024	1	2024	1	2024
GTISS Update (2024)	1	2024	1	2024
MDST Update - FY 2024	1	2024	1	2024
Deliver EDISS v4.0	4	2024	4	2024
Release Update to OSF - FY 2025	1	2025	1	2025
International Simulation v8.12 - 1Q FY 2025	1	2025	1	2025
MDST Update - FY 2025	1	2025	1	2025
Release Update to OSF - FY 2026	1	2026	1	2026
International Simulation v8.13 - 1Q FY 2026	1	2026	1	2026

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Missile Defense Agency			Date: April 2022		
Appropriation/Budget Activity 0400 / 4		R-1 Program Element (Number/Name) PE 0603890C / BMD Enabling Programs		Project (Number/Name) MD31 / Modeling & Simulation	
		Start		End	
Events		Quarter	Year	Quarter	Year
MDST Update - FY 2026		1	2026	1	2026
International Simulation v8.14 - 1Q FY 2027		1	2027	1	2027
MDST Update - FY 2027		1	2027	1	2027

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency										Date: April 2022		
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0603890C / BMD Enabling Programs				Project (Number/Name) MC31 / Engineering Cyber Operations			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
MC31: Engineering Cyber Operations	54.144	34.252	41.975	24.978	-	24.978	25.209	26.661	27.193	27.745	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Decrease from FY 2022 to FY 2023 reflects completion of FY 2022 Congressionally-funded cybersecurity engineering improvements, and the transfer of Special Security Office function from MC31, Information Assurance / Cyber Network Defense Accomplishment to MD28, Program Protection Accomplishment.

A. Mission Description and Budget Item Justification

This project provides monitoring and tracking of Cybersecurity mitigations detailed in Information Technology security Plans of Activity and Milestones (POAMs). Activities include preparation of certification and accreditation documentation and accreditation recommendations to the MDA Senior Information Assurance Officer (SIAO)/Certification Authority (CA) and DAA. Independent Verification and Validation team actions ensure the availability, integrity, authentication, confidentiality and non-repudiation of the MDA mission, test and administrative systems. Activities in the Project are necessary to comply with the Federal Information Security Management Act.

This project implements Risk Management Framework (RMF) system engineering principles as specified within DOD 8510.01 to acquire, design, test, implement and field technical solutions throughout the systems architecture to ensure sufficient protections exist from a threat and risk based approach. MDA's goal is to ensure Cybersecurity engineering principles flow into system requirements and design specifications early to provide the most cost benefit and ensure security controls are aligned with the National Institute of Standards and Technology (NIST) 800-53a security controls as applicable to systems categorized as National Security Systems.

This project includes resources to conduct an MDA Insider threat program to identify, deter, and mitigate potential insider threats. This activity is Presidentially and DoD-mandated.

This project also funds MDA Cyber Assistance Teams to assess the security of MDA information on Defense Industrial Base networks.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2021	FY 2022	FY 2023
Title: Information Assurance / Cyber Network Defense	34.252	41.975	24.978
Articles:	-	-	-
Description: This activity includes network defense and Information System Security Manager (ISSM) activities for MDA Engineering. Specific tasks include: - Conduct Cybersecurity/information assurance engineering and architecture planning for Engineering information technology systems - Plan and test the information assurance controls for Engineering systems			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency			Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603890C / BMD Enabling Programs	Project (Number/Name) MC31 / Engineering Cyber Operations	

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023
<ul style="list-style-type: none"> - Implement RMF system engineering principles to ensure sufficient protections exist from a threat and risk based approach - Conduct Controls Validation Testing of systems and provide Plan of Action and Milestones to mitigate information assurance deficiencies - Conduct annual information assurance reviews to assess compliance in implementing and maintaining information assurance controls - Perform cybersecurity upgrades as needed to MDA Engineering systems to be in compliance with DoD mandates - Continue MDA Insider Threat Mitigation Team efforts - Perform engagements with MDA Defense Industrial Base (DIB) partners to detect and increase understanding of cyber threats <p>Specific and/or unique accomplishments to each FY are as follows:</p> <p>FY 2022 Plans:</p> <ul style="list-style-type: none"> - Per FY 2022 Defense Appropriations Act, conduct cyber engineering activities, including: <ul style="list-style-type: none"> -- Plan and execute Cyber tabletop events -- Implement MDS Cybersecurity Resilience Strategy -- Expand User Activity Monitoring -- Implement technology protection improvements to enhance cybersecurity, insider threat, and software assurance posture of the MDS <p>FY 2023 Plans:</p> <ul style="list-style-type: none"> - Execute an effective System-level Supply Chain and Cyber Risk Management (SC2RM) program to prevent unmitigated risks from degrading the performance of components and systems across the supply chain. <p>FY 2022 to FY 2023 Increase/Decrease Statement:</p> <p>Decrease from FY 2022 to FY 2023 reflects completion of FY 2022 cybersecurity engineering improvements, and the transfer of Special Security Office function from MC31, Information Assurance / Cyber Network Defense Accomplishment to MD28, Program Protection Accomplishment.</p>			
Accomplishments/Planned Programs Subtotals	34.252	41.975	24.978

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

<u>Line Item</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u> <u>Base</u>	<u>FY 2023</u> <u>OCO</u>	<u>FY 2023</u> <u>Total</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• 0305103C: Cyber Security Initiative	1.122	1.142	1.165	-	1.165	1.207	1.236	1.262	1.287	Continuing	Continuing

Remarks

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency		Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603890C / <i>BMD Enabling Programs</i>	Project (Number/Name) MC31 / <i>Engineering Cyber Operations</i>
<p><u>D. Acquisition Strategy</u></p> <p>This project leverages expertise in the Engineering, intelligence/counterintelligence, and information assurance communities, including the Military Services, Federally Funded Research and Development Centers (FFRDCs), University Affiliated Research Centers (UARCs), and industry. The executing agents utilize various contracting strategies in a flexible manner to maximize their contribution. Products and Services will be acquired by competitive means to the extent that is beneficial and practical.</p>		

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603890C / BMD Enabling Programs						Project (Number/Name) MC31 / Engineering Cyber Operations			
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	N/A
Remarks N/A															
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Information Assurance / Cyber Network Defense - Cyber Assistance Team Leads	MIPR	MITRE : VA, AL	3.769	2.456	Nov 2020	1.969	Nov 2021	1.600	Nov 2022	-		1.600	Continuing	Continuing	Continuing
Information Assurance / Cyber Network Defense - Cyber Assistance Teams - Contractor Support	C/CPFF	TEAMS : VA, AL	12.028	8.110	Nov 2020	9.559	Nov 2021	6.366	Nov 2022	-		6.366	Continuing	Continuing	Continuing
Information Assurance / Cyber Network Defense - Cyber Assistance Teams - Hardware	Various	Various : VA, AL	2.876	1.323	Nov 2020	1.576	Nov 2021	0.500	Nov 2022	-		0.500	Continuing	Continuing	Continuing
Information Assurance / Cyber Network Defense - Cyber Assistance Teams - Intelligence Reporting	C/CPAF	Deloitte : AL, VA	3.178	1.783	Nov 2020	0.514	Nov 2021	0.000		-		0.000	Continuing	Continuing	Continuing
Information Assurance / Cyber Network Defense - Cyber Assistance Teams - Software/Licenses	C/CPAF	Various : AL, VA	2.401	2.819	Nov 2020	0.000		2.700	Nov 2022	-		2.700	Continuing	Continuing	Continuing
Information Assurance / Cyber Network Defense - Cyber Engineering	C/CPFF	Deloitte : AL, VA	6.198	0.594	Dec 2020	1.071	Dec 2021	0.000		-		0.000	Continuing	Continuing	Continuing
Information Assurance / Cyber Network Defense - Cyber Engineering - CSS	C/CPFF	TEAMS : VA, AL	2.600	2.002	Nov 2020	6.809	Dec 2021	0.275	Dec 2022	-		0.275	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603890C / BMD Enabling Programs						Project (Number/Name) MC31 / Engineering Cyber Operations			
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Information Assurance / Cyber Network Defense - Cyber Engineering - FFRDC/UARC	MIPR	Various : Various	0.000	2.303	Apr 2021	1.179	Apr 2022	0.000		-		0.000	0.000	3.482	0.000
Information Assurance / Cyber Network Defense - Cyber Engineering - VISUM	MIPR	Various : AL	2.960	2.331	Dec 2020	0.000		1.080	Dec 2022	-		1.080	Continuing	Continuing	Continuing
Information Assurance / Cyber Network Defense - Cyber Program Protection	C/CPFF	TEAMS : CO, AL, VA	0.000	0.000		1.285	Nov 2021	0.725	Nov 2022	-		0.725	Continuing	Continuing	Continuing
Information Assurance / Cyber Network Defense - Cyber SW Engineering & Assessment	MIPR	USA CCDC AVIATION AND MISSILE CENTE : AL	0.000	5.210	Feb 2021	2.173	Jun 2022	0.000		-		0.000	0.000	7.383	0.000
Information Assurance / Cyber Network Defense - Cybersecurity - Anti-Tamper	C/CPFF	TBD : AL	0.000	0.000		0.683	Jun 2022	0.000		-		0.000	Continuing	Continuing	Continuing
Information Assurance / Cyber Network Defense - Cybersecurity - Software Risk Assessments	C/TBD	TBD : Various	0.000	0.000		0.537	Jun 2022	0.000		-		0.000	Continuing	Continuing	Continuing
Information Assurance / Cyber Network Defense - Cybersecurity - Systems Engineering	C/CPFF	TBD : Various	0.000	0.000		2.748	Jun 2022	0.000		-		0.000	Continuing	Continuing	Continuing
Information Assurance / Cyber Network Defense - Cybersecurity - User Activity Monitoring	C/CPAF	JACOBS TECHNOLOGY INC. : Various	0.000	0.000		3.200	Jun 2022	0.000		-		0.000	Continuing	Continuing	Continuing
Information Assurance / Cyber Network Defense - Cybersecurity Resiliency Strategy Implementation	C/CPFF	TBD : Various	0.000	0.000		2.457	Jun 2022	0.000		-		0.000	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603890C / BMD Enabling Programs						Project (Number/Name) MC31 / Engineering Cyber Operations			
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Information Assurance / Cyber Network Defense - IT / CND Support	C/CPFF	TEAMS : CO, AL, VA	6.676	1.057	Nov 2020	1.667	Nov 2021	2.790	Nov 2022	-		2.790	Continuing	Continuing	Continuing
Information Assurance / Cyber Network Defense - Insider Threat - Continuous SSO Support	C/CPFF	TEAMS : CO, AL, VA	0.000	0.825	Dec 2020	1.428	Dec 2021	0.000		-		0.000	Continuing	Continuing	Continuing
Information Assurance / Cyber Network Defense - Insider Threat Mitigation Cell	C/CPFF	TEAMS : CO, AL, VA	3.371	0.825	Dec 2020	1.428	Dec 2021	1.050	Dec 2022	-		1.050	Continuing	Continuing	Continuing
Information Assurance / Cyber Network Defense - Insider Threat Mitigation Cell - IT	C/CPAF	Northrop Grumman : CO	3.430	0.612	Dec 2020	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Information Assurance / Cyber Network Defense - Software Assurance	C/CPFF	TEAMS : CO, AL	4.657	2.002	Nov 2020	1.692	Dec 2021	1.726	Dec 2022	-		1.726	Continuing	Continuing	Continuing
Information Assurance / Cyber Network Defense - Supply Chain and Cyber Risk Management (SC2RM)	MIPR	DOD - UNDER SECRETARY OF DEFENSE FOR ACQUISITION AND SUSTAINMENT (OUSD (A&S)) : VA	0.000	0.000		0.000		0.700	Nov 2022	-		0.700	Continuing	Continuing	Continuing
Information Assurance / Cyber Network Defense - Supply Chain and Cyber Risk Management (SC2RM) - Analysis	C/CPFF	TBD : AL	0.000	0.000		0.000		2.250	Dec 2022	-		2.250	Continuing	Continuing	Continuing
Information Assurance / Cyber Network Defense - Supply Chain and Cyber Risk Management (SC2RM) - Data Analytics / Mission Assurance	C/CPFF	TBD : AL	0.000	0.000		0.000		2.566	Dec 2022	-		2.566	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity						R-1 Program Element (Number/Name)				Project (Number/Name)					
0400 / 4						PE 0603890C / BMD Enabling Programs				MC31 / Engineering Cyber Operations					
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Information Assurance / Cyber Network Defense - Supply Chain and Cyber Risk Management (SC2RM) - FFRDC	FFRDC	THE MITRE CORPORATION : AL	0.000	0.000		0.000		0.650	Nov 2022	-		0.650	Continuing	Continuing	Continuing
Subtotal			54.144	34.252		41.975		24.978		-		24.978	Continuing	Continuing	N/A
Remarks															
N/A															
			Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			54.144	34.252		41.975		24.978		-		24.978	Continuing	Continuing	N/A
Remarks															
Award Dates reflect date of first obligation. Additional obligations may incrementally occur throughout the year.															

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Missile Defense Agency														Date: April 2022																							
Appropriation/Budget Activity 0400 / 4										R-1 Program Element (Number/Name) PE 0603890C / BMD Enabling Programs										Project (Number/Name) MC31 / Engineering Cyber Operations																	
Significant Event Complete ▲ Significant Event Planned △					Milestone Decision Complete ★ Milestone Decision Planned ☆					Element Test Complete ◆ Element Test Planned ◇					System Level Test Complete ● System Level Test Planned ○					Complete Activity ◆ Planned Activity ◇																	
										FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
Engineering Cyber Operations										◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Missile Defense Agency		Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603890C / BMD Enabling Programs	Project (Number/Name) MC31 / Engineering Cyber Operations

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Engineering Cyber Operations	1	2021	4	2027

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency										Date: April 2022		
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0603890C / BMD Enabling Programs				Project (Number/Name) MD32 / Quality, Safety, and Mission Assurance			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
MD32: Quality, Safety, and Mission Assurance	324.320	29.926	29.527	30.737	-	30.737	31.767	32.494	33.120	33.782	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

N/A

A. Mission Description and Budget Item Justification

Quality, Safety, and Mission Assurance ensures that the Missile Defense System (MDS) and all of its elements are designed, tested and operated in a reliable, safe, and effective manner.

Quality and Mission Assurance: Responsible for ensuring the reliable and effective design, test and operation of the MDS and all of its elements. Develops and ensures implementation of quality and mission assurance requirements. Mitigates quality and mission assurance risks to the lowest practical level. Provides in-plant MDA Assurance Representatives (MARs) at MDA government and contractor facilities to provide quality and mission assurance oversight of contractor manufacturing and integration. Performs Quality and Mission Assurance Assessments to ensure contractual requirements, internal requirements, and industry best practices are implemented at prime contractor and lower tier suppliers. Reviews and approves all new and modified parts, materials and critical processes for MDS elements.

Safety: Responsible for ensuring the safe design, test and operation of the MDS and all of its elements. Develops and ensures implementation of safety requirements. Mitigates safety risks to the lowest practical level. Ensures a safe workplace for all MDA employees and contractors by implementing a Safety program. MDS Safety Officers provide on-site support at the Missile Defense Integration and Operations Center (MDIOC) 24 hours a day, 7 days a week, 365 days a year to ensure operational safety of the MDS.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2021	FY 2022	FY 2023
Title: Quality, Safety & Mission Assurance	29.926	29.527	30.737
Articles:	-	-	-
Description: Quality, Safety, and Mission Assurance ensures that the Missile Defense System and all of its elements are designed, tested and operated in a reliable, safe, and effective manner. Specific and/or unique accomplishments to each FY are as follows:			
FY 2022 Plans: -SEE ABOVE.			
FY 2023 Plans:			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency		Date: April 2022	
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603890C / BMD Enabling Programs	Project (Number/Name) MD32 / Quality, Safety, and Mission Assurance	
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2021	FY 2022
-SEE ABOVE.			
FY 2022 to FY 2023 Increase/Decrease Statement: N/A			
Accomplishments/Planned Programs Subtotals		29.926	29.527
C. Other Program Funding Summary (\$ in Millions) N/A			
Remarks			
D. Acquisition Strategy The Quality, Safety and Mission Assurance program is a collaboration between subject matter expertise in the Government, Federally Funded Research and Development Centers (FFRDC), University Affiliated Research Centers (UARC), Contract Support Services (CSS), and Industry.			

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603890C / BMD Enabling Programs						Project (Number/Name) MD32 / Quality, Safety, and Mission Assurance			
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	N/A
Remarks N/A															
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Quality, Safety & Mission Assurance - Audits & Quality On-site Support	MIPR	NSWC Corona : AL, CA	30.726	2.152	Nov 2020	3.084	Nov 2021	3.146	Nov 2022	-		3.146	Continuing	Continuing	Continuing
Quality, Safety & Mission Assurance - In-Plant Quality Support (MARS)	C/CPFF	Various Multi : AL, AK, AZ, CA, CO, FL, HI, NJ, MA, MO, MD, UT	18.138	0.000		0.000		0.000		-		0.000	0.000	18.138	0.000
Quality, Safety & Mission Assurance - Independent Readiness Review Team	C/CPFF	AI Solutions : AL	5.994	0.000		0.000		0.000		-		0.000	0.000	5.994	0.000
Quality, Safety & Mission Assurance - MDS Quality Support	C/CPFF	AI Solutions : AL	12.137	0.000		0.000		0.000		-		0.000	0.000	12.137	0.000
Quality, Safety & Mission Assurance - MDS Safety	C/CPFF	APT, INC : AL	13.116	0.000		0.000		0.000		-		0.000	0.000	13.116	0.000
Quality, Safety & Mission Assurance - MDS Safety Officers	MIPR	CCDC : AL	4.706	0.000		0.000		0.000		-		0.000	0.000	4.706	0.000
Quality, Safety & Mission Assurance - Management and Operations Support	MIPR	CCDC : AL	3.488	0.549	Nov 2020	0.468	Nov 2021	0.776	Nov 2022	-		0.776	Continuing	Continuing	Continuing
Quality, Safety & Mission Assurance - Mission	C/CPFF	APT, INC. : AL	9.083	0.000		0.000		0.000		-		0.000	0.000	9.083	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603890C / BMD Enabling Programs						Project (Number/Name) MD32 / Quality, Safety, and Mission Assurance			
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Assurance Subject Matter Experts															
Quality, Safety & Mission Assurance - Operations Support	MIPR	Various Multi : AL, CA	5.859	0.000		0.000		0.000		-		0.000	0.000	5.859	0.000
Quality, Safety & Mission Assurance - Parts, Materials and Processes (PMP) Program	MIPR	Various Multi : AL, CA, DC, IN	19.744	1.225	Nov 2020	1.626	Nov 2021	2.419	Nov 2022	-		2.419	Continuing	Continuing	Continuing
Quality, Safety & Mission Assurance - Parts, Materials and Processes - PMP - Program	C/CPFF	AI Solutions : AL	10.083	0.000		0.000		0.000		-		0.000	0.000	10.083	0.000
Quality, Safety & Mission Assurance - Pedigree & Design Certification - FFRDC	MIPR	Aerospace : AL, CA	32.058	1.767	Nov 2020	2.986	Nov 2021	3.165	Nov 2022	-		3.165	Continuing	Continuing	Continuing
Quality, Safety & Mission Assurance - Quality and Mission Assurance Support	C/CPFF	AI Solutions : AL, AK, AZ, CA, CO, FL, HI, NJ, MA, MO, MD, UT	11.121	7.990	Nov 2020	6.400	Nov 2021	6.321	Nov 2022	-		6.321	Continuing	Continuing	Continuing
Quality, Safety & Mission Assurance - Safety Support	C/CPFF	ARES CORPORATION : AL, VA	3.234	1.315	Jan 2021	0.922	Jan 2022	0.766	Jan 2023	-		0.766	Continuing	Continuing	Continuing
Quality, Safety & Mission Assurance - Technical Support for Next Generation Interceptor (NGI) Program	MIPR	DOD - DEFENSE MICROELECTRONICS ACTIVITY (DMEA) : CA	0.000	0.000		0.165	Jun 2022	0.000		-		0.000	Continuing	Continuing	Continuing
Subtotal			179.487	14.998		15.651		16.593		-		16.593	Continuing	Continuing	N/A
Remarks N/A															

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603890C / BMD Enabling Programs						Project (Number/Name) MD32 / Quality, Safety, and Mission Assurance			
Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	N/A
Remarks N/A															
Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Quality, Safety & Mission Assurance - Quality, Safety & Mission Assurance HQ & Core Management (MDA CIV)	Allot	MDA QS : AL, VA, MD, CA, AZ, HI, AK, MA, NJ, FL, AR, UT	111.684	14.078	Oct 2020	13.083	Oct 2021	13.607	Oct 2022	-		13.607	Continuing	Continuing	Continuing
Quality, Safety & Mission Assurance - Quality, Safety & Mission Assurance Operations Support	C/CPFF	Network Mgmt Resources Yorktown : AL and VA	14.277	0.596	Dec 2020	0.392	Nov 2021	0.132	Nov 2022	-		0.132	Continuing	Continuing	Continuing
Quality, Safety & Mission Assurance - Quality, Safety & Mission Assurance Operations Support (Travel/PCS)	Allot	MDA QS : AL, CO, AK, DC, VA	18.872	0.254	Oct 2020	0.401	Oct 2021	0.405	Oct 2022	-		0.405	Continuing	Continuing	Continuing
Subtotal			144.833	14.928		13.876		14.144		-		14.144	Continuing	Continuing	N/A
Remarks N/A															
			Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			324.320	29.926		29.527		30.737		-		30.737	Continuing	Continuing	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency							Date: April 2022			
Appropriation/Budget Activity 0400 / 4			R-1 Program Element (Number/Name) PE 0603890C / BMD Enabling Programs			Project (Number/Name) MD32 / Quality, Safety, and Mission Assurance				
	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract	
Remarks Funding in the All Prior Years column represents a summary of Prior Years Total Costs for active contracts, Military Interdepartmental Purchase Requests, and civilian salaries on the R-3. Award Date reflects date of first obligation. Additional obligations may incrementally occur throughout the year.										

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Missile Defense Agency															Date: April 2022														
Appropriation/Budget Activity 0400 / 4										R-1 Program Element (Number/Name) PE 0603890C / BMD Enabling Programs										Project (Number/Name) MD32 / Quality, Safety, and Mission Assurance									
Significant Event Complete ▲ Significant Event Planned △					Milestone Decision Complete ★ Milestone Decision Planned ☆					Element Test Complete ◆ Element Test Planned ◇					System Level Test Complete ● System Level Test Planned ○					Complete Activity ◆ Planned Activity ◇									
										FY 2021		FY 2022		FY 2023		FY 2024		FY 2025		FY 2026		FY 2027							
MD32 Quality, Safety, and Mission Assurance										◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇					

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Missile Defense Agency			Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603890C / BMD Enabling Programs	Project (Number/Name) MD32 / Quality, Safety, and Mission Assurance	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
MD32 Quality, Safety, and Mission Assurance	1	2021	4	2027

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency										Date: April 2022		
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0603890C / BMD Enabling Programs				Project (Number/Name) MD40 / Program-Wide Support			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
MD40: Program-Wide Support	207.897	27.224	23.102	21.491	-	21.491	21.593	21.219	23.763	24.183	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Program Wide Support (PWS) is allocated on a pro-rata basis across multiple Agency PEs each fiscal year based on the total Agency budget, and therefore fluctuates per PE by fiscal year.

A. Mission Description and Budget Item Justification

PWS contains non-headquarters management costs in support of MDA functions and activities across the entire MDS. These functions include Government Civilians and Contract Support Services. This effort provides integrity and oversight of the MDS as well as supports MDA in the development and evaluation of technologies that will respond to the changing threat. Additionally, PWS includes personnel to support global deployments performing deployment site preparation and activation, and provides facility capabilities for MDA Executing Agent locations worldwide. Other MDA wide costs include: physical and technical security; civilian drug testing; audit readiness; the Science, Technology, Engineering, and Mathematics (STEM) program; legal services and settlements; travel and agency training; office, equipment, vehicle, and warehouse leases; utilities and base operations across multiple geographic locations; commercial and ancillary facility services; management of all facility aspects regardless of lifecycle stage; supplies and maintenance; compliance with statutory environmental requirements; data and unified communications support; materiel and readiness and central property management of equipment; Facilities Sustainment, Restoration and Modernization (FSRM) program, (formerly Real Property Maintenance) to keep the Department's inventory of facilities in good working order; and similar operating expenses. PWS is allocated on a pro-rata basis across most Agency PEs and therefore fluctuates per PE by fiscal year based on the total Agency budget in that fiscal year.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2021	FY 2022	FY 2023
Title: Program Wide Support	27.224	23.102	21.491
Articles:	-	-	-
Description: PWS contains non-headquarters management costs in support of MDA functions and activities across the entire MDS. These functions include Government Civilians and Contract Support Services. This effort provides integrity and oversight of the MDS as well as supports MDA in the development and evaluation of technologies that will respond to the changing threat. Additionally, PWS includes personnel to support global deployments performing deployment site preparation and activation, and provides facility capabilities for MDA Executing Agent locations worldwide. Other MDA wide costs include: physical and technical security; civilian drug testing; audit readiness; the Science, Technology, Engineering, and Mathematics (STEM) program; legal services and settlements; travel and agency training; office, equipment, vehicle, and warehouse leases; utilities and base operations across multiple geographic locations; commercial and ancillary facility services; management of all facility aspects regardless of lifecycle stage; supplies and maintenance; compliance with statutory environmental requirements; data and unified communications support; materiel and readiness and central property management of equipment; Facilities Sustainment, Restoration and Modernization (FSRM) program, (formerly Real Property Maintenance) to keep the Department's inventory of			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency		Date: April 2022	
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603890C / BMD Enabling Programs	Project (Number/Name) MD40 / Program-Wide Support	
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2021	FY 2022
facilities in good working order; and similar operating expenses. PWS is allocated on a pro-rata basis across most Agency PEs and therefore fluctuates per PE by fiscal year based on the total Agency budget in that fiscal year. FY 2022 Plans: - SEE ABOVE. FY 2023 Plans: - SEE ABOVE. FY 2022 to FY 2023 Increase/Decrease Statement: N/A			
Accomplishments/Planned Programs Subtotals		27.224	23.102
C. Other Program Funding Summary (\$ in Millions)			
N/A			
Remarks			
D. Acquisition Strategy			
N/A			

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603890C / BMD Enabling Programs				Project (Number/Name) MD40 / Program-Wide Support					
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Wide Support - Agency Facilities and Maintenance	MIPR	Various Multi : AL, CO, CA, VA	27.831	5.023	Dec 2020	0.000		0.063	Nov 2022	-		0.063	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations Management	Various	Various : Multi: AL, CA, CO, VA	6.512	0.000		0.000		0.000		-		0.000	0.000	6.512	0.000
Program Wide Support - Agency Operations and Support Civilian Salaries, Travel, Training	Various	MDA : AK, AL, CA, CO, VA	48.193	16.550	Oct 2020	17.624	Oct 2021	17.849	Oct 2022	-		17.849	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations and Support Other Agency Services	MIPR	Various : Multi: AK, AL, CO, CA, HI, MD, VA, NJ, NY, OCONUS	5.442	3.077	Nov 2020	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations and Support Services	C/Various	Various : Multi: AK, AL, CO, CA, HI, MD, VA	112.565	2.574	Dec 2020	5.427	Dec 2021	3.579	Nov 2022	-		3.579	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations, Sustainment and GPC	C/CPFF	Various Multi : AK, AL, CA, HI, NY, VA	0.000	0.000		0.018	Nov 2021	0.000		-		0.000	Continuing	Continuing	Continuing
Program Wide Support - Facilities and Maintenance SRM	MIPR	Various : Multi: AL, CA, AL, AK	1.752	0.000		0.033	May 2022	0.000		-		0.000	Continuing	Continuing	Continuing
Program Wide Support - Prior year no longer funded in the FYDP	Various	Various : Various	5.602	0.000		0.000		0.000		-		0.000	0.000	5.602	0.000
Subtotal			207.897	27.224		23.102		21.491		-		21.491	Continuing	Continuing	N/A
Remarks N/A															
			Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			207.897	27.224		23.102		21.491		-		21.491	Continuing	Continuing	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency							Date: April 2022			
Appropriation/Budget Activity 0400 / 4				R-1 Program Element (Number/Name) PE 0603890C / BMD Enabling Programs		Project (Number/Name) MD40 / Program-Wide Support				
	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract	
Remarks Award Date reflects date of first obligation. Additional obligations may incrementally occur throughout the year.										

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Missile Defense Agency														Date: April 2022																							
Appropriation/Budget Activity 0400 / 4										R-1 Program Element (Number/Name) PE 0603890C / BMD Enabling Programs										Project (Number/Name) MD40 / Program-Wide Support																	
Significant Event Complete ▲					Milestone Decision Complete ★					Element Test Complete ◆					System Level Test Complete ●					Complete Activity ◆																	
Significant Event Planned △					Milestone Decision Planned ☆					Element Test Planned ◇					System Level Test Planned ○					Planned Activity ◇																	
										FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
MD40 Program-Wide Support										◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Missile Defense Agency			Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603890C / BMD Enabling Programs	Project (Number/Name) MD40 / Program-Wide Support	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
MD40 Program-Wide Support	1	2021	4	2027

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Missile Defense Agency	Date: April 2022
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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 0603891C / <i>Special Programs - MDA</i>
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COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
Total Program Element	3,049.219	380.204	413.374	316.977	-	316.977	276.846	281.065	286.880	292.589	Continuing	Continuing
MD27: <i>Special Programs</i>	3,049.219	380.204	413.374	316.977	-	316.977	276.846	281.065	286.880	292.589	Continuing	Continuing

Program MDAP/MAIS Code: 362

Note

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.

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.

B. Program Change Summary (\$ in Millions)	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023 Base</u>	<u>FY 2023 OCO</u>	<u>FY 2023 Total</u>
Previous President's Budget	390.216	413.374	0.000	-	0.000
Current President's Budget	380.204	413.374	316.977	-	316.977
Total Adjustments	-10.012	0.000	316.977	-	316.977
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	-10.012	0.000			
• Missile Defeat and Defense Enhancement	0.000	0.000	0.000	-	0.000
• Other Adjustment	0.000	0.000	316.977	-	316.977

Change Summary Explanation

Further details are reported in accordance with Title 10, United States Code, Section 119(a)(1) in the Special Access Program Annual Report to Congress.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Missile Defense Agency **Date:** April 2022

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 0603892C / <i>AEGIS BMD</i>
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COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
Total Program Element	4,957.099	861.809	639.549	600.072	-	600.072	658.798	574.014	570.018	580.496	Continuing	Continuing
MD09: <i>Aegis BMD</i>	3,319.686	360.367	344.490	344.239	-	344.239	405.239	333.068	302.775	295.098	Continuing	Continuing
MM09: <i>Aegis BMD SM-3 Development</i>	545.580	303.832	124.708	86.633	-	86.633	66.010	48.265	70.835	85.089	Continuing	Continuing
MC09: <i>Cyber Operations</i>	37.404	8.544	3.750	4.431	-	4.431	4.682	4.882	4.842	4.938	Continuing	Continuing
MX09: <i>Aegis BMD Development Support</i>	678.923	158.251	136.506	142.980	-	142.980	160.210	165.334	169.313	172.442	Continuing	Continuing
MD40: <i>Program-Wide Support</i>	375.506	30.815	30.095	21.789	-	21.789	22.657	22.465	22.253	22.929	Continuing	Continuing

Program MDAP/MAIS Code: 362

Note

Decrease from FY 2022 to FY 2023 reflects the elimination of the Layered Homeland Defense program; A change in Ballistic Missile Defense (BMD) 6.x focus to continue major development functionality, testing and certification; Reduction of development activities for Standard Missile (SM)-3 (SM-3) Block IIA Enhanced Aegis Data Link and SM-3 Block IB Threat Upgrade (TU)/Technology Refresh (TR); Completion of Guidance Electronics Unit (GEU) Engineering Change Proposal (ECP) and Software Upgrade (SWUP) Build 8 efforts and transition of SWUP Build 8 into the production line.

A. Mission Description and Budget Item Justification

The Sea-Based Weapon Systems mission is to deliver an enduring, operationally effective and supportable BMD capability to defend the nation, deployed forces, friends and allies, and to increase this capability by delivering evolutionary improvements as part of Missile Defense System (MDS) upgrades. The Sea-Based Weapon Systems element of the MDS capitalizes upon and evolves from the existing United States Navy Aegis Weapons System (AWS) and SM infrastructures. Sea-Based Weapon Systems provides a forward-deployable, mobile capability to detect and track Ballistic Missiles of all ranges, and the ability to destroy Short-Range Ballistic Missiles (SRBMs), Medium-Range Ballistic Missiles (MRBMs), and Intermediate-Range Ballistic Missiles (IRBMs) in the midcourse phase of flight, and shorter range missiles in the terminal phase of flight. Sea-Based Weapon Systems also provides a Long Range Surveillance and Track (LRS&T) capability to the MDS. Upgrades to both the Aegis BMD Weapon System and the SM-3 configuration enable Sea-Based Weapon Systems to provide effective, supportable defensive capability against longer range, threats and an enduring Aegis Ashore defensive capability.

This Program Element includes MDS threat discrimination improvements, which will enhance MDS effectiveness against the evolving adversary threat. The result will be a MDS architecture more capable of discriminating and destroying reentry vehicles with a higher degree of confidence, improving Warfighter shot doctrine, and more efficiently using interceptor inventory. MDS threat discrimination improvements are funded from the Enabling (0603890C), Midcourse (0603882C), BMD Sensors (0603884C), Command and Control, Battle Management, and Communications (C2BMC)(0603896C), and Aegis BMD (0603892C) PEs.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Missile Defense Agency				Date: April 2022	
Appropriation/Budget Activity		R-1 Program Element (Number/Name)			
0400: Research, Development, Test & Evaluation, Defense-Wide / BA 4: Advanced Component Development & Prototypes (ACD&P)		PE 0603892C / AEGIS BMD			
B. Program Change Summary (\$ in Millions)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Previous President's Budget	877.336	732.512	0.000	-	0.000
Current President's Budget	861.809	639.549	600.072	-	600.072
Total Adjustments	-15.527	-92.963	600.072	-	600.072
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	-98.963			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	6.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	-15.527	0.000			
• Missile Defeat and Defense Enhancement	0.000	0.000	0.000	-	0.000
• Other Adjustment	0.000	0.000	600.072	-	600.072
Change Summary Explanation					
Decrease of \$98.9 million in FY 2022 reflects the Congressional reduction of Layered Homeland Defense lack of validated requirement and acquisition strategy.					
Increase of \$6 million in FY 2022 provides Congressional add for Lightweight Telescope for Advanced Aegis Interceptor.					
FY 2023 funding increase reflects the fact that the FY 2022 President's Budget request did not include out-year funding.					

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency										Date: April 2022		
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0603892C / AEGIS BMD				Project (Number/Name) MD09 / Aegis BMD			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
MD09: Aegis BMD	3,319.686	360.367	344.490	344.239	-	344.239	405.239	333.068	302.775	295.098	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Decrease from FY 2022 to FY 2023 reflects the following:

- Reduction of the Layered Homeland Defense program.
- Shift in Ballistic Missile Defense (BMD) 6.x focus to continue major development functionality, testing and certification.
- Reduction of development activities for Standard Missile (SM)-3 Block IIA Enhanced Aegis Data Link.

A. Mission Description and Budget Item Justification

Sea-Based Weapon Systems continues development of a Sea-Based BMD capability in support of the Missile Defense Agency's (MDA's) mission to protect the homeland, deployed forces, friends and allies from ballistic missile threats of all ranges and in all stages of flight.

Systems Engineering & Integration performs requirements development, engineering analysis, capability integration, and performance verification for Aegis BMD development and Missile Defense System (MDS) integration.

Aegis BMD Technology Design and Insertion enables cross-baseline specification management and capability assessments to ensure consistent application of technical standards, processes, and procedures across the Aegis BMD program. Aegis BMD specific efforts include: systems engineering and architecture (process and execution); modeling and simulation (M&S); Verification and Validation (V&V) test and evaluation support; ship integration; quality; safety and mission assurance M&S. V&V efforts in this accomplishment are performed at the Aegis BMD element level, which feed into the overall MDS system level.

Aegis Baseline (BL) 5.4.1 (BMD 4.2) is a joint effort with the U.S. Navy that refurbishes existing ship AN/SPY-1 radar arrays with the installation of antenna Low Noise Amplifiers (LNAs). It builds upon the recently certified Aegis BL 5.4.0 (BMD 4.1.2) program, which is a single Aegis Weapon System that merges BMD 4.1 and Aegis BL 5.3 computer programs within the current BMD 4.x weapon systems architecture. Additional capabilities provide Anti-Air Warfare (AAW) improvements, SM-6 Dual I Extended Range AAW/Anti-Surface Warfare (ASUW), interoperability improvements, and updated BMD threat adaptation data. BMD 4.2 will provide updates to the Flight I/II Destroyers (DDG's) with increased capability to maintain relevance through End of Service Life (50% Navy BMD Capability). Capabilities delivered include discrimination improvements, expanded threat set, increased stand-off range, expanded ship operating area, Sea Based Terminal INC II (via Ballistic Missile Defense Computing Suite, Computing Suite upgrade (BMDCS CS)), Space Domain Awareness, Diminishing Manufacturing Sources and Material Shortages (DMSMS) - Mission Planner Consoles, power supply etc.) as well as war fighter requested improvements. BMD 4.2 Capabilities developed under BL 5.4.1 lay the foundation for Aegis BL 9 improvements.

Aegis BL 9 (BMD 5.1.4 and BMD 5.1.5) software spirals align with U.S. Navy Aegis Baseline 9 Capability Packages 2022 and 2024, respectively. The software spirals provide enhanced detection, track, report, and defeat capabilities of additional medium, intermediate, and long range threats with increasingly complex engagement scenes and increased raid sizes. Through a series of unique Capability Insertion Packages, BMD 5.X capability spirals provides continuous software updates to

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency		Date: April 2022		
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603892C / AEGIS BMD	Project (Number/Name) MD09 / Aegis BMD		
the original BMD 5.1.0 architecture to incorporate emerging MDS capabilities, War fighter improvements, SM-3 software updates, and improved Weapon System performance necessary to pace the threat. Includes support for AN/SPY-1 RADAR sensitivity, improvements, technology maturation, and prototyping that will demonstrate enhanced Missile Defense tracking performance against longer range and more sophisticated threats in challenging and complex environments.				
Aegis BL 10 (BMD 6.0) incorporates the solid state Air and Missile Defense Radar (AMDR), now designated AN/SPY-6(v)1, for introduction on the first Flight III DDG. Aegis BL 10 (BMD 6.0) will provide deployed assets enhanced IAMD capability, while enabling MDS element utilization of SPY-6 data for remote engagement. Enhancements include significant improvements in IAMD planning, search, track, discrimination and force level (multi-asset) raid defense. Aegis BL 10 (BMD 6.0) will enable U.S. Navy ships to maintain greater stand-off range while increasing performance against complex threats.				
This Program Element also provides the development of the Aegis Weapon System Software configuration for land based Defense of Guam, including the capabilities of the Sea Based Terminal Defense Increment 3 capability for defense against advanced ballistic and hypersonic threats and integration of the Land Based Radar configuration.				
Aegis Layered Homeland Defense includes Aegis Weapon System and SM-3 Block IIA software modifications to existing systems to support a phased delivery of operational capability against expanded threat/mission space.				
M&S Objective Simulation Framework (OSF) effort develops, maintains and deploys the framework hardware and software for use at element laboratories and Combatant Command (CCMD) locations to support Integrated Master Test Plan (IMTP) events, MDS capability delivery assessments, War fighter training, exercises, and wargames.				
M&S MDS Simulations & Tools effort provides development and sustainment of digital products and the architecture framework, and delivery/maintenance of infrastructure for MDS performance assessments.				
MDS System Assessment and VV&A includes activities to support MDS Operational Capability Baseline (OCB) delivery decisions and Technical Capability Declarations (TCDs), and anchor System M&S.				
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2021	FY 2022	FY 2023
Title: Systems Engineering & Integration		18.308	19.721	19.818
Articles:		-	-	-
Description: Perform requirements development, engineering analysis, capability integration, and performance verification for Aegis BMD development and MDS integration, including Aegis BMD compliance with the MDS Specification and MDS Description Document.				
Recurring Accomplishments:				
- Conduct system level performance analyses to support ongoing MDS Architecture and Systems Engineering efforts				

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency			Date: April 2022		
Appropriation/Budget Activity 0400 / 4		R-1 Program Element (Number/Name) PE 0603892C / AEGIS BMD		Project (Number/Name) MD09 / Aegis BMD	
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)			FY 2021	FY 2022	FY 2023
<ul style="list-style-type: none"> - Perform top-down system level engineering analysis, capability integration, and performance verification for Aegis BMD development and MDS integration, including Aegis BMD compliance with the MDS System Specification and MDS System Description Document - Identify architecture alternatives that improve the MDS System's performance and are complementary to and interoperable with NATO systems and theaters around the world - Define MDS technical content expectations and develop system requirements, to include integration of new capabilities - Develop functional performance, interface, and design suitability requirements in collaboration with Aegis BMD engineers to ensure correct flow-down and allocation of MDS System-level requirements to Aegis BMD - Respond to Warfighter, Combatant Command and other requests for analyses and requests for information; provide analytical support for real-world events - Conduct non-advocate assessments of MDS capabilities and limitations prior to capability delivery decisions to determine fielding readiness (including Theater/Regional BMD) - Conduct extensive analysis of data collected in MDS test events to evaluate MDS System operations and performance <p>Specific and/or unique accomplishments to each FY are as follows:</p> <p>FY 2022 Plans:</p> <ul style="list-style-type: none"> - SEE ABOVE. <p>FY 2023 Plans:</p> <ul style="list-style-type: none"> - SEE ABOVE. <p>FY 2022 to FY 2023 Increase/Decrease Statement:</p> <p>N/A</p>					
<p>Title: Aegis Ballistic Missile Defense (BMD) Technology Design and Insertion</p> <p align="right">Articles:</p> <p>Description: Aegis BMD Core System Engineering enables cross-baseline specification management and capability assessments to ensure consistent application of technical standards, processes, and procedures across the Aegis BMD program. Aegis BMD specific efforts include: systems engineering and architecture (process and execution), M&S, V&V, test and evaluation support, and ship integration. M&S V&V efforts in this accomplishment are performed at the Aegis BMD element level, which feed into the overall MDS system level.</p> <p>Recurring Accomplishments:</p> <ul style="list-style-type: none"> - Conduct U.S. Navy and Joint Link certifications required for Baseline certifications for operational deployment - Support Ground Test Campaign for MDS to achieve OCB declaration - Execute V&V activities and provide results to MDA System Verification Team and the Operational Test Agency (OTA) in support of System-level accreditation for BMDS events 			53.989 -	52.290 -	49.774 -

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency		Date: April 2022	
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603892C / <i>AEGIS BMD</i>	Project (Number/Name) MD09 / <i>Aegis BMD</i>	
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2021	FY 2022
<ul style="list-style-type: none"> - Provide M&S Requirements Management and Development - Conduct further development of Aegis BMD System Architecture and overarching system concepts - Conduct MDS system level requirements allocation and Aegis BMD system requirements development, trace, validation and verification, and configuration management for coordination with all participating external agencies and organizations - Perform Command, Control, Computer, Communications and Intelligence (C4I) systems engineering to further develop Aegis BMD requirements, and to identify and resolve MDS interoperability issues - Define and coordinate development and implementation of C4I capabilities in U.S. Navy C4I programs of record to meet Aegis BMD requirements - Conduct Threat Engineering analysis and Requirements Assessment - Conduct Systems Engineering for Aegis BMD system-level M&S development and interfaces to the MDS architecture - Provide verified, validated, accredited models in support of U.S. Navy certification, MDA characterization of system-level performance, OTA assessment of operational capabilities, and representation of Aegis BMD capabilities in MDS test and exercise venues - Provide target engineering, test planning activities, and IMTP process/inputs for Aegis BMD - Conduct Performance Assessment and Verification (PAV) processes which assess the sufficiency of Objective Quality Evidence (OQE) to provide a traceable evidence to verify Element Specification (ES) requirements traced to MDS requirements - Provide oversight of all Aegis BMD analysis in support of systems assessment and verification supporting test and analysis requirements and test planning inputs to align with MDA and U.S. Navy test programs - Provide consolidated analysis and reporting for firing events <p>Specific and/or unique accomplishments to each FY are as follows:</p> <p>FY 2022 Plans:</p> <ul style="list-style-type: none"> - Implement Interface Change Proposals (ICPs) into Command and Control Processor (C2P) - Perform Independent Verification and Validation (IV&V) of ICPs into C2P - Implementation of ICPs supporting Army Integrated Battle Command System (IBCS) and C2BMC integration - Execute Aegis BMD feasibility analysis in support of MDS future architecture strategies and War fighter needs - Transition feasible weapon system improvements into Baseline development efforts - Continue to transition mature Regional Sensor Advanced Discrimination solutions and M&S into Baseline development efforts - Execute analysis and concept exploration to meet the MDS discrimination needs and objectives - Execute a System Requirements Review (SRR) for BMD 6.0.1. BMD 6.0.1 is planned to update the BMD 6.0 to meet Ballistic Missile Defense System Support (BMDSS) requirements beyond Increment 8 - Complete verification analysis and Objective Quality Evidence for OCB report out of Aegis BMD 5.1.4 - Execute a System Requirements Review (SRR) for BMD 5.2.1. BMD 5.2.1 is an update to BMD 5.2 to meet MDS System Specification requirements through Increment 9. 			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency			Date: April 2022		
Appropriation/Budget Activity 0400 / 4		R-1 Program Element (Number/Name) PE 0603892C / AEGIS BMD		Project (Number/Name) MD09 / Aegis BMD	
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)			FY 2021	FY 2022	FY 2023
<ul style="list-style-type: none"> - Execute threat analysis to define Aegis BMD Element Specifications (ES) requirements to support MDS System Specification Defended Area (DA) and Integrated Engagement Plan (IEP) requirements. Task addresses existing MDS System Specification performance widows. - Execute threat analysis to support MDS Increment 9 and 10 advanced threats beyond current Aegis BMD threat space. - Expand automated test and verification capabilities, to include automated performance verification and SM-3 test and verification - Complete Final VV&A, test and Accreditation for EDISS Increment 2 - Complete element design, development, requirements and system functional analysis, and system integration, test and VV&A for EDISS Increment 3 - Begin Requirements, element design, development, integration and System functional analysis for EDISS Increment 4 - Continue to Integrate and test GTISS Phase 2 M&S - Deploy Phase 2 of GTISS improvements to the MDA Ground Test Architecture to address MDS OTA identified issues - Provide engineering and software development of GTISS Phase 3, including in-progress technical reviews - Conduct design and engineering activities for an advanced telescope assembly with an evaluation of the capabilities for an SM-3 Blk IIA application <p>FY 2023 Plans:</p> <ul style="list-style-type: none"> - Continue providing residual capability analysis of deployed Aegis Ballistic Missile Defense Systems and SM-3 versus threats not covered in design requirements, specifically to improve response time to Combatant Command (COCOM) and Fleet requests for analysis - Integrate and improve threat data development tools with Prime contractor M&S - Maintain and expand dedicated analysis work force to support large-scale global analysis case matrix execution - Expand infrastructure to support large data library of performance analysis for read access upon request by COCOM and the Fleet while maximizing use of tactical code - Develop and deploy Artificial Intelligence/Machine Learning (AI/ML) tools in a swarm learning environment to manage M&S input parameters and post-processing of large data sets - Continue Combat System Test Bed (CSTB) IAMD capability integration for M&S planning and VV&A of SM-3 Block IIA, SM-3 Block IB and SM-6 missile models using Aegis BMD 5.x performance assessment as risk reduction for Aegis BMD 6.x efforts - Fabricate and test the advanced telescope assembly and compare with SM-3 baseline program capabilities to inform the program on capability roadmap improvements against advanced threats. <p>FY 2022 to FY 2023 Increase/Decrease Statement: N/A</p>					
Title: Aegis BMD 4.x Development			84.937	56.713	29.699
Articles:			-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency			Date: April 2022		
Appropriation/Budget Activity 0400 / 4		R-1 Program Element (Number/Name) PE 0603892C / AEGIS BMD		Project (Number/Name) MD09 / Aegis BMD	
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)			FY 2021	FY 2022	FY 2023
<p>Description: Aegis Baseline 5.4.0 (BMD 4.1.2) incorporates the BMD 5.0 Capability Upgrade (CU) of European Phased Adaptive Approach (EPAA) Phase II ENDO/EXO requirements including EPAA Phase II Exo-atmospheric threats, integration of the SM-3 Block IB TU, and reintroduction of other Aegis capabilities integrated with the SM-6 Dual I (Endo only). It provides Aegis Modernization capabilities comparable to the BMD 4.0 ships with legacy computer processing architecture. Aegis Baseline 5.4.1 (BMD 4.2) baseline development takes advantage of refurbished and upgraded AN/SPY-1 radar arrays with LNAs by increasing BMD capabilities with improved radar sensitivity, discrimination, threat upgrades, and more efficient radar resource utilization.</p> <p>Recurring Accomplishments:</p> <ul style="list-style-type: none"> - Update Critical Item Development (CIDS), Interface Description Specifications (IDS) and all supporting engineering documents and plans - Conduct design studies and concepts supporting development and integration - Conduct Aegis BMD performance analysis supporting In-Process Reviews (IPR) - Participate in program leadership and technical forums including Program Management Team, System Engineering Team, and Cross Product Teams for Integration and Test, M&S, Test, Evaluation & Certification, and Fleet Integration and Design - Provide Weapon System updates to include MIL-SPEC UYK-43, Commercial Off-The-Shelf (COTS) BMD Signal Processor, and COTS adjunct processor updates - MDA/Navy co-funded effort to provide BMD capability on Flight I/II DDGs <p>Specific and/or unique accomplishments to each FY are as follows:</p> <p>FY 2022 Plans: For Aegis Baseline 5.4.1 (BMD 4.2):</p> <ul style="list-style-type: none"> - Complete computer program integration efforts, capability development and coding; unit test and element computer program integration and test; and Engineering Test and Evaluation (ET&E), and Multi-Element Integration and Test (MEIT) with regression testing to support: - In-Process Review (IPR) #5 - AEGIS BL 5.4.1 Engineering Evaluation (EE) - AEGIS BL 5.4.1 (BMD 4.2) Engineering Assessment (EA) - Continue increased threat sensitivity runs in MEDUSA to account for new additional threats - Complete the incorporation of new baseline requirements as a result of an FY 2020 SRR - Conduct prototype install on first ship to finalize Ship Change Notice development in support of future ship installs in preparation of At-Sea testing and tracking event - Conduct testing on first ship to test LNAs in a shipboard environment <p>FY 2023 Plans: For Aegis Baseline 5.4.1 (BMD 4.2) with LNA:</p>					

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency		Date: April 2022	
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603892C / AEGIS BMD	Project (Number/Name) MD09 / Aegis BMD	
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2021	FY 2022
<ul style="list-style-type: none"> - Begin system Integration Testing at Surface Combat System Center, Wallops Island - Continue prototype Install on first ship to finalize Ship Change Notice development in support of future ship installs in preparation of At-Sea testing and tracking event - Develop final baseline updates , Engineering Test and Evaluation (ET&E), and Multi-Element Integration and Test (MEIT) with regression testing to support: - AEGIS BL 5.4.1 Engineering Evaluation (EE) - AEGIS BL 5.4.1 (BMD 4.2) Engineering Assessment (EA) - Continue increased threat sensitivity runs in MEDUSA to account for new additional threats - Complete the incorporation of new baseline requirements as a result of an FY 2020 SRR <p>FY 2022 to FY 2023 Increase/Decrease Statement: Decrease from FY2022 to FY2023 reflects transition from baseline development efforts to test ship installation and At-Sea testing in support of baseline certification.</p>			
<p>Title: Aegis BMD 5.x Development</p> <p align="right">Articles:</p> <p>Description: In alignment with U.S. Navy Aegis Baseline 9 Capability Packages (CP)(2022 and 2024), Aegis BMD 5.X will develop a series of unique Capability Insertion Packages (CIP) and AN/SPY-1 RADAR sensitivity technology maturation and prototyping that expand detection, track, report, and defeat capabilities of emerging threat systems with increasingly complex engagement scenes and raid sizes. Aegis BMD capability packages are focused towards Aegis Baseline 9 DDGs and Aegis Ashore Missile Defense Systems (AAMDS). Annual capability upgrades are necessary to pace the evolving threat, improve system reliability, and incorporate technological growth. Specific and/or unique accomplishments to each FY are as follows:</p> <p>FY 2022 Plans: Deliver Aegis BMD 5.1.4 (Aligned with Navy Aegis Baseline 9 Capability Package 2022): CIP Includes:</p> <ul style="list-style-type: none"> - Expanded Aegis BMD Threat Space: Provides integration of additional threats to the Aegis weapon system (aligns with SM-3 Block IIA Build 8.0/8.1 software updates and threat set) - Hypersonic TDL Upgrades: Incorporates two (2) TDL Interface Change Proposals (ICP) in support of BMDS Hypersonic track and reporting requirements - Electronic Attack/Electronic Protection (EA/EP) Increment 1: Provides initial weapon system improvements for operations in complex EA environments - MPAN Increment 2: Builds upon Increment 1 (BMD 5.1.3) by providing parallel processing and multi-cycle reprogramming, which decreases software update cycle times for the SM3 Block IIA missile 		50.024 -	46.165 -
		78.247 -	

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency		Date: April 2022	
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603892C / AEGIS BMD	Project (Number/Name) MD09 / Aegis BMD	
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2021	FY 2022
<ul style="list-style-type: none"> - Aegis Ashore TI-12 Hybrid (TI-12H) Integration: Provides weapon system updates and integration of TI-12H architecture in Aegis Ashore Missile Defense Systems - Doppler Data Collection System: Provides capability to collect Doppler data on RADAR tracks - 5th Fleet Urgent Operational Need (UON): Incorporate additional threat systems in support of 5th Fleet UON <p>Continue Aegis BMD 5.1.5 (Aligned with Navy Aegis Baseline 9 2023): CIP Includes:</p> <ul style="list-style-type: none"> - Expanded Hypersonic Track and Report (Increment 2): Continues development and delivery of Hypersonic tracking and reporting with MDS performance requirements - Expanded Aegis BMD Threat Space: Provides integration of additional threats to the Aegis weapon system (aligns with SM-3 Block IIA Build 8.2/8.3 software updates and threat set) - Aegis BMD Warfighter Improvements: Incorporates/Integrates Warfighter feedback through enhancements to existing functionality - Enhanced Aegis Data Link: Provides interface update between SPY-1 RADAR and SM3 missile - Aegis Remote Engagement (ARE): Integrates interface updates with the MDS to use additional remote data sources for Aegis BMD engagements <p>Continue Aegis BMD 5.1.6 (Aligned with Navy Aegis Baseline 9 2024): CIP Includes:</p> <ul style="list-style-type: none"> - Full Active Sensor Bias (Increment 2): Provides updates to improve radar tracking performance and report tracking bias to the MDS - Increased Boost Phase Communications (9-State Plus): Provides additional position, velocity, and acceleration track covariance over the TDL for boosting track in support of the GMD mission - Expanded Aegis BMD Threat Space: Provides integration of additional threats to the Aegis weapon system (aligns with SM-3 Block IIA Build 9.0 software updates and threat set) - Aegis BMD Warfighter Improvements: Incorporates/Integrates Warfighter feedback through enhancements to existing functionality <p>FY 2023 Plans: Continues Aegis BMD 5.1.5 (Aligned with Navy Aegis Baseline 9 2024): CIP Includes:</p> <ul style="list-style-type: none"> - Expanded Hypersonic Track and Report (Increment 2): Continues development and delivery of Hypersonic tracking and reporting with MDS performance requirements - Expanded Aegis BMD Threat Space: Provides integration of additional threats to the Aegis weapon system (aligns with SM-3 Block IIA Build 8.2/8.3 software updates and threat set) 			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency			Date: April 2022		
Appropriation/Budget Activity 0400 / 4		R-1 Program Element (Number/Name) PE 0603892C / AEGIS BMD	Project (Number/Name) MD09 / Aegis BMD		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)			FY 2021	FY 2022	FY 2023
<p>- Aegis BMD Warfighter Improvements: Incorporates/Integrates Warfighter feedback through enhancements to existing functionality</p> <p>AN/SPY-1 RADAR sensitivity improvement technology maturation and prototyping of Digital Low Noise Amplifier (dLNA):</p> <p>- Demonstrate improved tracking performance, resource utilization, and performance against longer range and more sophisticated threats through implementation of digital receive technologies</p> <p>Support includes:</p> <p>- Maturation of critical RADAR technologies necessary to digitize receive chain of in-service AN/SPY-1 RADAR</p> <p>- Procure prototype hardware and assemble prototype array</p> <p>- Develop RADAR calibration techniques</p> <p>- Assess System performance against existing and emerging threat systems</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement:</p> <p>Increase from FY 2022 to FY 2023 provides for technology maturation and prototyping support for AN/SPY-1 RADAR sensitivity improvement.</p>					
<p>Title: Aegis BMD 6.x Development</p> <p>Articles:</p> <p>Description: The U.S. Navy is developing the Advance Capability Build (ACB) 20 Combat System (CS) and the AMDR, now designated SPY-6(V)1, for introduction on the first DDG Flight III. Aegis BMD 6.0 and Aegis 6.0.1 will integrate Aegis BMD 5.1 capability with the ACB 20 Combat System, to include new SPY-6 requirements. Aegis BMD 6.0 and 6.0.1 exploit SPY-6 radar improvement to enhance Engagement and Search and Track capabilities to include discrimination, raid defense and expanded threat space. This will enable MDS element utilization of AN/SPY-6(V)1 data for remote engagements and will supplement deployed assets with simultaneous multi-mission capabilities (e.g. IAMD). AMDR will support a force-level (multi-asset) approach to raid defense and will enable U.S. Navy ships to have a greater stand-off range from threat environments.</p> <p>Recurring Accomplishments:</p> <p>- CIDS, IDS and all supporting engineering documents and plans</p> <p>- Conduct design studies and concepts supporting development and integration</p> <p>- Conduct Aegis BMD performance analysis supporting In-Process Reviews(IPR)</p> <p>- Participate in program leadership and technical forums including Program Management Team, System Engineering Team, and Cross Product Teams for Integration and Test, M&S, Test, Evaluation & Certification, and Fleet Integration and Design</p> <p>- Develop computer program for Aegis BMD 6.0 supporting Software Increment Reviews (SWIR)</p> <p>- MDA/Navy co-funded effort to provide BMD capability on Flight III DDGs</p> <p>- Expanded BMD Tracking and reporting updates</p> <p>Specific and/or unique accomplishments to each FY are as follows:</p>			80.858 -	84.443 -	59.954 -

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency			Date: April 2022		
Appropriation/Budget Activity 0400 / 4		R-1 Program Element (Number/Name) PE 0603892C / AEGIS BMD	Project (Number/Name) MD09 / Aegis BMD		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)			FY 2021	FY 2022	FY 2023
<p>FY 2022 Plans:</p> <ul style="list-style-type: none">- Continue Aegis BMD 6.0 concurrent engineering across Mission Planner (Polygon Defended Area/Launch Area/Weapons Doctrine & Real-Time Plan Response), IAMD/BMD Search & Track, Engagement Scheduling, Engagement Capacity, Raid and Dual Tier/Remote Engagement areas- Continue SPY-6 integration efforts, capability development, and performance analysis with focus shifted to on-ship/at-sea- Continue Aegis BMD 6.0 design, code, test and performance analysis across the BMD Mission area with focus shifted to on-ship/at-sea- Conduct EA against BMD 6.0 capabilities- Perform on-ship Aegis Light Off (ALO) and begin Sea Trials <p>FY 2023 Plans:</p> <ul style="list-style-type: none">- Continue Aegis BMD 6.0 software development (Aligned with AEGIS baseline 10.0) <p>Capabilities include:</p> <ul style="list-style-type: none">- Improved Mission Planner - Provides an Integrated Air and Missile Defense mission planner with increased accuracy, and engagement control functionality- Increased Organic Engagement Capacity - Provides increased ship operating areas by utilizing the increased radar performance of AN/SPY-6(V)1- Kill Assessment Improvements - Provides improved analysis of intercept to better determine whether the intercept was successful- Increased IAMD Raid Performance - Exploits functionality of AN/SPY-6(V)1 to improve raid performance- BMD Coordinator Submode - Warfighter improvement consolidating all BMD related display functionality under a single submode- Increased IAMD performance with Sea Based Terminal Increment 2 Capability Upgrade- Continue AN/SPY-6(V)1 integration efforts, capability development, and performance analysis with focus shifted to on-ship/at-sea- Continue Aegis BMD 6.0 design, code, test and performance analysis across the BMD Mission area with focus shifted to on-ship/at-sea- Commence baseline certification preparation and mission readiness assessment- Support ship sailaway from building yard, arrival at homeport, and preparation for the start of test and evaluation activities. <ul style="list-style-type: none">- Commence Aegis BMD 6.0.1 software development (Aligned with AEGIS baseline 10.1) <p>Capabilities include:</p> <ul style="list-style-type: none">- BMD Engagement Control - Limit the number of simultaneous BMD engagements and weapons expended- Mobile Platform Planning - Off-ship IAMD plan development and on-ship mission plan import/export					

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency		Date: April 2022	
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603892C / AEGIS BMD	Project (Number/Name) MD09 / Aegis BMD	
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2021	FY 2022
- Raid Evaluator - Capability to evaluate against raid and display predicted raid performance for a mission plan solution			
FY 2022 to FY 2023 Increase/Decrease Statement: Decrease from FY 2022 to FY 2023 reflects a shift in BMD 6.x focus to continue major development functionality, testing and certification.			
Title: Aegis Layered Homeland Defense Development		12.022	0.000
Articles:		-	-
Description: AWS and SM-3 Block IIA software modifications to existing systems to support a phased delivery of operational capability. The planned phased updates will build on the proven residual capability demonstrated in FTM-44 in CY 2020. The second phase of planned capability will increase system performance against moderate threats for Aegis BMD to provide an initial under layer capability to GMD in support of Homeland Defense. The third phase of planned capability will expanded threat/mission space and increase system performance against more complex threats to provide a robust under layer capability to GMD in support of Homeland Defense. In addition to increasing the performance capability of Aegis BMD, assess deployment options to include both transportable and persistent approaches.			
FY 2022 Plans:			
<ul style="list-style-type: none"> - Refine system level requirements and facilitate system development to expanded threat/mission space and increase system performance against moderate threats - Conduct System Requirements Review - Execute design and implementation of Weapon System and Standard Missile (SM-3 Block IIA) software upgrades in support of the phased delivery of operational capability against expanded threat/mission space and increase system performance against moderate threats to provide an initial under layer capability to GMD in support of Homeland Defense - Refine concepts for alternate SM-3 deployment methods to achieve both transportable and persistent deployment in support of Global Regional Defense Operations and Layered Homeland Defense, excluding any activities to increase system performance against moderate threats - Refine transportable deployment concept and execute design modifications to the following components: C2 component with Virtualized Aegis Weapon System (VAWS), Launcher component capable of firing SM-3 Block IIA and an Interceptor Communications component with antenna for in-flight uplink/downlink between VAWS and SM-3 Block IIA - Execute integration activities (e.g., communication antenna systems) required to meet planned demonstration objectives and resolve integration challenges of components - Continue to refine test plan for demonstration of transportable deployment concept - Conduct analysis addressing MDS Layered Homeland Defense Mid-term (FY2025-FY2029) Capability Evolution goals to include integrated battle management concepts and feasibility analysis for Aegis BMD system level performance 			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency			Date: April 2022		
Appropriation/Budget Activity 0400 / 4		R-1 Program Element (Number/Name) PE 0603892C / AEGIS BMD	Project (Number/Name) MD09 / Aegis BMD		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)			FY 2021	FY 2022	FY 2023
<div>- Conduct evaluation of enabling software and hardware technologies for both the AWS and the SM-3 in support of a future operational capability against expanded threat/mission space and increase system performance against more complex threats</div> <div>FY 2023 Plans: No funding is requested for Layered Homeland Defense in FY 2023 and the out-years.</div> <div>FY 2022 to FY 2023 Increase/Decrease Statement: Decrease from FY 2022 to FY 2023 reflects reduction of the Layered Homeland Defense program.</div>					
<div>Title: Modeling & Simulation Objective Simulation Framework</div> <div>Articles:</div> <div>Description: This effort develops, maintains and deploys the framework hardware and software for use at element laboratories and CCMD locations to support IMTP events, MDS capability delivery assessments, Warfighter training, exercises, and Wargames. Recurring Accomplishments: - Develop and implement OSF upgrades to incorporate advanced tracking, discrimination, engagement and associated upper tier debris mitigation capabilities, as well as other requirements and capabilities to meet MDA's evolving M&S Enterprise needs - Sustain and enhance framework products to maintain capabilities to support stakeholders - Develop plans, procedures and documentation for scheduled events including Wargames and Combatant Command Exercises and the Distributed, Focused and Integrated hardware in the loop (HWIL) Events as presented in the IMTP. Provide event architecture integration and checkout of Wargames for these same IMTP scheduled events - Provide the ground test architecture integration expertise to meet the testing requirements of the IMTP. Support delivery of integrated architectures for test across all test venues using the MDS test framework to integrate distributed architectures in support of MDS - Develop, maintain, test, field, and operate model representations for use in events and other MDA M&S stakeholder application areas. Deploy hardware and software updates to distributed sites. Perform regular maintenance and critical repairs of hardware and software. - Control and maintain the M&S Integration and Development Laboratories for Element M&S. Maintain venue for stakeholders to conduct early integration efforts and identification of issues prior to event architecture integration to support system development. - Maintain System-level M&S framework Specific and/or unique accomplishments to each FY are as follows:</div> <div>FY 2022 Plans: - SEE ABOVE.</div> <div>FY 2023 Plans:</div>			31.465 -	33.366 -	34.326 -

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency		Date: April 2022		
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603892C / AEGIS BMD	Project (Number/Name) MD09 / Aegis BMD		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2021	FY 2022	FY 2023
- SEE ABOVE.				
FY 2022 to FY 2023 Increase/Decrease Statement: N/A				
Title: M&S BMDS Simulations &Tools Articles: Description: This effort includes: development and sustainment of digital products and the architecture framework, and delivery/ maintenance of infrastructure for MDS performance assessments. Recurring Accomplishments: - Integrate, test, and verify the M&S enterprise supporting MDS testing, assessment, exercises, and wargaming, including testing infrastructure. Guide and facilitate integration testing of MDA's M&S frameworks and core truth models, and all M&S components into virtual representations of the MDS that are credible, affordable, and provide decision makers with the data needed - Integrate, test, functionally qualify, and deliver M&S tools and complex test architectures to provide system test capabilities to support MDA IMTP based test events, wargames, and exercises - Continue the transition of real-time digital simulation capability to the OSF to support Intended Uses - Provide HWIL/M&S Benchmarking/Integration documentation and coordination - Conduct M&S system integration and verification to support M&S system architecture development. Provide developmental integration testing to support M&S system architecture integration Specific and/or unique accomplishments to each FY are as follows: FY 2022 Plans: - SEE ABOVE. FY 2023 Plans: - SEE ABOVE. FY 2022 to FY 2023 Increase/Decrease Statement: N/A		4.343 -	4.455 -	4.383 -
Title: BMDS Verification, Validation & Assessment (VV&A) Articles: Description: This activity includes MDS System Assessment and VV&A activities to support MDS OCB delivery decisions, and anchor System modeling and simulation. Recurring Accomplishments: - Verify MDS performance, and produce MDS verification status reports		20.596 -	19.912 -	20.781 -

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency			Date: April 2022		
Appropriation/Budget Activity 0400 / 4		R-1 Program Element (Number/Name) PE 0603892C / AEGIS BMD		Project (Number/Name) MD09 / Aegis BMD	
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)			FY 2021	FY 2022	FY 2023
<ul style="list-style-type: none"> - Conduct extensive analysis of data collected in MDS ground and flight test events, instrumental to understanding MDS System operations and performance and anchoring models and simulations - Identify mitigation approaches for MDS performance issues uncovered during system level analysis and assessment - Maintain M&S VV&A database, and verification data for MDS System Specification Change Notices - Develop, maintain, and update the M&S VV&A tool kit - Provide recommendations for improving assessment confidence, including M&S and testing issue resolutions - Conduct V&V in support of MDA MDS System level accreditation process in support of MDS Ground Test and performance assessment events - Conduct specified MDS System post-flight reconstructions, element post-flight reconstructions, and pre-mission testing events so as to optimize the body of evidence and analysis supporting system-level MDS accreditation. <p>Specific and/or unique accomplishments to each FY are as follows:</p> <p>FY 2022 Plans: - SEE ABOVE.</p> <p>FY 2023 Plans: - SEE ABOVE.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: N/A</p>					
<p>Title: RF Link Improvements</p> <p align="right">Articles:</p> <p>Description: Design, develop, and deliver Radio Frequency (RF) Link Security Improvements that implement advance communications between Aegis BMD Weapon System and SM-3 Block IB and IIA missile variants. Product development and implementation will enable missile hardware enhancements in order to achieve the full requisite Missile RF Link Security Improvements. Priority will be on the BL 9 and SM-3 BLK IIA followed by BL 9/10 and SM-3 BLK IB.</p> <p>FY 2022 Plans: All efforts for this accomplishment have transitioned from Budget Project, MC09 Cyber Operations</p> <ul style="list-style-type: none"> - Begin software development and hardware prototype efforts to include initial integration testing - Conduct analysis and design trades to define encryption scheme for the weapon system, including backwards compatibility with missiles without RF Link Security upgrades 			3.825 -	27.425 -	2.257 -

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency			Date: April 2022		
Appropriation/Budget Activity 0400 / 4		R-1 Program Element (Number/Name) PE 0603892C / AEGIS BMD	Project (Number/Name) MD09 / Aegis BMD		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)			FY 2021	FY 2022	FY 2023
<p>- Update Aegis BMD Weapon System requirements and interface specifications to incorporate changes between the weapon system and missile message link</p> <p>FY 2023 Plans:</p> <p>- Complete final integration and test of RF Link updates between the Aegis BL 9 Weapon System (BMD 5.1.5) and the SM-3 Block IIA Missile</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement:</p> <p>Decrease from FY 2022 to FY 2023 reflects the completion of development activities for SM-3 Block IIA Enhanced Aegis Data Link.</p>					
<p>Title: Guam Defense Aegis Fire Control Software Upgrades</p> <p>Articles:</p> <p>Description: This accomplishment provides the development of the Aegis Weapon System Software configuration for land based Defense of Guam (DoG) including the capabilities of the Sea Based Terminal Defense Increment 3 capability for defense against advanced ballistic and hypersonic threats and integration of the Land Based SPY-7 Radar configuration.</p> <p>FY 2022 Plans:</p> <p>N/A</p> <p>FY 2023 Plans:</p> <p>-Define DoG Architecture and develop requirements to support a distributed Aegis network (remote radars, remote launchers)</p> <p>-Conduct platform engineering studies and hardware/software prototyping required for a relocatable array</p> <p>-Develop new weapon system specifications for relocatable array and distributed weapon system/launchers</p> <p>-Conduct element level, as well as Multi-Element level integration testing</p> <p>-Develop Aegis compliance threat space and conduct early performance analysis to optimize Aegis system performance</p> <p>-Design and code new electronic protection techniques that take advantage of solid state radar technologies</p> <p>-Develop Aegis system requirements compliant with MDS requirements and conduct a system requirements review</p> <p>-Begin design and development of new radar adaptation data, fire control calculation changes to support remote launchers, encrypted communication methods between Aegis Combat System components, and modular Guam Defense System Operations Center components.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement:</p> <p>Increase from FY 2022 to FY 2023 initiates the Aegis-specific Department of Defense architecture solution for DoG.</p>			0.000 -	0.000 -	45.000 -
Accomplishments/Planned Programs Subtotals			360.367	344.490	344.239

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency										Date: April 2022	
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0603892C / AEGIS BMD			Project (Number/Name) MD09 / Aegis BMD			

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

<u>Line Item</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u> <u>Base</u>	<u>FY 2023</u> <u>OCO</u>	<u>FY 2023</u> <u>Total</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• 0208866C: MD09: Aegis BMD O&M	79.913	68.293	69.071	-	69.071	70.303	75.240	87.513	91.726	Continuing	Continuing
• 0208866C: MD09: Aegis BMD Procurement	353.896	334.621	402.235	-	402.235	378.685	362.834	496.857	506.794	Continuing	Continuing
• 0208866C: MD73: Aegis Ashore Procurement	34.629	25.866	30.056	-	30.056	2.390	0.976	0.000	0.000	0.000	93.917
• 0208866C: MD90: Aegis Hardware and Software Procurement	104.241	81.791	78.181	-	78.181	115.776	116.026	61.748	32.695	Continuing	Continuing
• 0604878C: Aegis BMD Test	71.481	111.206	182.776	-	182.776	173.492	159.125	203.851	187.494	Continuing	Continuing
• 0604880C: Land Based SM-3 (LBSM3)	52.804	43.158	27.678	-	27.678	26.896	26.021	26.842	27.385	Continuing	Continuing

Remarks

D. Acquisition Strategy

The Sea-Based Weapon Systems element acquisition approach supports evolutionary development, continuously building upon demonstrated capabilities to advance overall BMDS capability. After considering all the technical and management aspects of the program and to meet the requirements presented by an evolving ballistic missile threat, the Sea-Based Weapon Systems program awarded sole source contracts to Raytheon and Lockheed Martin to continue development of the SM-3 and the Aegis BMD Weapon System, respectively.

The M&S acquisition strategy utilizes full and open competition to develop, acquire and deliver the integrated architectures/frameworks, as well as develop and deliver models of Aegis systems. The Digital and HWIL product centers integrate the suite of M&S into a composite simulation capability, all based on an open architecture. M&S achieves this end-state via close collaboration between its integrating contractor teams (Digital and HWIL) and those of the Aegis BMD prime contractors, with additional technical standards and engineering oversight provided by Federally Funded Research and Development Centers (FFRDCs) and University Affiliated Research Centers (UARC).

The Layered Homeland Defense acquisition strategy leverages existing Sea-Based Weapon System program awarded sole source contracts with Raytheon and Lockheed Martin to continue development of the SM-3 and the Aegis BMD Weapon Systems. Acquisition requirements for the transportable deployment option will also use existing contracts within Sea-Based Weapon Systems or within the partner element on the project. Additional information can be provided at the appropriate classification level.

The acquisition strategy for Guam Defense consists of contract actions to industry, and agreements with DoD organizations and FFRDCs to develop, demonstrate, and field a MDS on Guam.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603892C / AEGIS BMD				Project (Number/Name) MD09 / Aegis BMD					
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Systems Engineering & Integration - Systems Engineering - Architecture TEAMS	C/CPFF	Various : Various	0.000	5.242	Nov 2020	0.000		3.307	Nov 2022	-		3.307	Continuing	Continuing	Continuing
Systems Engineering & Integration - Systems Engineering	Allot	MDA Various : VA, AL	68.983	1.603	Nov 2020	0.936	Nov 2021	0.880	Nov 2022	-		0.880	Continuing	Continuing	Continuing
Systems Engineering & Integration - Systems Engineering - CSS	C/CPFF	TEAMS : VA	26.864	0.000		5.485	Nov 2021	2.359	Nov 2022	-		2.359	Continuing	Continuing	Continuing
Systems Engineering & Integration - Systems Engineering - Industry	C/CPAF	Boeing : VA	88.877	11.463	Nov 2020	13.300	Nov 2021	13.272	Nov 2022	-		13.272	Continuing	Continuing	Continuing
Aegis Ballistic Missile Defense (BMD) Technology Design and Insertion - MD09 - ABY Telescope	SS/TBD	Various : TBD	0.000	0.000		6.000	Jun 2022	0.000		-		0.000	0.000	6.000	0.000
Aegis Ballistic Missile Defense (BMD) Technology Design and Insertion - MD09 - TD APL	SS/CPAF	JHU/APL : Columbia, MD	47.110	6.933	Nov 2020	6.660	Nov 2021	9.764	Nov 2022	-		9.764	Continuing	Continuing	Continuing
Aegis Ballistic Missile Defense (BMD) Technology Design and Insertion - MD09 - TD LM	C/CPFF	Lockheed Martin : Moorestown, NJ	38.829	7.641	Nov 2020	7.730	Nov 2021	12.851	Nov 2022	-		12.851	Continuing	Continuing	Continuing
Aegis Ballistic Missile Defense (BMD) Technology Design and Insertion - MD09 - TD MIT	MIPR	Hanscom AFB - MIT/LL : Lexington, MA	25.660	3.351	Nov 2020	3.651	Nov 2021	4.830	Nov 2022	-		4.830	Continuing	Continuing	Continuing
Aegis Ballistic Missile Defense (BMD) Technology Design and Insertion - MD09 - TD MITRE	MIPR	CECOM - MITRE : Dahlgren, VA	4.061	0.562	Nov 2020	0.474	Nov 2021	0.481	Nov 2022	-		0.481	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603892C / AEGIS BMD				Project (Number/Name) MD09 / Aegis BMD					
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Aegis Ballistic Missile Defense (BMD) Technology Design and Insertion - MD09 - TD NSWCCD	MIPR	NSWC DD : Dahlgren, VA	44.180	11.541	Nov 2020	8.354	Nov 2021	10.574	Nov 2022	-		10.574	Continuing	Continuing	Continuing
Aegis Ballistic Missile Defense (BMD) Technology Design and Insertion - MD09 - TD Raytheon	SS/IDIQ	RAYTHEON : AZ	0.000	1.683	Nov 2020	0.000		0.000		-		0.000	0.000	1.683	0.000
Aegis Ballistic Missile Defense (BMD) Technology Design and Insertion - NIWC Pacific	MIPR	NIWC PAC : San Diego, CA	15.621	6.609	Nov 2020	9.186	Nov 2021	8.984	Nov 2022	-		8.984	Continuing	Continuing	Continuing
Aegis Ballistic Missile Defense (BMD) Technology Design and Insertion - Technology Design and Insertion - Advanced Concepts	MIPR	Various : Various	0.000	2.402	Nov 2020	0.000		0.000		-		0.000	0.000	2.402	0.000
Aegis Ballistic Missile Defense (BMD) Technology Design and Insertion - Technology Design and Insertion - Discrimination	MIPR	Various - MDA : AL,VA	17.640	0.000		0.000		0.000		-		0.000	0.000	17.640	0.000
Aegis Ballistic Missile Defense (BMD) Technology Design and Insertion - Technology Design and Insertion - M&S improvements	MIPR	Various - MDA : AL, VA	8.913	11.275	Nov 2020	10.235	Nov 2021	2.290	Nov 2022	-		2.290	Continuing	Continuing	Continuing
Aegis Ballistic Missile Defense (BMD) Technology Design and Insertion - Various - MDA	MIPR	Various - MDA : AL,VA,CA	32.577	1.992	Nov 2020	0.000		0.000		-		0.000	0.000	34.569	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603892C / AEGIS BMD				Project (Number/Name) MD09 / Aegis BMD					
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Aegis BMD 4.x Development - BMD 4.0 Dev -MD09- Aegis Techrep	MIPR	AEGIS Techrep : Moorestown, NJ	4.447	1.435	Nov 2020	2.947	Nov 2021	1.543	Nov 2022	-		1.543	Continuing	Continuing	Continuing
Aegis BMD 4.x Development - BMD 4.0 Dev. - MD09 - Dahlgren	MIPR	NSWC/DD : DAHLGREN, VA	160.786	9.508	Nov 2020	9.404	Nov 2021	4.925	Nov 2022	-		4.925	Continuing	Continuing	Continuing
Aegis BMD 4.x Development - BMD 4.0 Dev. - MD09 - Lockheed Martin	SS/CPIF	LOCKHEED MARTIN : MOORESTOWN, NJ	890.313	70.937	Nov 2020	41.856	Nov 2021	21.919	Nov 2022	-		21.919	Continuing	Continuing	Continuing
Aegis BMD 4.x Development - BMD 4.0 Dev. -MD09- BMD 4.0 Dev-	Various	Various : Various	46.730	1.838	Nov 2020	2.506	Nov 2021	1.312	Nov 2022	-		1.312	Continuing	Continuing	Continuing
Aegis BMD 4.x Development - BMD 4.0 Dev.-MD09-D	Allot	MDA : VA	31.834	1.219	Nov 2020	0.000		0.000		-		0.000	0.000	33.053	0.000
Aegis BMD 5.x Development - MD09 - 5.x	SS/CPAF	LOCKHEED MARTIN : MOORESTOWN, NJ	733.051	39.775	Nov 2020	33.595	Nov 2021	72.424	Nov 2022	-		72.424	Continuing	Continuing	Continuing
Aegis BMD 5.x Development - MD09 - 5.x APL	SS/CPFF	JHU/APL/MD : COLUMBIA, MD	54.663	1.791	Nov 2020	2.489	Nov 2021	0.685	Nov 2022	-		0.685	Continuing	Continuing	Continuing
Aegis BMD 5.x Development - MD09 - 5.x DD	MIPR	NSWC/DD : DAHLGREN, VA	78.586	4.515	Nov 2020	8.213	Nov 2021	3.768	Nov 2022	-		3.768	Continuing	Continuing	Continuing
Aegis BMD 5.x Development - MD09 - 5.x PHD	MIPR	NSWC/PHD : PT HUENEME, CA	12.392	1.296	Nov 2020	0.823	Nov 2021	0.514	Nov 2022	-		0.514	Continuing	Continuing	Continuing
Aegis BMD 5.x Development - MD09 - AW	MIPR	Aegis Tech Rep : Moorestown, NJ	6.285	2.647	Nov 2020	1.045	Nov 2021	0.856	Nov 2022	-		0.856	Continuing	Continuing	Continuing
Aegis BMD 5.x Development - MD09 - Various	MIPR	Various : MA, MD, VA, NJ	209.059	0.000		0.000		0.000		-		0.000	0.000	209.059	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603892C / AEGIS BMD				Project (Number/Name) MD09 / Aegis BMD					
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Aegis BMD 6.x Development - D - Strategic Investment	MIPR	Various : Various	0.000	0.000		4.786	Nov 2021	0.000		-		0.000	Continuing	Continuing	Continuing
Aegis BMD 6.x Development - JHU/APL	SS/CPFF	JHU/APL : MD	19.959	6.113	Nov 2020	7.006	Nov 2021	4.974	Nov 2022	-		4.974	Continuing	Continuing	Continuing
Aegis BMD 6.x Development - Lockheed Martin	C/CPFF	Lockheed Martin : NJ	123.641	56.663	Nov 2020	53.270	Nov 2021	41.491	Nov 2022	-		41.491	Continuing	Continuing	Continuing
Aegis BMD 6.x Development - MD09 - DD	MIPR	NSWC/DD : Dahlgren, VA	20.091	8.900	Nov 2020	9.634	Nov 2021	6.840	Nov 2022	-		6.840	Continuing	Continuing	Continuing
Aegis BMD 6.x Development - Raytheon Integrated Defense Systems	MIPR	DOD - USN - NAVAL SEA SYSTEMS COMMAND (NAVSEA) : VA	0.000	0.000		4.579	Nov 2021	3.251	Nov 2022	-		3.251	Continuing	Continuing	Continuing
Aegis BMD 6.x Development - Various	MIPR	Various : MA, MD, VA, NJ, CA	36.391	9.182	Nov 2020	5.168	Nov 2021	3.398	Nov 2022	-		3.398	Continuing	Continuing	Continuing
Aegis Layered Homeland Defense Development - Aegis Engineering - APL	SS/CPFF	JHU/APL : MD	1.369	1.018	Nov 2020	0.000		0.000		-		0.000	0.000	2.387	0.000
Aegis Layered Homeland Defense Development - Aegis Engineering - DD	MIPR	NSWC DD : Dahlgren VA	1.712	0.667	Nov 2020	0.000		0.000		-		0.000	0.000	2.379	0.000
Aegis Layered Homeland Defense Development - Aegis Engineering - LM	SS/CPFF	Lockheed Martin : Moorestown NJ	0.327	5.595	Nov 2020	0.000		0.000		-		0.000	0.000	5.922	0.000
Aegis Layered Homeland Defense Development - Aegis Engineering - MIT/LL	MIPR	MIT/LL : Lexington MA	1.183	2.058	Nov 2020	0.000		0.000		-		0.000	0.000	3.241	0.000
Aegis Layered Homeland Defense Development - Aegis Engineering - RMS	SS/CPIF	Raytheon : AZ	0.000	0.000		0.000		0.000		-		0.000	0.000	0.000	0.000
Aegis Layered Homeland Defense Development -	MIPR	Aegis Techrep : Moorestown NJ	0.000	0.000		0.000		0.000		-		0.000	0.000	0.000	0.000

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Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603892C / AEGIS BMD				Project (Number/Name) MD09 / Aegis BMD					
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Aegis Weapon System - MD09 - Aegis Techrep															
Aegis Layered Homeland Defense Development - Aegis Weapon System - MD09 - DD	MIPR	NSWC DD : Dahlgren VA	0.000	0.000		0.000		0.000		-		0.000	0.000	0.000	0.000
Aegis Layered Homeland Defense Development - Aegis Weapon System - MD09 - LM	SS/CPFF	Lockheed Martin : Moorestown NJ	2.128	0.000		0.000		0.000		-		0.000	0.000	2.128	0.000
Aegis Layered Homeland Defense Development - Standard Missile - 3 (SM-3) Block IIA Development - MD09 - Raytheon	SS/CPIF	Raytheon : AZ	2.770	2.684	Nov 2020	0.000		0.000		-		0.000	0.000	5.454	0.000
Aegis Layered Homeland Defense Development - Strategic Investment	MIPR	Various : Various	0.106	0.000		0.000		0.000		-		0.000	0.000	0.106	0.000
Modeling & Simulation Objective Simulation Framework - M&S OSF Engineering	Various	MDA : AL, VA	18.734	4.957	Nov 2020	4.224	Nov 2021	3.888	Nov 2022	-		3.888	Continuing	Continuing	Continuing
Modeling & Simulation Objective Simulation Framework - M&S OSF Engineering - CSS Support	C/CPFF	TEAMS : AL, CO	31.884	6.084	Nov 2020	5.547	Nov 2021	5.319	Nov 2022	-		5.319	Continuing	Continuing	Continuing
Modeling & Simulation Objective Simulation Framework - M&S OSF Engineering - Engineering Support	C/CPAF	Northrop Grumman : CO	41.660	0.000		0.000		0.546	Nov 2022	-		0.546	0.000	42.206	0.000
Modeling & Simulation Objective Simulation Framework - M&S OSF Engineering - Integration	MIPR	CCDC : AL	30.023	3.464	Nov 2020	3.398	Nov 2021	3.385	Nov 2022	-		3.385	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603892C / AEGIS BMD				Project (Number/Name) MD09 / Aegis BMD					
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Modeling & Simulation Objective Simulation Framework - M&S OSF Engineering - Prime	C/CPFF	Teledyne Brown Engineering / TBD : AL, CO	173.883	0.000		0.000		0.000		-		0.000	0.000	173.883	0.000
Modeling & Simulation Objective Simulation Framework - M&S OSF Engineering - Prime 2	C/CPFF	Lockheed Martin : AL	0.000	16.960	Nov 2020	20.197	Nov 2021	21.188	Nov 2022	-		21.188	Continuing	Continuing	Continuing
M&S BMDS Simulations &Tools - Sims & Tools	C/CPFF	Teledyne Brown Engineering : AL, CO	3.558	0.000		0.000		0.000		-		0.000	0.000	3.558	0.000
M&S BMDS Simulations &Tools - Sims & Tools - Industry	C/CPAF	Northrop Grumman : CO	40.308	0.000		0.000		0.000		-		0.000	0.000	40.308	0.000
M&S BMDS Simulations &Tools - Sims & Tools - Industry (2)	C/CPAF	SWDC : CO	3.700	3.857	Nov 2020	3.355	Nov 2021	4.383	Nov 2022	-		4.383	Continuing	Continuing	Continuing
M&S BMDS Simulations &Tools - Sims & Tools - Various	Various	Various : AL, CO	1.419	0.486	Nov 2020	1.100	Nov 2021	0.000		-		0.000	0.000	3.005	0.000
BMDS Verification, Validation & Assessment (VV&A) - Verification & Assessment	Various	MDA Various : AL, VA	7.395	0.000		0.000		0.000		-		0.000	0.000	7.395	0.000
BMDS Verification, Validation & Assessment (VV&A) - Verification & Assessment - CSS Support	C/CPFF	TEAMS : AL	16.864	2.362	Nov 2020	2.462	Nov 2021	2.512	Nov 2022	-		2.512	Continuing	Continuing	Continuing
BMDS Verification, Validation & Assessment (VV&A) - Verification & Assessment - Industry	C/CPAF	Boeing : AL	34.157	8.161	Nov 2020	7.370	Nov 2021	7.591	Nov 2022	-		7.591	Continuing	Continuing	Continuing
BMDS Verification, Validation & Assessment (VV&A) - Verification & Assessment - Labs	MIPR	MITRE : VA	11.853	1.255	Nov 2020	0.847	Nov 2021	1.282	Nov 2022	-		1.282	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603892C / AEGIS BMD				Project (Number/Name) MD09 / Aegis BMD					
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
BMDS Verification, Validation & Assessment (VV&A) - Verification & Assessment - OGA	MIPR	CCDC : AL	41.132	6.891	Nov 2020	7.162	Nov 2021	7.325	Nov 2022	-		7.325	Continuing	Continuing	Continuing
BMDS Verification, Validation & Assessment (VV&A) - Verification & Assessment - UARC2	MIPR	JHU/APL : AL, VA	5.978	1.927	Nov 2020	2.071	Nov 2021	2.071	Nov 2022	-		2.071	Continuing	Continuing	Continuing
RF Link Improvements - BL 9/ BL 10 Missile RF Link Improvements	MIPR	Various : TBD	0.000	0.000		1.357	Nov 2021	2.257	Nov 2022	-		2.257	Continuing	Continuing	Continuing
RF Link Improvements - RF Link Improvements - Dahlgren	MIPR	NSWC - Dahlgren : Dahlgren, VA	0.000	0.153	Nov 2020	2.009	Nov 2021	0.000		-		0.000	Continuing	Continuing	Continuing
RF Link Improvements - RF Link Improvements - SM-3	SS/CPFF	Raytheon : Tucson, AZ	0.000	3.672	Nov 2020	21.512	Dec 2021	0.000		-		0.000	Continuing	Continuing	Continuing
RF Link Improvements - RF Link Improvements - SM-3 APL	SS/CPFF	JHU/APL : Laurel, MD	0.000	0.000		1.511	Nov 2021	0.000		-		0.000	Continuing	Continuing	Continuing
RF Link Improvements - RF Link Improvements - WS	SS/CPIF	Lockheed Martin : Moorestown, NJ	0.000	0.000		1.036	Nov 2021	0.000		-		0.000	Continuing	Continuing	Continuing
Guam Defense Aegis Fire Control Software Upgrades - JHU/APL	C/CPIF	JOHNS HOPKINS UNIVERSITY APPLIED PHYSICS LABORATORY LLC, THE : MD	0.000	0.000		0.000		5.000	Nov 2022	-		5.000	Continuing	Continuing	Continuing
Guam Defense Aegis Fire Control Software Upgrades - Lockheed Martin	C/CPIF	LOCKHEED MARTIN CORPORATION : NJ	0.000	0.000		0.000		36.000	Nov 2022	-		36.000	Continuing	Continuing	Continuing
Guam Defense Aegis Fire Control Software Upgrades - NSWC Dahlgren	MIPR	Naval Surface Warfare Center (NSWC)/Dahlgren Division : VA	0.000	0.000		0.000		4.000	Nov 2022	-		4.000	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency													Date: April 2022		
Appropriation/Budget Activity					R-1 Program Element (Number/Name)					Project (Number/Name)					
0400 / 4					PE 0603892C / AEGIS BMD					MD09 / Aegis BMD					
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			3,319.686	360.367		344.490		344.239		-		344.239	Continuing	Continuing	N/A
Remarks															
N/A															
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	N/A
Remarks															
N/A															
Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	N/A
Remarks															
N/A															
Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	N/A
Remarks															
N/A															

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022				
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0603892C / AEGIS BMD					Project (Number/Name) MD09 / Aegis BMD						
				Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals				3,319.686	360.367		344.490		344.239		-		344.239	Continuing	Continuing	N/A

Remarks
 Funding in the All Prior Years column represents a summary of Prior Years Total Costs for active contracts, MIPRs, and civilian salaries on the R-3.
 Award Date reflects date of first obligation. Additional obligations may incrementally occur throughout the year.

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Missile Defense Agency															Date: April 2022									
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0603892C / AEGIS BMD										Project (Number/Name) MD09 / Aegis BMD									
Significant Event Complete ▲ Significant Event Planned △					Milestone Decision Complete ★ Milestone Decision Planned ☆					Element Test Complete ◆ Element Test Planned ◇					System Level Test Complete ● System Level Test Planned ○					Complete Activity ◆ Planned Activity ◇				
BL 5.4.1 (BMD 4.2) IPR #2					▲																			
BMD 5.1.3 Certification					★																			
BMD 5.1.3 BMDS OCB Approval					▲																			
BL 5.4.1 (BMD 4.2) IPR #3										▲														
BMD 6.0 IPR #6										▲														
BMD 5.1.5 PSRR										▲														
BMD 5.1.5 SRR										★														
BMD 5.1.6 PSRR										△														
BMD 6.0 EA #1										△														
BL 5.4.1 (BMD 4.2) IPR #4										△														
BMD 5.1.6 SRR										☆														
BL 5.4.1 (BMD 4.2) IPR #5										△														
BMD 5.1.4.0 EA															△									
BMD 5.1.4.0 CSCP										☆														
BMD 5.1.5 IPR #1/PDR										☆														
BMD 6.0 Capabilities EA										△														
BMD 6.0 IPR #7										☆														
BMD 5.1.4.0 OCB										☆														
BMD 5.1.4.1 EA										△														
BMD 5.1.5 CDR										☆														
BMD 5.1.5 IPR #2/CDR										☆														
BMD 5.1.6 IPR #1/PDR										☆														
BL 5.4.1 (BMD 4.2) EA															△									
BMD 5.1.4.1 CSCP										☆														

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Missile Defense Agency **Date:** April 2022

Appropriation/Budget Activity 0400 / 4				R-1 Program Element (Number/Name) PE 0603892C / AEGIS BMD				Project (Number/Name) MD09 / Aegis BMD			
Significant Event Complete ▲ Significant Event Planned △				Milestone Decision Complete ★ Milestone Decision Planned ☆				Element Test Complete ◆ Element Test Planned ◇			
				System Level Test Complete ● System Level Test Planned ○				Complete Activity ◆ Planned Activity ◇			
				FY 2021				FY 2022			
				FY 2023				FY 2024			
				FY 2025				FY 2026			
				FY 2027							
BMD 6.0 IPR #8							☆				
BMD 5.1.4.1 OCB							☆				
AN/SPY-1 dLNA Demo Hardware Design Review							☆				
BMD 5.1.5 EA							◇				
BMD 6.0 EA #3							☆				
Defense of Guam Weapon System SRR							☆				
AN/SPY-1 dLNA Demo Software Design Review							☆				
BL 5.4.1 (BMD 4.2) CERT							△				
BMD 5.1.5 CSCP								☆			
BMD 5.1.5 OCB								☆			
AN/SPY-1 dLNA Demo System Design Review								☆			
BMD 6.0 EA #4								☆			
BL 5.4.1 (BMD 4.2) OCB								☆			
BMD 6.0 CSCP								☆			
BMD 6.0 OCB									☆		
AN/SPY-1 dLNA demo EA									△		
AN/SPY-1 dLNA demo TRR										△	
AN/SPY-1 dLNA Demo										△	

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Missile Defense Agency			Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603892C / <i>AEGIS BMD</i>	Project (Number/Name) MD09 / <i>Aegis BMD</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
BL 5.4.1 (BMD 4.2) IPR #2	1	2021	1	2021
BMD 5.1.3 Certification	1	2021	1	2021
BMD 5.1.3 BMDS OCB Approval	2	2021	2	2021
BL 5.4.1 (BMD 4.2) IPR #3	3	2021	3	2021
BMD 6.0 IPR #6	3	2021	3	2021
BMD 5.1.5 PSRR	3	2021	3	2021
BMD 5.1.5 SRR	4	2021	4	2021
BMD 5.1.6 PSRR	4	2021	4	2021
BMD 6.0 EA #1	1	2022	1	2022
BL 5.4.1 (BMD 4.2) IPR #4	1	2022	1	2022
BMD 5.1.6 SRR	2	2022	2	2022
BL 5.4.1 (BMD 4.2) IPR #5	2	2022	2	2022
BMD 5.1.4.0 EA	3	2022	3	2022
BMD 5.1.4.0 CSCP	3	2022	3	2022
BMD 5.1.5 IPR #1/PDR	3	2022	3	2022
BMD 6.0 Capabilities EA	3	2022	3	2022
BMD 6.0 IPR #7	3	2022	3	2022
BMD 5.1.4.0 OCB	4	2022	4	2022
BMD 5.1.4.1 EA	4	2022	4	2022
BMD 5.1.5 CDR	4	2022	4	2022
BMD 5.1.5 IPR #2/CDR	4	2022	4	2022
BMD 5.1.6 IPR #1/PDR	4	2022	4	2022
BL 5.4.1 (BMD 4.2) EA	1	2023	1	2023

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Missile Defense Agency			Date: April 2022	
Appropriation/Budget Activity 0400 / 4		R-1 Program Element (Number/Name) PE 0603892C / <i>AEGIS BMD</i>		Project (Number/Name) MD09 / <i>Aegis BMD</i>
		Start		End
Events	Quarter	Year	Quarter	Year
BMD 5.1.4.1 CSCP	1	2023	1	2023
BMD 6.0 IPR #8	1	2023	1	2023
BMD 5.1.4.1 OCB	2	2023	2	2023
AN/SPY-1 dLNA Demo Hardware Design Review	2	2023	2	2023
BMD 5.1.5 EA	3	2023	3	2023
BMD 6.0 EA #3	3	2023	3	2023
Defense of Guam Weapon System SRR	3	2023	3	2023
AN/SPY-1 dLNA Demo Software Design Review	4	2023	4	2023
BL 5.4.1 (BMD 4.2) CERT	4	2023	4	2023
BMD 5.1.5 CSCP	1	2024	1	2024
BMD 5.1.5 OCB	2	2024	2	2024
AN/SPY-1 dLNA Demo System Design Review	3	2024	3	2024
BMD 6.0 EA #4	3	2024	3	2024
BL 5.4.1 (BMD 4.2) OCB	3	2024	3	2024
BMD 6.0 CSCP	4	2024	4	2024
BMD 6.0 OCB	2	2025	2	2025
AN/SPY-1 dLNA demo EA	2	2025	2	2025
AN/SPY-1 dLNA demo TRR	3	2025	3	2025
AN/SPY-1 dLNA Demo	4	2025	4	2025

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency										Date: April 2022		
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0603892C / AEGIS BMD				Project (Number/Name) MM09 / Aegis BMD SM-3 Development			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
MM09: Aegis BMD SM-3 Development	545.580	303.832	124.708	86.633	-	86.633	66.010	48.265	70.835	85.089	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Decrease from FY 2022 to FY 2023 reflects the reduction of development activities including the SM-3 Blk IB TU/TR, GEU ECP, SWUP build 8, and incorporation of SWUP build 8 into the production line.

A. Mission Description and Budget Item Justification

Provides development of SM-3 Missiles, Upgrade Modifications, and Integration into the Aegis Weapon System.

The SM-3 Block IB improves Aegis BMD's ability to expand the BMD battlespace, engage longer range, more sophisticated ballistic missiles that may deploy countermeasures and launch in larger raid sizes. The SM-3 Block IB Kinetic Warhead's (KW) two color infra-red (IR) seeker and advanced signal processor provides a real-time discrimination and characterization capability while improving sensitivity for longer range targets and performance against more sophisticated threats. Additionally, the new Throttleable Divert and Attitude Control System (TDACS) KW divert engine has been upgraded over the SM-3 Block IA to provide a more flexible divert in order to maneuver the KW to intercept.

The SM-3 Block IIA consists of an upgrade to a 21-inch diameter SM-3 missile and expands beyond the SM-3 Block IB battlespace to counter Intermediate Range Ballistic Missile (IRBM). SM-3 Block IIA provides an increased kinematic envelope through improved IR discrimination and divert capability that provide performance against the EPAA phase III expanded threat set. When combined with Aegis BMD 5.1 weapon system modifications, the SM-3 Block IIA will provide Engage on Remote (EoR) capability, which allows the use of remote off board sensor information to launch and guide the SM-3 Block IIA to final intercept. Aegis BMD 5.1 EoR capability with SM-3 Block IIA also frees up radar resources and increases the number and type of threats to be engaged simultaneously over previous baselines.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2021	FY 2022	FY 2023
Title: Standard Missile-3 (SM-3) Block IB Development	73.509	51.298	9.359
Articles:	-	-	-
Description: This effort modernizes the SM-3 Block IB missile, which improves on the SM-3 Block IA performance and enables engagement of more sophisticated ballistic missiles and larger raid sizes SM-3 Block IB TU/TR (previously IB Modernization) will provide the following: - Refreshed SM-3 KW Common Avionics Package will provide improved producibility and utilization of common components between the SM-3 Block IIA. SM-3 Block IB common components will be extendable to support different form/fit in circuit card assemblies across SM-3 Block IB and SM-3 Block IIA and will mitigate SM-3 Block IB hardware availability issues. Includes Back-fit of IIA GEU ECP into IB			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency			Date: April 2022		
Appropriation/Budget Activity 0400 / 4		R-1 Program Element (Number/Name) PE 0603892C / AEGIS BMD	Project (Number/Name) MM09 / Aegis BMD SM-3 Development		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)			FY 2021	FY 2022	FY 2023
<p>- Refreshed SM-3 Block IB Guidance Section (GS) with the integration of Digital Data Link (DDL) replacement of Plate 3A will resolve Plate 3A hardware availability issues</p> <p>Recurring Accomplishments:</p> <p>- Assess performance with weapons systems upgrades/modifications and against emerging threats</p> <p>Specific and/or unique accomplishments to each FY are as follows:</p> <p>FY 2022 Plans:</p> <p>- SEE ABOVE</p> <p>FY 2023 Plans:</p> <p>- SEE ABOVE</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement:</p> <p>Decrease from FY 2022 to FY 2023 reflects the completion of development activities for SM-3 Block IB TU/TR.</p>					
<p>Title: Standard Missile-3 (SM-3) Block IIA Development</p> <p>Articles:</p> <p>Description: The SM-3 Block IIA is required to meet EPAA Phase III. It will increase the area that can be defended by Aegis BMD, increase the probability of kill against a larger threat set, and leverage enhanced capability provided by BMDS sensor upgrades</p> <p>Recurring Accomplishments:</p> <p>- Conduct SM-3 Block IIA software update to support engagements against additional complex threats identified during Aegis BMD 5.1 design process conducted after missile CDR</p> <p>- Conduct End to End Distributed Development System (ETEDDS) integration testing; and flight test support</p> <p>- Continue implementation of SM-3 Block IIA cost reduction initiatives to support meeting cost goals to reduce the current estimated Average Unit Production Price (AUPP)</p> <p>- Continue transition of KW hardware commonality effort (from design to material purchases) to system integration testing in order to demonstrate Technology Readiness Level (TRL) 7</p> <p>- Continue Engineering Manufacture Readiness Level (EMRL) 3 compliance to support life cycle progression</p> <p>Specific and unique accomplishments to each FY are as follows:</p> <p>FY 2022 Plans:</p> <p>- Conduct improved BMD 5.1 Raid to meet BMD 5.1 requirements, discrimination improvements to support future threats, and other BMD System Capability improvements aligned with AWS Baseline Improvements.</p> <p>- Integration and engineering of the SM-3 BLK IIA Build 8 missile with BMD AWS Baselines 5.x.</p> <p>- Completion of program Transition to Production (EMRL 4 maturity).</p>			230.323 -	73.410 -	77.274 -

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency										Date: April 2022		
Appropriation/Budget Activity 0400 / 4				R-1 Program Element (Number/Name) PE 0603892C / AEGIS BMD				Project (Number/Name) MM09 / Aegis BMD SM-3 Development				
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)										FY 2021	FY 2022	FY 2023
- Complete GEU ECP qualification, integration and Transition to Production development.												
FY 2023 Plans: -SEE ABOVE												
FY 2022 to FY 2023 Increase/Decrease Statement: Increase from FY 2022 to FY 2023 reflects continuation of GEU ECP and continuation of Build 8 efforts.												
Accomplishments/Planned Programs Subtotals										303.832	124.708	86.633
C. Other Program Funding Summary (\$ in Millions)												
Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost	
• 0208866C MD09: SM-3 Block IB Procurement	353.896	334.621	402.235	-	402.235	378.685	362.834	496.857	506.794	Continuing	Continuing	
• 0208866C MD09: Aegis BMD O&M	79.913	68.293	69.071	-	69.071	70.303	75.240	87.513	91.726	Continuing	Continuing	
• 0208866C MD14: SM-3 Block IIA Procurement	318.322	488.022	337.975	-	337.975	458.224	479.190	460.468	457.932	Continuing	Continuing	
Remarks												
D. Acquisition Strategy The Sea-Based Weapon Systems element acquisition approach supports evolutionary development, continuously building upon demonstrated capabilities to advance overall BMDS capability. After considering all the technical and management aspects of the program and to meet the requirements presented by an evolving ballistic missile threat, the Sea-Based Weapon Systems program awarded sole source contracts to Raytheon and Lockheed Martin to continue development of the SM-3 and the Aegis BMD Weapon System, respectively.												

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603892C / AEGIS BMD				Project (Number/Name) MM09 / Aegis BMD SM-3 Development					
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Standard Missile-3 (SM-3) Block IB Development - Standard Missile-3 (SM-3) Block IB Development - MM09 Carderock	MIPR	NSWC Carderock : Bethesda, MD	0.882	0.000		0.000		0.000		-		0.000	0.000	0.882	0.000
Standard Missile-3 (SM-3) Block IB Development - Standard Missile-3 (SM-3) Block IB Development - MM09	SS/CPIF	Raytheon : Tuscon, AZ	88.898	70.770	Dec 2020	49.606	Dec 2021	8.871	Dec 2022	-		8.871	Continuing	Continuing	Continuing
Standard Missile-3 (SM-3) Block IB Development - Standard Missile-3 (SM-3) Block IB Development - MM09 - 20117142332259	MIPR	NSWC/PHD : Port Hueneme, CA	0.199	0.000		0.000		0.000		-		0.000	0.000	0.199	0.000
Standard Missile-3 (SM-3) Block IB Development - Standard Missile-3 (SM-3) Block IB Development - MM09 - Various	MIPR	NSWC Corona : Corona, CA	0.720	0.333	Nov 2020	0.260	Nov 2021	0.000		-		0.000	Continuing	Continuing	Continuing
Standard Missile-3 (SM-3) Block IB Development - Standard Missile-3 (SM-3) Block IB Development - MM09 MIT	MIPR	Hanscom AFB - MIT/ LL : Lexington, MA	1.105	0.000		0.000		0.000		-		0.000	0.000	1.105	0.000
Standard Missile-3 (SM-3) Block IB Development - Standard Missile-3 (SM-3) Block IB Development- MM09 DD	MIPR	NSWC Dahlgren : Dahlgren, VA	1.608	0.316	Nov 2020	0.420	Nov 2021	0.058	Nov 2022	-		0.058	Continuing	Continuing	Continuing
Standard Missile-3 (SM-3) Block IB Development - Standard Missile-3 (SM-3) Block IB Development- MM09 JHU/APL	SS/CPFF	JHUAPL : Laurel, MD	2.172	2.090	Nov 2020	1.012	Nov 2021	0.430	Nov 2022	-		0.430	Continuing	Continuing	Continuing
Standard Missile-3 (SM-3) Block IIA Development -	MIPR	Various : CA, VA, MD	23.528	8.701	Nov 2020	1.588	Nov 2021	0.000		-		0.000	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603892C / AEGIS BMD						Project (Number/Name) MM09 / Aegis BMD SM-3 Development			
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Standard Missile-3 (SM-3) Block IIA Development - CA,VA, MD															
Standard Missile-3 (SM-3) Block IIA Development - Standard Missile-3 (SM-3) Block IIA Development - MM09 - SM-3 BLK IIA INTEGRATION	SS/CPIF	Raytheon : Tucson, AZ	351.588	183.393	Mar 2021	63.733	Oct 2021	67.024	Nov 2022	-		67.024	Continuing	Continuing	Continuing
Standard Missile-3 (SM-3) Block IIA Development - Standard Missile-3 (SM-3) Block IIA Development - MM09 - SM-3 BLK IIA INTEGRATION - APL	MIPR	JHU/APL : Laurel, MD	30.899	11.279	Dec 2020	4.017	Nov 2021	2.294	Dec 2022	-		2.294	Continuing	Continuing	Continuing
Standard Missile-3 (SM-3) Block IIA Development - Standard Missile-3 (SM-3) Block IIA Development - MM09 - SM-3 BLK IIA INTEGRATION - DD	MIPR	NSWC DD : Dahlgren, VA	16.065	7.461	Nov 2020	2.398	Nov 2021	7.206	Dec 2022	-		7.206	Continuing	Continuing	Continuing
Standard Missile-3 (SM-3) Block IIA Development - Standard Missile-3 (SM-3) Block IIA Development - NSWC Corona	MIPR	NSWC Corona : Corona, CA	6.563	0.000		1.188	Nov 2021	0.500	Dec 2022	-		0.500	Continuing	Continuing	Continuing
Standard Missile-3 (SM-3) Block IIA Development - Standard Missile-3 (SM-3) Block IIA Development - NSWC/Crane	MIPR	NWSC/Crane : IN	2.466	0.355	Nov 2020	0.486	Nov 2021	0.250	Dec 2022	-		0.250	Continuing	Continuing	Continuing
Standard Missile-3 (SM-3) Block IIA Development - Standard Missile-3 (SM-3) Block IIA Development - MM09 - SM-3 BLK IIA	MIPR	Brookhaven Lab - DOE : Uptown NY	3.830	0.000		0.000		0.000		-		0.000	0.000	3.830	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency **Date:** April 2022

Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603892C / AEGIS BMD	Project (Number/Name) MM09 / Aegis BMD SM-3 Development
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Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Standard Missile-3 (SM-3) Block IIA Development - Standard Missile-3 (SM-3) Block IIA Development - MM09 - SM-3 BLK IIA Draper	SS/CPIF	Draper Laboratory : Cambridge MA	4.133	0.934	Nov 2020	0.000		0.000		-		0.000	0.000	5.067	0.000
Standard Missile-3 (SM-3) Block IIA Development - Standard Missile-3 (SM-3) Block IIA Development - NJ	C/CPFF	Lockheed Martin : Moorestown NJ	10.924	18.200	Nov 2020	0.000		0.000		-		0.000	0.000	29.124	0.000
Subtotal			545.580	303.832		124.708		86.633		-		86.633	Continuing	Continuing	N/A

Remarks
N/A

	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	545.580	303.832	124.708	86.633	-	86.633	Continuing	Continuing	N/A

Remarks
Award Date reflects date of first obligation. Additional obligations may incrementally occur throughout the year.

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Missile Defense Agency										Date: April 2022														
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0603892C / AEGIS BMD					Project (Number/Name) MM09 / Aegis BMD SM-3 Development														
Significant Event Complete ▲ Significant Event Planned △		Milestone Decision Complete ★ Milestone Decision Planned ☆		Element Test Complete ◆ Element Test Planned ◇		System Level Test Complete ● System Level Test Planned ○				Complete Activity ◆ Planned Activity ◇														
					FY 2021		FY 2022			FY 2023			FY 2024			FY 2025			FY 2026			FY 2027		
Build 8.1 Operational Capability Baseline (OCB)					▲																			
Build 8.1 MPAN WSERB					▲																			
IBTU Tech Refresh PDR					▲																			
Build 8.3 with BMD 5.1.5 SRR									▲															
Build 8.2 Formal Qualification Testing (FQT)									△															
IBTU Tech Refresh Qualification											△													
Build 8.2 and BMD 5.1.4 OCB											△													
GEU-ECP (1st AUR Delivery with ECP)											△													
Build 8.3 FQT													△											
IBTU Tech Refresh CDR													△											
GEU-ECP Transition to Production													△											
Build 8.3 and BMD 5.1.5 OCB															△									

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Missile Defense Agency			Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603892C / AEGIS BMD	Project (Number/Name) MM09 / Aegis BMD SM-3 Development	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Build 8.1 Operational Capability Baseline (OCB)	1	2021	1	2021
Build 8.1 MPAN WSERB	1	2021	1	2021
IBTU Tech Refresh PDR	2	2021	2	2021
Build 8.3 with BMD 5.1.5 SRR	4	2021	4	2021
Build 8.2 Formal Qualification Testing (FQT)	1	2022	1	2022
IBTU Tech Refresh Qualification	4	2022	4	2022
Build 8.2 and BMD 5.1.4 OCB	1	2023	1	2023
GEU-ECP (1st AUR Delivery with ECP)	1	2023	1	2023
Build 8.3 FQT	3	2023	3	2023
IBTU Tech Refresh CDR	3	2023	3	2023
GEU-ECP Transition to Production	3	2023	3	2023
Build 8.3 and BMD 5.1.5 OCB	2	2024	2	2024

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency										Date: April 2022		
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0603892C / AEGIS BMD				Project (Number/Name) MC09 / Cyber Operations			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
MC09: Cyber Operations	37.404	8.544	3.750	4.431	-	4.431	4.682	4.882	4.842	4.938	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Increase from FY 2022 to FY 2023 provides monitoring requirements in support of the Host Based Security System, Assurance Compliance Assessment Solution (ACAS) Vulnerability scanning, and System Information and Event Management (SIEM) (i.e. ArcSight) requirements at remote sites.

A. Mission Description and Budget Item Justification

Sustain the DoD Risk Management Framework (RMF) Certification and Accreditation process and Controls Validation Testing (CVT) activities, analysis of validation results, risk assessments and reviews of proposed Program Manager/Information Systems Security Manager (PM/ISSM).

This project supports the monitoring and tracking of Cybersecurity mitigation detailed in Information Technology Security Plan of Action and Milestones (POA&Ms). Activities include preparation of C&A documentation and accreditation recommendations to the MDA Authorizing Official (AO). Independent Verification and Validation (IV&V) team actions ensure the availability, integrity, authentication, confidentiality and non-repudiation of the AB mission and non-mission systems, which includes test and remote site administrative systems. Activities in the Project are necessary to comply with the Federal Information Security Management Act (FISMA).

The SM-3 Block IB and IIA missiles and corresponding Aegis BMD weapon systems communication requires hardware and software development and integration testing to enable new cyber security capabilities. Activities include Encoder/Decoder, Plate 3 CCAs and Mission Computer CCA updates. After missile and baseline specific efforts are complete, significant integration testing is required.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2021	FY 2022	FY 2023
Title: Network / System Certification and Accreditation (C&A)	8.544	3.750	4.431
Articles:	-	-	-
Description: Network/System Certification and Accreditation (C&A) includes recurring efforts such as cybersecurity engineering and architecture requirements planning for Aegis BMD systems, plan and test the Risk Management Framework (RMF) controls for the BMDS in regards to Aegis BMD systems to comply with the new directive, RMF for DoD Information Technology (DoDi 8510.01) to replace the DoD Information Assurance Certification and Accreditation process (DIACAP) and conduct Controls Validation Testing (CVT). Recurring Accomplishments: - Continue coordination and development of new and existing accreditation packages that comply with new directive, RMF for DoD Information Technology (DoDi 8510.01) process - CVT and cooperative risk assessments to mitigate cybersecurity deficiencies			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency			Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603892C / AEGIS BMD	Project (Number/Name) MC09 / Cyber Operations	

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023
<ul style="list-style-type: none"> - Develop and deploy Hardware and Software HW/SW implementation strategies for Continuous Monitoring activities at remote sites and Aegis BMD assets - Monthly reviews of systems through the eMass System - Daily management of eMass System Plan of Action and Milestones (POAMs) <p>FY 2022 Plans: - SEE ABOVE.</p> <p>FY 2023 Plans: - SEE ABOVE.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: Increase from FY 2022 to FY 2023 provides monitoring requirements in support of the Host Based Security System, ACAS Vulnerability scanning, and SIEM (i.e. ArcSight) requirements at remote sites.</p>			
Accomplishments/Planned Programs Subtotals	8.544	3.750	4.431

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

<u>Line Item</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u> <u>Base</u>	<u>FY 2023</u> <u>OCO</u>	<u>FY 2023</u> <u>Total</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• 0603882C: <i>Ballistic Missile Defense Midcourse Defense Segment</i>	1,195.853	724.028	667.524	-	667.524	870.817	802.617	781.973	765.733	Continuing	Continuing
• 0603884C: <i>Ballistic Missile Defense Sensors</i>	259.605	254.962	231.134	-	231.134	250.028	274.705	276.254	257.575	Continuing	Continuing
• 0603896C: <i>Ballistic Missile Defense Command and Control, Battle Management & Communication</i>	639.027	564.946	589.374	-	589.374	575.883	588.824	612.853	605.801	Continuing	Continuing
• 0603898C: <i>Ballistic Missile Defense Joint Warfighter Support</i>	49.261	50.594	50.269	-	50.269	51.849	55.960	56.488	54.980	Continuing	Continuing
• 0603904C: <i>Missile Defense Integration and Operations Center (MDIOC)</i>	54.026	52.403	49.367	-	49.367	51.744	56.502	57.833	59.006	Continuing	Continuing
• 0604878C: <i>Aegis BMD Test</i>	71.481	111.206	182.776	-	182.776	173.492	159.125	203.851	187.494	Continuing	Continuing
• 0604880C: <i>Land Based SM-3 (LBSM3)</i>	52.804	43.158	27.678	-	27.678	26.896	26.021	26.842	27.385	Continuing	Continuing

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency	Date: April 2022
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Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603892C / AEGIS BMD	Project (Number/Name) MC09 / Cyber Operations
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C. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u> <u>Base</u>	<u>FY 2023</u> <u>OCO</u>	<u>FY 2023</u> <u>Total</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• 0901598C: Management HQ - MDA	26.902	24.102	25.259	-	25.259	25.836	26.438	26.984	27.524	Continuing	Continuing

Remarks

D. Acquisition Strategy

The Sea-Based Weapon Systems element acquisition approach supports evolutionary development, continuously building upon demonstrated capabilities to advance overall BMDS capability. After considering all the technical and management aspects of the program and to meet the requirements presented by an evolving ballistic missile threat, the Sea-Based Weapon Systems program awarded sole source contracts to Raytheon and Lockheed Martin to continue development of the SM-3 and the Aegis BMD Weapon System, respectively.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603892C / AEGIS BMD						Project (Number/Name) MC09 / Cyber Operations			
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Network / System Certification and Accreditation (C&A) - CND/IA Advisory and Assistance Services	C/CPIF	Torch Technologies : Huntsville, AL	2.747	0.000		0.000		0.000		-		0.000	0.000	2.747	0.000
Network / System Certification and Accreditation (C&A) - Cyber TEAMS MC09 - BMDS CSM/CND	C/CPFF	SYSTEM HIGH CORPORATION : TBD	0.000	0.000		0.000		0.505	Nov 2022	-		0.505	Continuing	Continuing	Continuing
Network / System Certification and Accreditation (C&A) - Cyber TEAMS MC09 - CCRM	C/CPFF	DECISIVE ANALYTICS CORPORATION : TBD	0.000	0.000		0.000		3.104	Nov 2022	-		3.104	Continuing	Continuing	Continuing
Network / System Certification and Accreditation (C&A) - Cyber TEAMS - MC09	C/CPFF	Booz Allen and Hamilton : McLean, VA	11.128	3.573	Nov 2020	2.757	Nov 2021	0.000		-		0.000	Continuing	Continuing	Continuing
Network / System Certification and Accreditation (C&A) - Network / System Certification and Accreditation (C&A) - Network System Certification and Accreditation - RMS	SS/CPAF	Raytheon : Tucson, AZ	0.000	4.106	Nov 2020	0.000		0.000		-		0.000	0.000	4.106	0.000
Network / System Certification and Accreditation (C&A) - Network System Certification and Accreditation	SS/CPAF	Lockheed Martin : Moorestown NJ	11.813	0.000		0.000		0.000		-		0.000	0.000	11.813	0.000
Network / System Certification and Accreditation (C&A)	MIPR	DISA : Falls Church, VA	0.100	0.000		0.000		0.000		-		0.000	0.000	0.100	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603892C / AEGIS BMD				Project (Number/Name) MC09 / Cyber Operations					
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
- Network System Certification and Accreditation - DISA															
Network / System Certification and Accreditation (C&A) - Network System Certification and Accreditation - PHD	MIPR	NSWC/PHD : Port Hueneme CA	0.501	0.000		0.000		0.000		-		0.000	0.000	0.501	0.000
Network / System Certification and Accreditation (C&A) - Network/System Certification and Accreditation - DD	MIPR	NSWC - DD : Dahlgren VA	1.300	0.000		0.000		0.000		-		0.000	0.000	1.300	0.000
Network / System Certification and Accreditation (C&A) - Program Operations - MC09 - CivSal	Allot	MDA : VA	0.343	0.601	Nov 2020	0.156	Nov 2021	0.161	Oct 2022	-		0.161	Continuing	Continuing	Continuing
Network / System Certification and Accreditation (C&A) - Security Operations - Secure Communications/ Equipment	C/CPFF	Jacobs Technology : TN	0.682	0.264	Nov 2020	0.837	Nov 2021	0.661	Dec 2022	-		0.661	Continuing	Continuing	Continuing
RF Link Improvements - RF Link Improvements - SM-3	SS/CPFF	Raytheon : Tucson, AZ	8.390	0.000		0.000		0.000		-		0.000	0.000	8.390	0.000
RF Link Improvements - RF Link Improvements - SM-3 APL	SS/CPFF	JHU/APL : Laurel, MD	0.000	0.000		0.000		0.000		-		0.000	0.000	0.000	0.000
RF Link Improvements - RF Link Improvements - WS	SS/CPIF	Lockheed Martin : Moorestown, NJ	0.400	0.000		0.000		0.000		-		0.000	0.000	0.400	0.000
Subtotal			37.404	8.544		3.750		4.431		-		4.431	Continuing	Continuing	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603892C / AEGIS BMD				Project (Number/Name) MC09 / Cyber Operations					
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Remarks N/A															
			Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			37.404	8.544		3.750		4.431		-		4.431	Continuing	Continuing	N/A
Remarks Award Date reflects date of first obligation. Additional obligations may incrementally occur throughout the year.															

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Missile Defense Agency															Date: April 2022														
Appropriation/Budget Activity 0400 / 4										R-1 Program Element (Number/Name) PE 0603892C / AEGIS BMD										Project (Number/Name) MC09 / Cyber Operations									
Significant Event Complete ▲					Milestone Decision Complete ★					Element Test Complete ◆					System Level Test Complete ●					Complete Activity ◆									
Significant Event Planned △					Milestone Decision Planned ☆					Element Test Planned ◇					System Level Test Planned ○					Planned Activity ◇									
										FY 2021		FY 2022		FY 2023		FY 2024		FY 2025		FY 2026		FY 2027							
MC09 Cyber Operations										◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇					

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Missile Defense Agency			Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603892C / AEGIS BMD	Project (Number/Name) MC09 / Cyber Operations	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
MC09 Cyber Operations	1	2021	4	2027

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency										Date: April 2022		
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0603892C / AEGIS BMD				Project (Number/Name) MX09 / Aegis BMD Development Support			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
MX09: Aegis BMD Development Support	678.923	158.251	136.506	142.980	-	142.980	160.210	165.334	169.313	172.442	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Increase from FY 2022 to FY 2023 provides:

- Development of virtual AWS M&S solutions to support Wargames and Exercises to replace the existing low fidelity M&S solutions which require regular development and maintenance to stay current with Fleet capabilities.
- Automation of doctrine development and management of Aegis BMD documentation for the Fleet.
- Integration of Fleet feedback processes with the Forge development program to increase the throughput and speed to resolve Warfighter feedback items.
- Addition of BMDS Test Site (BTS) Hardware.

A. Mission Description and Budget Item Justification

This includes the Government, contractor, and Federally Funded Research and Development Center (FFRDC) workforce that manage the overall Sea-Based Weapon Systems program and enables the program to develop, build, and test standard missiles and associated Aegis Weapons Systems. Sea-Based Weapon Systems, in accordance with negotiated agreements between the U.S. Navy and the Missile Defense Agency (MDA) has identified and segregated funding for Developmental Support of Sea-Based Weapon Systems specific elements resident aboard Aegis capable U.S. Navy ships. Computer Program Support consists of, but is not limited to, reviews of Technical Observation Reports (TORs) that are generated by ship crews during exercises or deployments, determination of root causes and preparation of Computer Program Change Request (CPCR) to correct TORs, updates to the in-service computer program to apply, test and certify multiple CPCRs, and tests installation of Aegis Weapon System (AN/SPY-radar/Fire Control System (FCS)) alignment updates as required. Sea-Based Weapon Systems provides support to Annual Integration Events (AIEs) to ensure any updated Aegis Combat System (ACS) computer programs do not degrade BMD equipped ships and provides distance and technical support for BMD equipped ships. Provides Fleet operations and mission support to enable the conduct of sustained BMD operation.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2021	FY 2022	FY 2023
Title: Program Operations	87.408	85.575	88.366
Articles:	-	-	-
Description: This activity includes the Government, contractor, and FFRDC workforce that manage the overall Sea-Based Weapon Systems program and enables the program to develop, build, and test standard missiles and the associated Aegis Weapon Systems. This project includes all operations support for the Aegis program office in Engineering, Testing, Logistics, Acquisition, Safety, Quality Assurance, Finance, Budget Formulation and Execution, Cost Estimation, and Earned Value Management in support of development activities. Specific and/or unique accomplishments to each FY are as follows: FY 2022 Plans:			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency			Date: April 2022		
Appropriation/Budget Activity 0400 / 4		R-1 Program Element (Number/Name) PE 0603892C / AEGIS BMD	Project (Number/Name) MX09 / Aegis BMD Development Support		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)			FY 2021	FY 2022	FY 2023
- SEE ABOVE					
FY 2023 Plans: - SEE ABOVE.					
FY 2022 to FY 2023 Increase/Decrease Statement: N/A					
Title: Aegis Ballistic Weapon System Support			31.120	22.123	21.766
Articles:			-	-	-
Description: Provides system engineering for fielded Sea-Based Weapon Systems from warfighter feedback, investigation of BMDS Discrepancy Reports, and BMDS ground test observation analysis. It includes computer program defect corrections and supports assessment of flight test readiness. Recurring Accomplishments: - Update threat adaptation data to keep pace with emergent threats - Provide operation and sustainment of land based test sites used for the development of Aegis BMD baselines. Operation and sustainment includes Engineering, Logistics, Quality Assurance, Configuration Management and other support activities to both baseline development and the sites. - Provide support for contingency operations of national interest - Support upgrades to fielded Aegis BMD computer programs baselines approved as an Operational Capability Baseline - Provide engineering support to Operationally Capable Baseline ships that participate in BMD test events - Provide test site usage for maintenance and support of baselines under development - Sustain the classified computing infrastructure needed for development efforts Specific and/or unique accomplishments to each FY are as follows:					
FY 2022 Plans: SEE ABOVE					
FY 2023 Plans: SEE ABOVE					
FY 2022 to FY 2023 Increase/Decrease Statement: N/A					
Title: Fleet Integration			23.740	17.444	19.268
Articles:			-	-	-
Description: Provide Fleet operations and mission support to enable the conduct of sustained BMD operations; advocate war fighter requirements and fleet feedback in baseline development and capability upgrades to Aegis BMD weapon system;					

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency			Date: April 2022		
Appropriation/Budget Activity 0400 / 4		R-1 Program Element (Number/Name) PE 0603892C / AEGIS BMD	Project (Number/Name) MX09 / Aegis BMD Development Support		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)			FY 2021	FY 2022	FY 2023
<p>provide analysis and Mission Planning support for Geographic Combatant Commanders for operational application of Maritime BMD capabilities; and provide BMD Capabilities Analysis and Exercise Support for Aegis BMD baselines under development or currently deployed in the Operational Fleet.</p> <p>Recurring Accomplishments:</p> <ul style="list-style-type: none">- Define, develop and review Joint and Fleet Doctrine for incorporation of Aegis BMD capability transition to warfighter and baseline acceptance into MDA OCB- Research and define certification and warfighter acceptance requirements for Aegis BMD baselines to ensure successful capability delivery- Develop Aegis BMD training simulations and scenarios to support shipboard training including BMD Qualification (BMDQ) and higher level exercises- Execute warfighter feedback process to enhance Aegis BMD functional capability development and influence future Aegis BMD requirements and support MDA Test Community and Combatant Commanders in BMD Exercises and Wargames- Provide analysis for Anti-Ship Ballistic Missile Defense- Provide analysis on parametric organic sensor sensitivity- Provide analysis on up-range ship/sensor support for Launch on Remote (LoR), Engage on Remote (EoR), and Cued engagements- Provide analysis on impacts of countermeasures- Provide analysis on developing threats <p>Specific and/or unique accomplishments to each FY are as follows:</p> <p>FY 2022 Plans:</p> <p>- SEE ABOVE.</p> <p>FY 2023 Plans:</p> <p>- SEE ABOVE.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement:</p> <p>Increase from FY 2022 to FY 2023 provides:</p> <ul style="list-style-type: none">- Development of virtual AWS M&S solutions to support Wargames and Exercises to replace the existing low fidelity M&S solutions which require regular development and maintenance to stay current with Fleet capabilities.- Automation of doctrine development and management of Aegis BMD documentation for the Fleet.- Integration of Fleet feedback processes with the Forge development program to increase the throughput and speed to resolve Warfighter feedback items.					
Title: Infrastructure Upgrades			15.983	11.364	13.580
Articles:			-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency			Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603892C / AEGIS BMD	Project (Number/Name) MX09 / Aegis BMD Development Support	

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023
<p>Description: Provides management of C4I aspects of the BTS San Diego upgrade plan to maintain Fleet representative C4I configurations to support testing, troubleshooting, and Fleet operations. Includes IT services in support of the Aegis RDT&E mission to include: IT help-desk services; portal and data services; records management; business automation services; and desktop and Special Purpose Processing Nodes (SPPNs) maintenance and licenses. In addition, replaces critical IT infrastructure at end-of-life and to implement DoD mandated projects in support of the Joint Information environment (JIE) initiative.</p> <p>Recurring accomplishments:</p> <ul style="list-style-type: none"> - Procure and installation of two TI-16 Mod 1 Baseline 10 labs to support MDA Ground Testing commencing in FY22 - Procure and installation of two Detection Simulation (DETSIM) Emulators to support AN/APY-6 testing commencing in FY22 - Procure and installation of three Virtual Twin/VTE - IDIQ Contract # N002418F8622 / PR# 1300855404 commencing in FY22 - Establishment of Cooperative Engagement Capability (CEC) lab and interaction to Aegis BMD labs - Conduct Aegis IT services such as IT help-desk; portal and data services; records management; business automation services; and desktop and SPPN maintenance and licenses - Replacement of critical end-of-life equipment - Upgrades to IT infrastructure planning and implementation efforts to accomplish DoD mandated IT Projects (JIE and DoD Chief Information Officer (CIO) Information Resources Management (IRM) initiatives. <p>FY 2022 Plans:</p> <ul style="list-style-type: none"> - Develop, procure and install Combined Federated Battle Laboratories Network (CFBLNet) allowing MDACNET chat and voice capability - Develop, procure and install Program Executive Office Integrated Warfare Systems-Cyber (PEO IWS-C) Integrated Air and Missile Defense (IAMD) Risk Reduction Testing with IFF Sensor and Tactical Air (TACAIR) capabilities <p>FY 2023 Plans: SEE ABOVE</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: Increase from FY 2022 to FY 2023 reflects addition of BTS Hardware.</p>			
Accomplishments/Planned Programs Subtotals	158.251	136.506	142.980

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

Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• 0208866C MD09: MD09 Aegis BMD O&M	79.913	68.293	69.071	-	69.071	70.303	75.240	87.513	91.726	Continuing	Continuing
• 0604878C: Aegis BMD Test	71.481	111.206	182.776	-	182.776	173.492	159.125	203.851	187.494	Continuing	Continuing

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency	Date: April 2022
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Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603892C / AEGIS BMD	Project (Number/Name) MX09 / Aegis BMD Development Support
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C. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u> <u>Base</u>	<u>FY 2023</u> <u>OCO</u>	<u>FY 2023</u> <u>Total</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• 0604880C: Land Based SM-3 (LBSM3)	52.804	43.158	27.678	-	27.678	26.896	26.021	26.842	27.385	Continuing	Continuing

Remarks

D. Acquisition Strategy

The Sea-Based Weapon Systems element acquisition approach supports evolutionary development, continuously building upon demonstrated capabilities to advance overall BMDS capability. After considering all the technical and management aspects of the program and to meet the requirements presented by an evolving ballistic missile threat, the Sea-Based Weapon Systems program awarded sole source contracts to Raytheon and Lockheed Martin to continue development of the Standard Missile-3 (SM-3) and the Aegis BMD Weapon System, respectively.

Competition will be maximized for purchase of any products or services as appropriate.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency **Date:** April 2022

Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603892C / AEGIS BMD	Project (Number/Name) MX09 / Aegis BMD Development Support
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Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	N/A

Remarks

N/A

Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Operations - Program Operations - MX09 - GSA Procurement for MDA Historical Project	C/CPFF	Gryphon Technologies : VA	0.316	0.000		0.000		0.000		-		0.000	0.000	0.316	0.000
Program Operations - Program Operations - MX09 - Civ Sal	Allot	MDA : VA	91.700	34.623	Nov 2020	32.567	Nov 2021	33.869	Nov 2022	-		33.869	Continuing	Continuing	Continuing
Program Operations - Program Operations - MX09 - DD PM	MIPR	NSWC/DD : Dahlgren, VA	8.911	2.057	Nov 2020	0.000		0.000		-		0.000	0.000	10.968	0.000
Program Operations - Program Operations - MX09 - IT	Various	MDA : VA, AL	4.438	1.776	Nov 2020	1.255	Dec 2021	1.774	Dec 2022	-		1.774	Continuing	Continuing	Continuing
Program Operations - Program Operations - MX09 - MDA Travel	Allot	MDA : VA	5.103	0.784	Nov 2020	0.785	Oct 2021	1.139	Oct 2022	-		1.139	Continuing	Continuing	Continuing
Program Operations - Program Operations - MX09 - NAVSEA Civ Sal	MIPR	NAVSEA : Washington, DC	38.603	14.034	Nov 2020	14.688	Nov 2021	15.130	Nov 2022	-		15.130	Continuing	Continuing	Continuing
Program Operations - Program Operations - MX09 - NAVSEA RB Sal	MIPR	NAVSEA : Washington, DC	7.210	1.745	Nov 2020	1.797	Nov 2021	1.851	Nov 2022	-		1.851	Continuing	Continuing	Continuing
Program Operations - Program Operations - MX09 - NAVSEA Training, Various	MIPR	NAVSEA : Washington, DC	1.602	0.020	Nov 2020	0.030	Nov 2021	0.030	Nov 2022	-		0.030	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603892C / AEGIS BMD				Project (Number/Name) MX09 / Aegis BMD Development Support					
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Operations - Program Operations - MX09 - NAVSEA Travel	MIPR	NAVSEA : Washington, DC	2.496	0.000		0.000		0.000		-		0.000	0.000	2.496	0.000
Program Operations - Program Operations - MX09 - Security	MIPR	Various : VA	1.833	0.085	Nov 2020	0.300	Nov 2021	0.300	Nov 2022	-		0.300	Continuing	Continuing	Continuing
Program Operations - Program Operations - MX09 - TEAMS	C/CPFF	Various : VA, AL	131.634	31.284	Nov 2020	34.153	Nov 2021	4.314	Nov 2022	-		4.314	Continuing	Continuing	Continuing
Program Operations - Program Operations - MX09 - USACE Litigation efforts	MIPR	Army Corps of Engineers : Various efforts	0.000	1.000	Jun 2021	0.000		0.000		-		0.000	0.000	1.000	0.000
Program Operations - Program Operations - MX09 TEAMS Acquisition	C/CPFF	BCF SOLUTIONS, INC. : VA	0.000	0.000		0.000		2.315	Nov 2022	-		2.315	Continuing	Continuing	Continuing
Program Operations - Program Operations - MX09 TEAMS Business Ops	C/CPFF	Veterans Technology, LLC : VA	0.000	0.000		0.000		3.679	Nov 2022	-		3.679	Continuing	Continuing	Continuing
Program Operations - Program Operations - MX09 TEAMS MDS Engineering	C/CPFF	PARSONS GOVERNMENT SERVICES INC. : VA	0.000	0.000		0.000		15.269	Nov 2022	-		15.269	Continuing	Continuing	Continuing
Program Operations - Program Operations - MX09 TEAMS Office Admin	C/CPFF	YORKTOWN SYSTEMS GROUP, INC. : VA	0.000	0.000		0.000		2.085	Nov 2022	-		2.085	Continuing	Continuing	Continuing
Program Operations - Program Operations - MX09 TEAMS Predictive Eng	C/CPFF	TORCH TECHNOLOGIES INC : TBD	0.000	0.000		0.000		1.348	Nov 2022	-		1.348	Continuing	Continuing	Continuing
Program Operations - Program Operations - MX09 TEAMS QMA	C/CPFF	AI SOLUTIONS, INC. : VA	0.000	0.000		0.000		2.174	Nov 2022	-		2.174	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603892C / AEGIS BMD						Project (Number/Name) MX09 / Aegis BMD Development Support			
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Operations - Program Operations - MX09 TEAMS Warfighter Integration	C/CPFF	STRATEGIC ALLIANCE BUSINESS GROUP LLC : VA	0.000	0.000		0.000		3.089	Nov 2022	-		3.089	Continuing	Continuing	Continuing
Aegis Ballistic Weapon System Support - MX09 - AW APL	SS/CPFF	JHU/APL : Columbia, MD	7.088	0.767	Nov 2020	0.853	Nov 2021	0.744	Nov 2022	-		0.744	Continuing	Continuing	Continuing
Aegis Ballistic Weapon System Support - MX09 - AW DD	MIPR	NSWC DD : Dahlgren, VA	24.110	3.288	Nov 2020	3.505	Nov 2021	3.223	Nov 2022	-		3.223	Continuing	Continuing	Continuing
Aegis Ballistic Weapon System Support - MX09 - AW LM	C/CPFF	Lockheed Martin : Moorestown, NJ	57.692	17.794	Nov 2020	2.098	Nov 2021	4.215	Nov 2022	-		4.215	Continuing	Continuing	Continuing
Aegis Ballistic Weapon System Support - MX09 - AW NAVSEA	MIPR	NAVSEA : Washington, DC	61.556	7.002	Nov 2020	14.861	Nov 2021	11.624	Nov 2022	-		11.624	Continuing	Continuing	Continuing
Aegis Ballistic Weapon System Support - MX09 - AW TECH REP	MIPR	Aegis Tech Rep : Moorestown, NJ	1.538	0.056	Nov 2020	0.432	Nov 2021	0.210	Nov 2022	-		0.210	Continuing	Continuing	Continuing
Aegis Ballistic Weapon System Support - MX09 - AW Wallops	MIPR	SCSC : Wallops Island, VA	4.780	1.713	Nov 2020	0.374	Nov 2021	1.750	Nov 2022	-		1.750	Continuing	Continuing	Continuing
Aegis Ballistic Weapon System Support - MX09 - TD Various	MIPR	Various : San Diego, CA	32.663	0.500	Nov 2020	0.000		0.000		-		0.000	0.000	33.163	0.000
Aegis Ballistic Weapon System Support - MX09 - AW PHD	MIPR	NSWC PHD : Port Hueneme, CA	0.956	0.000		0.000		0.000		-		0.000	0.000	0.956	0.000
Fleet Integration - MX09 - ABS	MIPR	NIWC : San Diego, CA	2.000	0.000		1.000	Nov 2021	1.019	Nov 2022	-		1.019	Continuing	Continuing	Continuing
Fleet Integration - MX09 - ABS APL	SS/CPFF	JHU/APL : Columbia, MD	0.000	0.000		5.939	Nov 2021	6.050	Nov 2022	-		6.050	Continuing	Continuing	Continuing
Fleet Integration - MX09 - ABS Fleet	C/CPFF	LM : VA	0.025	5.033	Nov 2020	0.000		0.000		-		0.000	0.000	5.058	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603892C / AEGIS BMD				Project (Number/Name) MX09 / Aegis BMD Development Support					
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Fleet Integration - MX09 - Fleet APL	SS/CPFF	JHU/APL/MD : Columbia, MD	41.378	12.891	Nov 2020	5.773	Nov 2021	6.456	Nov 2022	-		6.456	Continuing	Continuing	Continuing
Fleet Integration - MX09 - Fleet DD	MIPR	NSWC DD : Dahlgren, VA	12.552	2.415	Nov 2020	2.449	Nov 2021	3.160	Nov 2022	-		3.160	Continuing	Continuing	Continuing
Fleet Integration - MX09 - Fleet PEO C41	MIPR	PEO C41 : San Diego, CA	4.004	1.004	Nov 2020	0.000		0.000		-		0.000	0.000	5.008	0.000
Fleet Integration - MX09 - Fleet SMDC	MIPR	SMDC/ARSTRST : Huntsville, AL	2.957	0.825	Nov 2020	0.630	Nov 2021	0.930	Nov 2022	-		0.930	Continuing	Continuing	Continuing
Fleet Integration - MX09 - TG & Cerberus Integration	C/CPFF	NORTHROP GRUMMAN : AL	0.000	0.315	May 2021	0.000		0.000		-		0.000	0.000	0.315	0.000
Fleet Integration - MX09 - Fleet CSCS	MIPR	CSCS : Dahlgren, VA	5.618	1.257	Nov 2020	1.653	Nov 2021	1.653	Nov 2022	-		1.653	Continuing	Continuing	Continuing
Infrastructure Upgrades - Infrastructure Upgrades - MX-09 S Jacobs	C/CPAF	Jacobs Engineering : AL, CA, CO, NM, VA, HI	0.096	0.000		0.000		0.000		-		0.000	0.000	0.096	0.000
Infrastructure Upgrades - Infrastructure Upgrades MX-09 S Network	C/CPFF	Network Management Resources : Chantilly, VA	0.171	0.000		0.000		0.000		-		0.000	0.000	0.171	0.000
Infrastructure Upgrades - MX09 - ICT Funding	C/CPAF	Jacobs Engineering : AL,CA,CO,NM,VA,HI	59.171	11.649	Nov 2020	11.364	Nov 2021	11.509	Nov 2022	-		11.509	Continuing	Continuing	Continuing
Infrastructure Upgrades - MX09 - S	MIPR	DOD - USN - NAVAL INFORMATION WARFARE SYSTEMS COMMAND (NAVWAR) : CA	0.446	0.000		0.000		0.000		-		0.000	0.000	0.446	0.000
Infrastructure Upgrades - MX09 - S APL	SS/CPAF	JHU/APL : Laurel, MD	6.957	0.000		0.000		0.000		-		0.000	0.000	6.957	0.000
Infrastructure Upgrades - MX09 - S Corona	MIPR	NSWC Corona : Corona, CA	5.332	0.000		0.000		0.000		-		0.000	0.000	5.332	0.000
Infrastructure Upgrades - MX09 - S LM	C/CPAF	Lockheed Martin : Moorestown, NJ	21.629	0.000		0.000		0.000		-		0.000	0.000	21.629	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603892C / AEGIS BMD				Project (Number/Name) MX09 / Aegis BMD Development Support					
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Infrastructure Upgrades - MX09 - S MIT	C/CPAF	MIT : Lexington, MA	1.306	0.000		0.000		0.000		-		0.000	0.000	1.306	0.000
Infrastructure Upgrades - MX09 - S RMS	C/CPAF	Raytheon : Tucson, AZ	6.920	0.000		0.000		0.000		-		0.000	0.000	6.920	0.000
Infrastructure Upgrades - MX09- D/TD	MIPR	DOD - USN - NAVAL INFORMATION WARFARE SYSTEMS COMMAND (NAVWAR) : CA	13.910	4.334	Nov 2020	0.000		2.071	Nov 2022	-		2.071	Continuing	Continuing	Continuing
Infrastructure Upgrades - MX09- S DD	MIPR	NSWC DD : Dahlgren, VA	3.843	0.000		0.000		0.000		-		0.000	0.000	3.843	0.000
Infrastructure Upgrades - MX09-Various	MIPR	Various : Various	1.579	0.000		0.000		0.000		-		0.000	0.000	1.579	0.000
Joint Emerging Operational Need (JEON) - Joint Emerging Operational Needs Statement (JEON) - MX09 AW JHU/APL	SS/CPFF	JHU/APL : Columbia, MD	0.480	0.000		0.000		0.000		-		0.000	0.000	0.480	0.000
Joint Emerging Operational Need (JEON) - Joint Emerging Operational Needs Statement (JEON) - MX09 AW Lockheed Martin	C/CPFF	Lockheed Martin : Moorestown, NJ	3.635	0.000		0.000		0.000		-		0.000	0.000	3.635	0.000
Joint Emerging Operational Need (JEON) - Joint Emerging Operational Needs Statement (JEON) - MX09 AW NSWC	MIPR	NSWC DD : Dahlgren, VA	0.685	0.000		0.000		0.000		-		0.000	0.000	0.685	0.000
Subtotal			678.923	158.251		136.506		142.980		-		142.980	Continuing	Continuing	N/A
Remarks N/A															

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency													Date: April 2022		
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603892C / AEGIS BMD				Project (Number/Name) MX09 / Aegis BMD Development Support					

Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	N/A

Remarks
N/A

Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	N/A

Remarks
N/A

	Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	678.923	158.251		136.506		142.980		-		142.980	Continuing	Continuing	N/A

Remarks
Award Date reflects date of first obligation. Additional obligations may incrementally occur throughout the year.

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Missile Defense Agency																Date: April 2022							
Appropriation/Budget Activity 0400 / 4								R-1 Program Element (Number/Name) PE 0603892C / AEGIS BMD								Project (Number/Name) MX09 / Aegis BMD Development Support							
Significant Event Complete ▲				Milestone Decision Complete ★				Element Test Complete ◆				System Level Test Complete ●				Complete Activity ◆							
Significant Event Planned △				Milestone Decision Planned ☆				Element Test Planned ◇				System Level Test Planned ○				Planned Activity ◇							
								FY 2021		FY 2022		FY 2023		FY 2024		FY 2025		FY 2026		FY 2027			
MX09 Aegis BMD Development Support								◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Missile Defense Agency			Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603892C / AEGIS BMD	Project (Number/Name) MX09 / Aegis BMD Development Support	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
MX09 Aegis BMD Development Support	1	2021	4	2027

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency										Date: April 2022		
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0603892C / AEGIS BMD				Project (Number/Name) MD40 / Program-Wide Support			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
MD40: Program-Wide Support	375.506	30.815	30.095	21.789	-	21.789	22.657	22.465	22.253	22.929	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Program Wide Support (PWS) is allocated on a pro-rata basis across multiple Agency PE's each fiscal year based on the total Agency budget, and therefore fluctuates per PE by fiscal year.

A. Mission Description and Budget Item Justification

PWS contains non-headquarters management costs in support of MDA functions and activities across the entire MDS. These functions include Government Civilians and Contract Support Services. This effort provides integrity and oversight of the MDS as well as supports MDA in the development and evaluation of technologies that will respond to the changing threat. Additionally, PWS includes personnel to support global deployments performing deployment site preparation and activation, and provides facility capabilities for MDA Executing Agent locations worldwide. Other MDA wide costs include: physical and technical security; civilian drug testing; audit readiness; the Science, Technology, Engineering, and Mathematics (STEM) program; legal services and settlements; travel and agency training; office, equipment, vehicle, and warehouse leases; utilities and base operations across multiple geographic locations; commercial and ancillary facility services; management of all facility aspects regardless of lifecycle stage; supplies and maintenance; compliance with statutory environmental requirements; data and unified communications support; materiel and readiness and central property management of equipment; Facilities Sustainment, Restoration and Modernization (FSRM) program, (formerly Real Property Maintenance) to keep the Department's inventory of facilities in good working order; and similar operating expenses. PWS is allocated on a pro-rata basis across most Agency PEs and therefore fluctuates per PE by fiscal year based on the total Agency budget in that fiscal year.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2021	FY 2022	FY 2023
Title: Program Wide Support	30.815	30.095	21.789
Articles:	-	-	-
Description: PWS contains non-headquarters management costs in support of MDA functions and activities across the entire MDS. These functions include Government Civilians and Contract Support Services. This effort provides integrity and oversight of the MDS as well as supports MDA in the development and evaluation of technologies that will respond to the changing threat. Additionally, PWS includes personnel to support global deployments performing deployment site preparation and activation, and provides facility capabilities for MDA Executing Agent locations worldwide. Other MDA wide costs include: physical and technical security; civilian drug testing; audit readiness; the STEM program; legal services and settlements; travel and agency training; office, equipment, vehicle, and warehouse leases; utilities and base operations across multiple geographic locations; commercial and ancillary facility services; management of all facility aspects regardless of lifecycle stage; supplies and maintenance; compliance with statutory environmental requirements; data and unified communications support; materiel and readiness and central property management of equipment; the FSRM program (formerly Real Property Maintenance) to keep the Department's			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency		Date: April 2022	
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603892C / AEGIS BMD	Project (Number/Name) MD40 / Program-Wide Support	
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2021	FY 2022
inventory of facilities in good working order; and similar operating expenses. PWS is allocated on a pro-rata basis across most Agency PEs and therefore fluctuates per PE by fiscal year based on the total Agency budget in that fiscal year.			
FY 2022 Plans: - SEE ABOVE.			
FY 2023 Plans: - SEE ABOVE.			
FY 2022 to FY 2023 Increase/Decrease Statement: Decrease from FY 2022 to FY 2023 reflects the PWS allocation on a pro-rata basis across multiple Agency PE's each fiscal year based on the total Agency budget, and therefore fluctuates per PE by fiscal year.			
Accomplishments/Planned Programs Subtotals		30.815	30.095
C. Other Program Funding Summary (\$ in Millions)			
N/A			
Remarks			
D. Acquisition Strategy			
N/A			

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603892C / AEGIS BMD				Project (Number/Name) MD40 / Program-Wide Support					
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Wide Support - Agency Facilities and Maintenance SRM	MIPR	Various : Various	0.000	0.000		0.000		0.239	Nov 2022	-		0.239	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations Management	C/CPAF	Various : Multi: AL, CA, CO, VA	3.662	0.000		0.000		0.000		-		0.000	0.000	3.662	0.000
Program Wide Support - Agency Operations and Support Civilian Salaries	Various	MDA : Multi: AK, AL, CO, CA, VA	295.041	25.101	Oct 2020	30.095	Oct 2021	17.826	Oct 2022	-		17.826	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations and Support Other Agency Services	MIPR	Various : Multi: AK/AL/CA/CO/HI/MD/VA/NJ/NY/OCONUS	31.131	0.237	Oct 2020	0.000		0.924	Nov 2022	-		0.924	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations and Support Services	C/CPFF	Various : Multi: AL, CA, CO, VA	40.982	5.477	Jul 2021	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations, Sustainment and GPC	C/CPFF	021 - CDSA DAM NECK - DODN63273 : TBD	0.000	0.000		0.000		2.800	Nov 2022	-		2.800	Continuing	Continuing	Continuing
Program Wide Support - Prior year no longer funded in the FYDP	Various	Various : Various	4.690	0.000		0.000		0.000		-		0.000	0.000	4.690	0.000
Subtotal			375.506	30.815		30.095		21.789		-		21.789	Continuing	Continuing	N/A
Remarks N/A															
			Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			375.506	30.815		30.095		21.789		-		21.789	Continuing	Continuing	N/A
Remarks Award Date reflects date of first obligation. Additional obligations may incrementally occur throughout the year.															

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Missile Defense Agency															Date: April 2022														
Appropriation/Budget Activity 0400 / 4										R-1 Program Element (Number/Name) PE 0603892C / AEGIS BMD										Project (Number/Name) MD40 / Program-Wide Support									
Significant Event Complete ▲					Milestone Decision Complete ★					Element Test Complete ◆					System Level Test Complete ●					Complete Activity ◆									
Significant Event Planned △					Milestone Decision Planned ☆					Element Test Planned ◇					System Level Test Planned ○					Planned Activity ◇									
										FY 2021		FY 2022		FY 2023		FY 2024		FY 2025		FY 2026		FY 2027							
MD40 Program-Wide Support										◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇					

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Missile Defense Agency			Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603892C / AEGIS BMD	Project (Number/Name) MD40 / Program-Wide Support	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
MD40 Program-Wide Support	1	2021	4	2027

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Missile Defense Agency	Date: April 2022
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Appropriation/Budget Activity 0400: Research, Development, Test & Evaluation, Defense-Wide / BA 4: Advanced Component Development & Prototypes (ACD&P)	R-1 Program Element (Number/Name) PE 0603896C / Ballistic Missile Defense Command and Control, Battle Management & Communication
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COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
Total Program Element	4,101.943	639.027	564.946	589.374	-	589.374	575.883	588.824	612.853	605.801	Continuing	Continuing
MD01: Command & Control, Battle Management, Communications (C2BMC)	2,610.267	405.836	339.716	368.950	-	368.950	351.786	355.998	372.510	364.903	Continuing	Continuing
MC01: Cyber Operations	62.855	17.132	12.537	8.504	-	8.504	8.255	8.504	8.664	8.839	Continuing	Continuing
MT01: C2BMC Test	417.802	60.345	65.341	58.616	-	58.616	56.453	64.671	66.276	63.637	Continuing	Continuing
MX01: Command & Control, Battle Management, Communications (C2BMC) Development Support	841.802	129.960	125.086	131.903	-	131.903	138.665	139.480	142.259	145.342	Continuing	Continuing
MD40: Program-Wide Support	169.217	25.754	22.266	21.401	-	21.401	20.724	20.171	23.144	23.080	Continuing	Continuing

Program MDAP/MAIS Code: 362

Note

The increase from FY 2022 to FY 2023 provides additional product support and software development for Spiral 8.2-5 and provides for the initiation of the C2BMC portion of the Department of Defense architecture solution for Defense of Guam.

A. Mission Description and Budget Item Justification

The Command and Control, Battle Management, and Communications (C2BMC) program is the integrating element of the Missile Defense System (MDS). It is a vital operational system that enables the U.S. President, Secretary of Defense and Combatant Commanders at strategic, regional and operational levels to systematically plan missile defense operations, to collectively see the battle develop, and to dynamically manage designated networked sensors and weapons systems to achieve global and regional mission objectives. Systems linked through C2BMC include Patriot, Terminal High Altitude Area Defense (THAAD), Aegis Ballistic Missile Defense (BMD), Aegis Ashore, Ground-based Midcourse Defense (GMD), Army Integrated Air and Missile Defense Battle Command System (IBCS), and sensors such as the Army Navy/Transportable Radar Surveillance and Control-2 (AN/TPY-2) Radar, Sea-Based X-Band Radar (SBX), Long Range Discrimination Radar (LRDR), Homeland Defense, Space-Based Infrared System (SBIRS), and BMDS Overhead Persistent Infrared (OPIR) Architecture (BOA). The C2BMC program also works to increase coalition partners' capabilities and investigates concepts and explores system engineering issues associated with innovative space applications for a missile defense intercept and defeat system. C2BMC begins support to integrate existing sensor elements within Missile Defense Agency and the Services into the Ballistic Missile Defense System Communications Network (BCN) to establish a globally integrated sensor architecture to provide enhanced, dynamic space capabilities, and extend existing BCN network and cybersecurity management to cover the expanded architecture.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Missile Defense Agency	Date: April 2022
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Appropriation/Budget Activity 0400: Research, Development, Test & Evaluation, Defense-Wide / BA 4: Advanced Component Development & Prototypes (ACD&P)	R-1 Program Element (Number/Name) PE 0603896C / Ballistic Missile Defense Command and Control, Battle Management & Communication
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B. Program Change Summary (\$ in Millions)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Previous President's Budget	645.741	603.448	0.000	-	0.000
Current President's Budget	639.027	564.946	589.374	-	589.374
Total Adjustments	-6.714	-38.502	589.374	-	589.374
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	-44.978			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	6.476			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	-8.364	0.000			
• Missile Defeat and Defense Enhancement	0.000	0.000	0.000	-	0.000
• Other Adjustment	1.650	0.000	589.374	-	589.374

Change Summary Explanation

Decrease of \$44.9 million in FY 2022 reflects the Congressional reduction for Layered Homeland Defense (LHD) from lack of validated requirements and acquisition strategy. Increase of \$6.4 million in FY 2022 provides the Congressional plus-up for Joint All Domain Command and Control (JADC2) and MDS Cybersecurity.

FY 2023 funding increase reflects the fact that the FY 2022 President's Budget request did not include out-year funding.

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency										Date: April 2022		
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0603896C / Ballistic Missile Defense Co mmand and Control, Battle Management & Communication				Project (Number/Name) MD01 / Command & Control, Battle Management, Communications (C2BMC)			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
MD01: Command & Control, Battle Management, Communications (C2BMC)	2,610.267	405.836	339.716	368.950	-	368.950	351.786	355.998	372.510	364.903	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

The increase from FY 2022 to FY 2023 provides additional product support and software development for Spiral 8.2-5 and provides for the initiation of the C2BMC portion of the Department of Defense architecture solution for Defense of Guam.

A. Mission Description and Budget Item Justification

Provides incremental development, deployment, and operational support of C2BMC capabilities required for Missile Defense System (MDS) planning, situational awareness, sensor management, and engagement coordination. The FY 2019 National Defense Authorization Act (NDAA) section 869 recognized C2BMC for its implementation of this iterative practice and directed C2BMC's inclusion in a Community of Practice to advise on agile or iterative development.

C2BMC delivers capabilities incrementally with each software build (named as a Spiral), adding to or enhancing the capability of the previous build. C2BMC incremental delivery of Spiral 8.2 provides critical Homeland Defense for increased Ground-Based Missile Defense (GMD) battlespace, improved threat tracking using multiple sensors communicating via Link 16, enhanced sensor tasking to meet track quality and discrimination timeliness requirements, Space Domain Awareness (SDA) tasking support, and improved cyber capabilities. Enhanced Homeland Defense also integrates the Ballistic Missile Defense System (BMDS) Overhead Persistent Infrared (OPIR) Architecture (BOA) with the MDS to enhance system level missile-tracking capabilities through earlier cueing of radars and weapon systems.

European Phased Adaptive Approach (EPAA) Phase 3/Engage-on-Remote (EOR) (Spiral 8.2-3) provides critical sensor management capability, greater engagement flexibility, improved OPIR-based cueing, and enhanced Aegis Ballistic Missile Defense (BMD) defended area by enabling Aegis to use Army Navy/Transportable Radar Surveillance and Control-2 (AN/TPY-2) data for EOR engagements, providing a five-fold increase in defended area coverage in the US Central Command (USCENTCOM) and US European Command (USEUCOM) area of responsibility compared to individual weapon system organic capability. Spiral 8.2-3 also includes SDA and integrates Mobile Sensor Integration (MSI) Phase 1 and BOA data into the MDS.

Long Range Discrimination Radar (LRDR) Control for Homeland Defense (Spiral 8.2-5) enables increased homeland and regional defense by providing LRDR sensor management, creation and dissemination of a BMD System track inclusive of LRDR sensor data, hypersonic threat tracking, significant capability expansion of track and reporting Advance Threats for warfighter SDA; implements Link-16 reporting, integration of system level discrimination data, transmission of LRDR-based information to GMD Fire Control (GFC) and other MDS elements; and operationalization of Space-based Kill Assessment (SKA) hit assessment for Homeland Defense.

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency		Date: April 2022		
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603896C / Ballistic Missile Defense Co mmand and Control, Battle Management & Communication	Project (Number/Name) MD01 / Command & Control, Battle Management, Communications (C2BMC)		
Expanded Regional and Homeland Defense Increment 7 (Spiral 8.2-7) will provide BMDS System Track (BST) with System Level Discrimination Integration for GMD engagements; Expanded Active Sensor Bias Monitoring and Full Reporting; Refined Space and Intelligence Data; Expanded Hypersonic Tracking and Link-16 Reporting.				
C2BMC continues to develop incremental improvements to the MDS to keep pace with emerging threats worldwide by investing in the development, integration, and testing of advanced algorithms to improve track and discrimination capabilities and enhancing use of space based sensor data from sources such as the Space Based Infrared System (SBIRS), using the BMDS OPIR architecture. Related disciplines provide development and deployment support to C2BMC system capabilities. In support of Hypersonic Defense, C2BMC will provide contingency capability to demonstrate, develop and deploy a detection and warning for advanced threats. C2BMC continues Protected Anti-Jam/Anti-Scintillation Wideband Net-Centric System (PAAWNS) modem integration, installations, and technical refresh globally of the threat based communication network modernization against the advanced threat, while maintaining efficiencies in cost.				
C2BMC International Partner system engineering ensures allies and partners are integrated to the fullest extent possible with U.S. MDS capabilities. Collaborative system engineering, testing, and fielding facilitate interoperability with North Atlantic Treaty Organization (NATO) and partner nations such as Israel and Japan. C2BMC works with these nations to define and document international interfaces that are compatible with international standards and traceable to U.S. MDS requirements. C2BMC participates in test events and live fire exercises hosted by international partners to ensure U.S. missile defense weapons, sensors, and C2 systems are interoperable with international systems. C2BMC maintains and upgrades the U.S./NATO secure data sharing gateways located at Ramstein Air Base, Germany, for missile defense operations and training. C2BMC also supports development of Japan's BMD requirements to ensure interoperability of Japanese and U.S. BMD systems (sensors, shooters, C2) resulting in an integrated regional, operational, and strategic defense of Japan.				
C2BMC Modeling and Simulation (M&S) maintains MDS simulation/stimulation tools and federated models to support development and verification of deployed C2BMC and BOA Spirals. The BMDS C2BMC Model (BCM) is used for Flight Test pre-mission analysis and exercises to represent a second C2 Suite for Cross-Area of Responsibility (XAOR) functionality, Early Digital Product (EDP) for C2BMC performance assessment, and supports development and integration of GMD, AN/TPY-2, and Aegis software and models. The OPIR sensor M&S is used in the Ground Test Integrated System-level Simulation (GTISS) as the stimulus for BOA. The BCM program provides a cost effective means to assess and explore the performance space of the MDS beyond what can be physically tested via Flight Tests and Target of Opportunity collections.				
C2BMC develops, integrates, and tests advanced algorithms to improve discrimination capabilities and enhance the use of space-based sensor data. In support of Missile Defense Agency (MDA) discrimination improvements effort, C2BMC demonstrates, develops, and deploys multiple techniques to improve BMD System ability to identify lethal and non-lethal objects.				
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2021	FY 2022	FY 2023
Title: C2BMC Development and Deployment		282.068	264.708	313.489
Articles:		-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency		Date: April 2022	
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603896C / <i>Ballistic Missile Defense Command and Control, Battle Management & Communication</i>	Project (Number/Name) MD01 / <i>Command & Control, Battle Management, Communications (C2BMC)</i>	
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2021	FY 2022
<p>Description: Provides funding for incremental development and deployment of C2BMC capabilities that link sensors and shooters to enable integrated MDS capabilities, integrate BOA with the MDS architecture to enhance missile tracking capabilities and enable much earlier cueing of radars and shooters, and fulfill Cybersecurity requirements. The Enterprise Sensors Laboratory (ESL) and Experimentation Laboratory (X-Lab) produce key prototypes for further maturation in the C2BMC capability Spiral development process and enable integrated experimentation for C2BMC, ESL, OPIR products, and other MDS elements through robust connectivity to simulation frameworks, weapon systems, sensors, and operational assets. Expand capability to track and report Advanced Threats for warfighter Situational Awareness. Expanding SDA tasking and reporting to include TPY2, LRDR, and Aegis sensors.</p> <p>Recurring accomplishments include iterative development and procurement cycles for hardware, software, network capability system engineering tasks, and artifacts for technical engineering reviews; participation in test readiness reviews, pre-test engineering, and analysis of ground and flight test results, wargames, and exercises in accordance with the MDS Integrated Master Test Plan (IMTP); site planning, scheduling, and hardware acquisition to support planned deployment of C2BMC Spirals and BOA capabilities; updates and maintenance for C2BMC Model (BCM) MDS simulation/stimulation (federated model) and verification scenarios for all C2BMC Spirals deployed and under development; Discrimination, operationalization of SKA Hit Assessment, and C2BMC capabilities; design and installation of operational sharing gateways; and collaboration with international partners to ensure future interoperability; and maintain Verification and Validation in support of MDS capability ground testing and participation in MDS ground tests. C2BMC will continue to design and prototype the next incremental capability addressing Additional Homeland Defense and Mid-Term Discrimination requirements, inclusive of C2BMC Generation of BMD System Track (with System Level Discrimination Data Integration) for GMD Homeland Defense Engagements and Expanded Regional and Homeland Defense, and an expanded interface with the OPIR enterprise, which yields additional raid handling capacity, enhanced Aegis BMD engage on capability, and expanded hypersonic defense tracking and reporting.</p> <p>C2BMC will begin to integrate existing MDA and Service elements with C2BMC and the Ballistic Missile Defense System Communications Network (BCN) to establish a globally integrated sensor architecture to provide enhanced, dynamic space capabilities, and extend existing BCN network and cybersecurity management to cover the expanded architecture. The expanded sensor architecture will integrate ground-based radars from the U.S. Space Force Space Surveillance Network (SSN), orchestrated by C2BMC, and develop algorithms to fuse and/or correlate the data provided by these sensors in support of missile defense and space C2 missions.</p> <p>Specific and/or unique accomplishments for each FY are as follows:</p>			
			FY 2023

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency		Date: April 2022	
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603896C / <i>Ballistic Missile Defense Command and Control, Battle Management & Communication</i>	Project (Number/Name) MD01 / <i>Command & Control, Battle Management, Communications (C2BMC)</i>	
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2021	FY 2022
<p>FY 2022 Plans:</p> <p>LRDR for Homeland Defense (Spiral 8.2-5), homeland defense focus:</p> <ul style="list-style-type: none"> - Complete incremental capability development for S8.2-5 in response to emergent operational requirements - Complete phased deployment of hardware and software to provide LRDR MDS network connectivity and sensor control nodes - Complete development, integration, and operationalization of BOA 7.0 capability to detect and track advanced threats globally - Complete development and testing of Space-based Kill Assessment (SKA) Hit Assessment (HA) - Begin sustainment of S8.2-5 capabilities <p>C2BMC Additional and Expanded Regional and Homeland Defense focus:</p> <ul style="list-style-type: none"> - Continue design and development of, and deliver accredited models and simulations (M&S) for, C2BMC and BOA spirals for participation in End-to-end Digital Integrated System Simulation (EDISS) - Support two training device development and fielding programs for distributed and individual training - Continue to support the design and development of Ground Test Integrated System-level Simulation (GTISS) by developing and delivering accredited M&S for BOA spirals - Continue development of next iteration of BOA which will include addition of new sensors and expanded Advanced Threat Performance - Continue development to integrate additional advanced sensors into BOA to expand coverage and increase custody of emerging threats - Initiate integration of sensor elements to provide enhanced, dynamic space capabilities and extend existing Ballistic Missile Defense System Communications Network (BCN) and cybersecurity management to cover expanded architecture - Continue technical upgrade and refresh for development lab infrastructure and the Joint Early Warning Lab (JEWL) <p>Space C2 Integration</p> <ul style="list-style-type: none"> - Initiate development and test of source and system track algorithms in support of Space C2 sensor orchestration - Continue development, integration, and test of the Eglin C-Band Radar, Millstone, ALTAIR, Space Fence, and GBR-K sensors into C2BMC - Initiate development of Space Domain Awareness sensor integration of a Upgraded Early Warning Radar (UEWR) sensor in support of Joint Space C2/MD missions - Support interface development and test for the Millstone, ALTAIR, Space Fence, Eglin C-Band, and UEWR radars as their U.S. Space Force upgrade paths near IOC - Initiate early operational testing of the above SSN sensors with C2BMC serving as the sensor orchestrator and track processor - Conduct studies to evaluate and optimize trades in support of delivering integrated Space C2 and missile defense capabilities 			
			FY 2023

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency		Date: April 2022		
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603896C / Ballistic Missile Defense Co mmand and Control, Battle Management & Communication	Project (Number/Name) MD01 / Command & Control, Battle Management, Communications (C2BMC)		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2021	FY 2022	FY 2023
<p>JADC2 Interface:</p> <p>- Congressional plus up for JADC2 Interface will connect C2BMC X-Lab and ESL to the JADC2 Battle Lab Network using the Joint Demonstration Environment</p> <p>FY 2023 Plans:</p> <p>LRDR for Homeland Defense (Spiral 8.2-5), homeland defense focus:</p> <p>- Continue sustainment of S8.2-5 capabilities</p> <p>C2BMC Additional and Expanded Regional and Homeland Defense focus:</p> <p>- Continue development of next iteration of BOA which will include addition of new sensors and expanded Advanced Threat Performance</p> <p>- Continue development to integrate additional advanced sensors into BOA to expand coverage and increase custody of emerging threats</p> <p>Space C2 Integration</p> <p>- Continue development and test of source and system track algorithms in support of Space C2 sensor orchestration</p> <p>- Continue development, integration, and test of the Eglin C-Band Radar, Millstone, ALTAIR, Space Fence, and GBR-K sensors into C2BMC</p> <p>- Continue development of Space Domain Awareness sensor integration of a UEWR sensor in support of Joint Space C2/MD missions</p> <p>- Support interface development and test for the Millstone, ALTAIR, Space Fence, Eglin C-Band, and UEWR radars as their U.S. Space Force upgrade paths near IOC</p> <p>- Continue early operational testing of the above SSN sensors with C2BMC serving as the sensor orchestrator and track processor</p> <p>- Conduct studies to evaluate and optimize trades in support of delivering integrated Space C2 and missile defense capabilities</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement:</p> <p>Increase from FY 2022 to FY 2023 provides additional product support and software development for Spiral 8.2-5.</p>				
Title: C2BMC Communications		37.568	35.265	35.461
Articles:		-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency		Date: April 2022	
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603896C / <i>Ballistic Missile Defense Command and Control, Battle Management & Communication</i>	Project (Number/Name) MD01 / <i>Command & Control, Battle Management, Communications (C2BMC)</i>	
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2021	FY 2022
<p>Description: The BCN ties together an expanding set of sensors and weapons systems to enable the National Command Authority and the commanders at the strategic, theater, and tactical levels to optimally engage missile threats. Recurring accomplishments include the following:</p> <ul style="list-style-type: none"> - Provide GMD Communications Network (GCN) Long Haul Communications Transport (LHCT) services and a robust, end-to-end, high availability, operational communications network (COMNET) infrastructure with diverse paths that quickly and unambiguously share information across the global MDS - Participate in and analyze results from events scheduled in the MDS IMTP - Provide MDS communications via leased Defense Information Service Agency (DISA) circuits, and resolve real-time operational issues through DISA's Network Operations and Security Center - Provide effective network management to coordinate and integrate information across diverse equipment platforms, interface with other DoD communications systems, evolve information standards and capabilities, and adhere to the DoD Risk Management Framework (RMF) - Upgrade BCN capability by supporting all DoD teleports to enhance satellite communications - Continue technical refresh for End-of-Life SATCOM terminals on SBX by transitioning to Military Satellite Communications (MILSATCOM) terminals - Continue acquiring additional network circuits to support the threat based communication network modernization - Continue PAAWNS modem testing integration and installations globally <p>Specific and/or unique accomplishments for each FY are as follows:</p> <p>FY 2022 Plans:</p> <ul style="list-style-type: none"> - Continue upgrade and technical refresh of the PAAWNS threat based communication network against the advanced threat of nuclear capabilities, while maintaining efficiencies in cost - Continue upgrade and integration of AN-TPY/2 High-Altitude Electromagnetic Pulse Hardened Transport Terminals (HEMPHTTs) for increased protection of satellite communication systems at relevant sites <p>FY 2023 Plans:</p> <ul style="list-style-type: none"> - Continue upgrade and technical refresh of the PAAWNS threat based communication network against the advanced threat of nuclear capabilities, while maintaining efficiencies in cost - Continue upgrade and integration of AN-TPY/2 HEMPHTTs for increased protection of satellite communication systems at relevant sites 			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency			Date: April 2022		
Appropriation/Budget Activity 0400 / 4		R-1 Program Element (Number/Name) PE 0603896C / <i>Ballistic Missile Defense Command and Control, Battle Management & Communication</i>		Project (Number/Name) MD01 / <i>Command & Control, Battle Management, Communications (C2BMC)</i>	
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)			FY 2021	FY 2022	FY 2023
- Provide SBX terminal and cyber upgrades					
FY 2022 to FY 2023 Increase/Decrease Statement: N/A					
Title: Classified			50.000	39.743	0.000
Articles:			-	-	-
Description: Provides for the development of innovative command and control techniques and technology to accelerate integration of non-traditional sensors for missile defense. Leverage advanced processing nodes, innovative fusion techniques, and advanced capabilities for enhanced tracking and reporting.					
Specific and/or unique accomplishments for each FY are as follows:					
FY 2022 Plans: - SEE ABOVE					
FY 2023 Plans: N/A					
FY 2022 to FY 2023 Increase/Decrease Statement: The decrease from FY 2022 to FY 2023 reflects the completion of classified efforts for the development of innovative command and control techniques and technology to accelerate integration of non-traditional sensors.					
Title: Cruise Missile Defense for Homeland			36.200	0.000	0.000
Articles:			-	-	-
Description: Accelerates capability against cruise missiles and asymmetric threats. Provides performance assessment of advanced cruise missiles, leverages Command and Control, Battle Management, and Communications Enterprise Sensor Processing. Node to track and report on advanced threats, and establishes a new suite for 24 hours a day, 7 days a week, 365 days a year testing of new ground processing algorithms to detect and report on long range cruise missiles, and will demonstrate a design with non-traditional sensors and networks, with the potential for limited leave behind capability.					
Specific and/or unique accomplishments for each FY are as follows:					
FY 2022 Plans:					

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency			Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603896C / <i>Ballistic Missile Defense Command and Control, Battle Management & Communication</i>	Project (Number/Name) MD01 / <i>Command & Control, Battle Management, Communications (C2BMC)</i>	

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023
N/A			
FY 2023 Plans: N/A			
FY 2022 to FY 2023 Increase/Decrease Statement: N/A			
Title: Guam Defense Design/Upgrade C2BMC Battle Management Decision Aids, Planners and Algorithms Description: Deploy C2BMC User Node to support Guam defense to provide ballistic and hypersonic threat typing and tracking, battle management decision aids and regional radar support while integrating with IBCS and Aegis Weapon System. BOA updates to support regional raid tracking. Enterprise Sensor Processing Node (ESPN) to provide cruise missile typing, warning, and tracking. FY 2022 Plans: N/A FY 2023 Plans: -Initiate ESPN Cruise Missile development at Enterprise Sensor Laboratory (ESL) -Initiate Site Surveys, procure and install Type 1 Defense Information System Agency Nodes -Initiate Command Center Planning and Design FY 2022 to FY 2023 Increase/Decrease Statement: Increase from FY 2022 to FY 2023 provides for the initiation of the C2BMC portion of the Department of Defense architecture solution for Defense of Guam.	Articles: 0.000 -	0.000 -	20.000 -
Accomplishments/Planned Programs Subtotals	405.836	339.716	368.950

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

<u>Line Item</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u> <u>Base</u>	<u>FY 2023</u> <u>OCO</u>	<u>FY 2023</u> <u>Total</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• 0603881C: <i>Ballistic Missile</i>	305.081	213.382	190.216	-	190.216	196.279	213.945	224.146	238.269	Continuing	Continuing
<i>Defense Terminal Defense Segment</i>											

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency										Date: April 2022		
Appropriation/Budget Activity 0400 / 4				R-1 Program Element (Number/Name) PE 0603896C / Ballistic Missile Defense Co mmand and Control, Battle Management & Communication				Project (Number/Name) MD01 / Command & Control, Battle Management, Communications (C2BMC)				
C. Other Program Funding Summary (\$ in Millions)												
Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost	
• 0603882C: Ballistic Missile Defense Midcourse Defense Segment	1,195.853	724.028	667.524	-	667.524	870.817	802.617	781.973	765.733	Continuing	Continuing	
• 0603884C: Ballistic Missile Defense Sensors	259.605	254.962	231.134	-	231.134	250.028	274.705	276.254	257.575	Continuing	Continuing	
• 0603890C: BMD Enabling Programs	607.167	623.644	591.847	-	591.847	613.589	625.761	635.633	640.374	Continuing	Continuing	
• 0603892C: AEGIS BMD	861.809	639.549	600.072	-	600.072	658.798	574.014	570.018	580.496	Continuing	Continuing	
• 0603904C: Missile Defense Integration and Operations Center (MDIOC)	54.026	52.403	49.367	-	49.367	51.744	56.502	57.833	59.006	Continuing	Continuing	
• 0603907C: Sea Based X-Band Radar (SBX)	120.063	147.241	164.668	-	164.668	174.934	215.367	198.956	179.622	Continuing	Continuing	
• 0603914C: Ballistic Missile Defense Test	364.994	389.156	367.824	-	367.824	363.963	421.261	476.991	490.176	Continuing	Continuing	
• 0603915C: Ballistic Missile Defense Targets	534.348	560.478	559.513	-	559.513	555.341	623.995	628.146	632.072	Continuing	Continuing	
• 0604181C: Hypersonic Defense	267.589	287.796	225.477	-	225.477	108.540	110.220	287.535	449.590	Continuing	Continuing	
• 0604672C: Homeland Defense Radar-Hawaii	133.000	75.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	208.000	
• 0604873C: Long Range Discrimination Radar (LRDR)	135.088	133.335	75.120	-	75.120	103.451	95.712	71.715	76.316	Continuing	Continuing	
Remarks												
D. Acquisition Strategy												
A sole source C2BMC contract to Lockheed Martin was awarded 1st quarter FY 2012. The current ordering period is through 1st quarter FY 2025. Major team members to Lockheed are Northrop Grumman, Boeing, Raytheon, and General Dynamics. They are charged with the development, testing, fielding, training, operations and sustainment, and cyber operations support of the C2BMC system. Additionally, the DISA supports C2BMC worldwide long-haul communications. C2BMC Program Office government, Federally Funded Research and Development Center/University Affiliated Research Center (FFRDC/UARC), and Contract Support Services (CSS) personnel are also fully integrated as part of the Prime contractor's team to function in an Integrated Product Team environment. Furthermore, a sole source Specialized												

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency		Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603896C / Ballistic Missile Defense Command and Control, Battle Management & Communication	Project (Number/Name) MD01 / Command & Control, Battle Management, Communications (C2BMC)
<p>Warfighter Development Contract (SWDC) was awarded to Northrop Grumman in March 2018 (3 year base and 2 one year option periods) for continuation of the systems engineering, software development, test and integration for BOA.</p>		

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603896C / <i>Ballistic Missile Defense Command and Control, Battle Management & Communication</i>						Project (Number/Name) MD01 / <i>Command & Control, Battle Management, Communications (C2BMC)</i>			
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
C2BMC Development and Deployment - Independent Performance Assessment and Analysis -Various	MIPR	Various : Huntsville, AL, Colorado Springs, CO; NCR	8.965	5.625	Oct 2020	1.886	Oct 2021	4.455	Oct 2022	-		4.455	Continuing	Continuing	Continuing
C2BMC Development and Deployment - Aggregated Discrim	Various	Various : AL; CO; FL; OH; MA; VA	53.851	17.088	Oct 2020	12.443	Oct 2021	6.598	Nov 2022	-		6.598	Continuing	Continuing	Continuing
C2BMC Development and Deployment - BMDS C2BMC Model (BCM) - EDISS Integration	SS/CPIF	Lockheed Martin : Huntsville, AL, Colorado Springs, CO; NCR	9.186	3.527	Oct 2020	3.797	Oct 2021	0.933	Oct 2022	-		0.933	0.000	17.443	0.000
C2BMC Development and Deployment - BOA OPIR Stimulation M&S - EDISS/ GTISS	C/CPAF	SciTec : Newark, NJ	0.583	0.000		2.575	Oct 2021	1.676	Nov 2022	-		1.676	Continuing	Continuing	Continuing
C2BMC Development and Deployment - BOA OPIR Stimulation M&S - EDISS/ GTISS -GOV	MIPR	Sandia National Labs : Albuquerque, NM	2.245	0.963	Nov 2020	0.000		0.000		-		0.000	0.000	3.208	0.000
C2BMC Development and Deployment - BOA OPIR Stimulation M&S - EDISS/ GTISS -NGC	SS/CPAF	Northrop Grumman Space and Mission Systems : Azusa, CA	5.082	1.450	Nov 2020	0.000		0.000		-		0.000	0.000	6.532	0.000
C2BMC Development and Deployment - BOA Simulation Development and Integration- EDISS	SS/CPAF	Northrop Grumman Space and Mission Systems : Boulder, CO	0.000	1.451	Oct 2020	0.000		0.000		-		0.000	0.000	1.451	0.000
C2BMC Development and Deployment - C2BMC Hardware/Software Development, Integration & Test (I&T)	SS/CPIF	Lockheed Martin Team : Huntsville, AL; Colorado Springs, CO	989.971	123.076	Dec 2020	130.327	Dec 2021	137.805	Dec 2022	-		137.805	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603896C / <i>Ballistic Missile Defense Command and Control, Battle Management & Communication</i>						Project (Number/Name) MD01 / <i>Command & Control, Battle Management, Communications (C2BMC)</i>			
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
C2BMC Development and Deployment - C2BMC Integration	MIPR	DOD - USA - COMBAT CAPABILITIES DEVELOPMENT COMMAND (CCDC) AVIATION AND MISSILE CENTER (AVMC) : Huntsville, AL	176.627	9.528	Nov 2020	7.263	Nov 2021	8.673	Nov 2022	-		8.673	Continuing	Continuing	Continuing
C2BMC Development and Deployment - C2BMC Mid-Term Discrim-SCOUT OGA	MIPR	DOD - USA - COMBAT CAPABILITIES DEVELOPMENT COMMAND (CCDC) AVIATION AND MISSILE CENTER (AVMC) : AL	6.830	0.000		0.000		0.000		-		0.000	0.000	6.830	0.000
C2BMC Development and Deployment - Contract Support Services (CSS)	C/CPFF	MDA Various : Huntsville, AL; Colorado Springs, CO; NCR	340.139	35.208	Nov 2020	25.375	Nov 2021	33.597	Nov 2022	-		33.597	Continuing	Continuing	Continuing
C2BMC Development and Deployment - Cybersecurity Upgrades - Development	SS/CPIF	Lockheed Martin : Huntsville, AL; Colorado Springs, CO	0.000	0.000		0.000		0.000		-		0.000	0.000	0.000	0.000
C2BMC Development and Deployment - ESL/BOA Development	SS/CPAF	Northrop Grumman Space and Mission Systems : Colorado Springs, CO	53.655	18.553	Oct 2020	28.691	Oct 2021	56.679	Oct 2022	-		56.679	Continuing	Continuing	Continuing
C2BMC Development and Deployment - Federally Funded Research & Development Centers / University Affiliated Research Center	MIPR	MITRE, IDA, ORNL, Aerospace, JHU/APL, GTRI : Arlington, VA/ Huntsville, AL/	216.932	17.904	Oct 2020	15.368	Oct 2021	14.546	Oct 2022	-		14.546	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603896C / Ballistic Missile Defense Co mmand and Control, Battle Management & Communication				Project (Number/Name) MD01 / Command & Control, Battle Management, Communications (C2BMC)					
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
		Colorado Springs, CO													
C2BMC Development and Deployment - IT User Services - IRES	C/CPAF	Jacobs Technical, Inc : AL, AK, CA, CO, HI, NM, VA	7.930	6.046	Mar 2021	6.057	Mar 2022	6.132	Mar 2023	-		6.132	Continuing	Continuing	Continuing
C2BMC Development and Deployment - IT User Services - NGC	SS/CPFF	Northrop Grumman Space and Mission Systems : Colorado Springs, CO	9.266	0.000		0.000		0.000		-		0.000	0.000	9.266	0.000
C2BMC Development and Deployment - Independent Performance Assessment and Analysis	MIPR	DOD - USA - COMBAT CAPABILITIES DEVELOPMENT COMMAND (CCDC) AVIATION AND MISSILE CENTER (AVMC) : Huntsville, AL	10.112	1.951	Nov 2020	0.865	Nov 2021	7.654	Nov 2022	-		7.654	Continuing	Continuing	Continuing
C2BMC Development and Deployment - Joint Early Warning Lab (JEWL) and C2BMC Lab Build Out	C/CPAF	Jacobs Technical, Inc : Colorado Springs, CO	7.695	1.623	Mar 2021	1.019	Mar 2022	2.179	Mar 2023	-		2.179	Continuing	Continuing	Continuing
C2BMC Development and Deployment - M&S EDISS/ GTISS - Industry	C/CPAF	Boeing : Huntsville, AL	4.064	0.000		0.000		0.000		-		0.000	0.000	4.064	4.064
C2BMC Development and Deployment - MDA Civilian, Travel & PCS	Various	MDA Various : Huntsville, AL; Colorado Springs, CO; NCR	208.741	20.107	Oct 2020	20.919	Oct 2021	23.151	Oct 2022	-		23.151	Continuing	Continuing	Continuing
C2BMC Development and Deployment - Mobile Sensor Integration Phase II	Various	Various : AL; CO; FL; OH; MA; VA	33.500	0.000		0.000		0.000		-		0.000	0.000	33.500	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603896C / <i>Ballistic Missile Defense Command and Control, Battle Management & Communication</i>						Project (Number/Name) MD01 / <i>Command & Control, Battle Management, Communications (C2BMC)</i>			
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
C2BMC Development and Deployment - Models & Simulation	SS/CPIF	Lockheed Martin Team : Huntsville, AL; Colorado Springs, CO; NCR	13.882	4.652	Oct 2020	3.720	Oct 2021	1.309	Oct 2022	-		1.309	Continuing	Continuing	Continuing
C2BMC Development and Deployment - OGA Communications Development	MIPR	USAF/SAF : Various	14.389	0.000		0.000		0.000		-		0.000	0.000	14.389	0.000
C2BMC Development and Deployment - Post Intercept Assessment	C/CPFF	SciTec : Newark, NJ	3.683	0.500	Nov 2020	0.000		0.000		-		0.000	0.000	4.183	0.000
C2BMC Development and Deployment - Post Intercept Assessment Hardware	C/CPAF	Northrop Grumman Space and Missile Systems : Colorado Springs, CO	0.713	0.000		0.000		0.000		-		0.000	0.000	0.713	0.000
C2BMC Development and Deployment - Post Intercept Assessment Integration	SS/CPIF	Lockheed Martin Team : Huntsville, AL/Colorado Springs, CO	1.231	0.000		0.000		0.000		-		0.000	0.000	1.231	0.000
C2BMC Development and Deployment - Post Intercept Assessment Prototyping	C/CPFF	Corvid : Huntsville, AL	8.248	0.000		0.000		0.000		-		0.000	0.000	8.248	0.000
C2BMC Development and Deployment - Prior year C2BMC Development and Deployment no longer funded in the FYDP	Various	Various : Various	1.000	0.000		0.000		0.000		-		0.000	0.000	1.000	0.000
C2BMC Development and Deployment - Specialized Warfighter Development Program Management	SS/CPAF	Northrop Grumman Space and Mission Systems : Huntsville, AL	5.930	5.495	Mar 2021	0.000		0.000		-		0.000	0.000	11.425	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603896C / Ballistic Missile Defense Co mmand and Control, Battle Management & Communication				Project (Number/Name) MD01 / Command & Control, Battle Management, Communications (C2BMC)					
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
C2BMC Development and Deployment - Spiral Development	MIPR	Sandia, MDA Various : AL; CA; CO; NCR, NM	8.480	4.588	Oct 2020	0.575	Oct 2021	2.617	Oct 2022	-		2.617	Continuing	Continuing	Continuing
C2BMC Development and Deployment - X Lab	SS/CPIF	Lockheed Martin : Huntsville, AL	11.504	2.733	Oct 2020	3.828	Oct 2021	5.485	Oct 2022	-		5.485	Continuing	Continuing	Continuing
C2BMC Communications - Communication Equipment and Fielding	MIPR	DISA, PMDCATS, SPAWAR : Springfield, VA	184.939	33.748	Jan 2021	30.459	Jan 2022	30.495	Jan 2023	-		30.495	Continuing	Continuing	Continuing
C2BMC Communications - Communication Leases	MIPR	DISA : Arlington, VA	65.377	3.820	Oct 2020	4.806	Oct 2021	4.966	Oct 2022	-		4.966	Continuing	Continuing	Continuing
C2BMC Communications - Networks Development and Deployment	SS/CPFF	Lockheed Martin Team : Colorado Springs, CO	28.498	0.000		0.000		0.000		-		0.000	0.000	28.498	0.000
C2BMC Communications - Prior year C2BMC Communications no longer funded in the FYDP	Various	Various : Various	117.019	0.000		0.000		0.000		-		0.000	7.115	124.134	0.000
Classified - Classified Program	MIPR	USAF/SAF : Various	0.000	50.000	Feb 2021	39.743	Feb 2022	0.000		-		0.000	0.000	89.743	0.000
Cruise Missile Defense for Homeland - Cruise Missile Defense for Homeland	MIPR	USAF/SAF : Various	0.000	36.200	Jan 2021	0.000		0.000		-		0.000	0.000	36.200	0.000
Guam Defense Design/ Upgrade C2BMC Battle Management Decision Aids, Planners and Algorithms - Defense of Guam - C2BMC Hardware/ Software Development, Integration & Test (I&T) User NODE (Phase I)	SS/CPIF	LOCKHEED MARTIN CORPORATION : Various	0.000	0.000		0.000		1.185	Nov 2022	-		1.185	Continuing	Continuing	Continuing
Guam Defense Design/ Upgrade C2BMC Battle	MIPR	DOD - DEFENSE INFORMATION	0.000	0.000		0.000		4.306	Nov 2022	-		4.306	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency											Date: April 2022				
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603896C / <i>Ballistic Missile Defense Command and Control, Battle Management & Communication</i>					Project (Number/Name) MD01 / <i>Command & Control, Battle Management, Communications (C2BMC)</i>				

Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Management Decision Aids, Planners and Algorithms - Defense of Guam - Communication Equipment and Fielding		SYSTEMS AGENCY (DISA) : VA													
Guam Defense Design/ Upgrade C2BMC Battle Management Decision Aids, Planners and Algorithms - Defense of Guam - ESPN Development	C/CPFF	SCITEC INC : Various	0.000	0.000		0.000		0.861	Nov 2022	-		0.861	Continuing	Continuing	Continuing
Guam Defense Design/ Upgrade C2BMC Battle Management Decision Aids, Planners and Algorithms - Defense of Guam - ESPN/ESL/BOA Development	SS/CPAF	NORTHROP GRUMMAN : CO	0.000	0.000		0.000		13.648	Nov 2022	-		13.648	Continuing	Continuing	Continuing
Subtotal			2,610.267	405.836		339.716		368.950		-		368.950	Continuing	Continuing	N/A

Remarks

N/A

Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	N/A

Remarks

N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency													Date: April 2022		
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0603896C / <i>Ballistic Missile Defense Command and Control, Battle Management & Communication</i>					Project (Number/Name) MD01 / <i>Command & Control, Battle Management, Communications (C2BMC)</i>					

Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	N/A

Remarks
N/A

Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	N/A

Remarks
N/A

			Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			2,610.267	405.836		339.716		368.950		-		368.950	Continuing	Continuing	N/A

Remarks
Funding in the All Prior Years column represents a summary of Prior Years Total Costs for active contracts, Military Interdepartmental Purchase Requests, and civilian salaries on the R-3.
Award Dates reflect date of first obligation. Additional obligations may incrementally occur throughout the year.

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Missile Defense Agency																Date: April 2022							
Appropriation/Budget Activity 0400 / 4								R-1 Program Element (Number/Name) PE 0603896C / Ballistic Missile Defense Co mmand and Control, Battle Management & Communication								Project (Number/Name) MD01 / Command & Control, Battle Management, Communications (C2BMC)							
Significant Event Complete ▲				Milestone Decision Complete ★				Element Test Complete ◆				System Level Test Complete ●				Complete Activity ◆							
Significant Event Planned △				Milestone Decision Planned ☆				Element Test Planned ◇				System Level Test Planned ○				Planned Activity ◇							
								FY 2021		FY 2022		FY 2023		FY 2024		FY 2025		FY 2026		FY 2027			
MD01 Command & Control, Battle Management, Communications (C2BMC) Planned								◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇		
Spiral 8.2-5 Homeland Defense Capability Declaration USNORTHCOM/USINDOPACOM											△												
Spiral 8.2-5 Homeland Defense Capability Declaration USEUCOM/USCENTCOM														△									
Expanded Regional and Homeland Defense Capability Declaration USNORTHCOM/USINDOPACOM															△								
Expanded Regional and Homeland Defense Capability Declaration USEUCOM/USCENTCOM																△							

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Missile Defense Agency			Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603896C / <i>Ballistic Missile Defense Command and Control, Battle Management & Communication</i>	Project (Number/Name) MD01 / <i>Command & Control, Battle Management, Communications (C2BMC)</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
MD01 Command & Control, Battle Management, Communications (C2BMC) Planned	1	2021	4	2027
Spiral 8.2-5 Homeland Defense Capability Declaration USNORTHCOM/USINDOPACOM	1	2022	1	2022
Spiral 8.2-5 Homeland Defense Capability Declaration USEUCOM/USCENTCOM	2	2023	2	2023
Expanded Regional and Homeland Defense Capability Declaration USNORTHCOM/USINDOPACOM	2	2024	2	2024
Expanded Regional and Homeland Defense Capability Declaration USEUCOM/USCENTCOM	4	2024	4	2024

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency										Date: April 2022		
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0603896C / Ballistic Missile Defense Co mmand and Control, Battle Management & Communication				Project (Number/Name) MC01 / Cyber Operations			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
MC01: Cyber Operations	62.855	17.132	12.537	8.504	-	8.504	8.255	8.504	8.664	8.839	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Decrease from FY 2022 to FY 2023 reflects the FY 2022 Congressional Plus Up for improvements to MDS cybersecurity as well as the completion of replacement efforts for high priority hardware no longer supported by the original equipment manufacturer.

A. Mission Description and Budget Item Justification

Command and Control, Battle Management, and Communications (C2BMC) Cyber Operations sustain the Missile Defense Agency (MDA) Risk Management Framework (RMF) and Security Controls Assessments (SCA)/Controls Validation Testing (CVT) activities, analysis of validation results, risk assessments, and reviews of proposed Program Manager/Information System Security Manager (PM/ISSM) Plan of Action and Milestones (POA&Ms) and Cybersecurity Tools for MDA C2BMC mission systems. Activities in this Project are necessary to comply with the Federal Information Systems Modernization Act (FISMA).

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2021	FY 2022	FY 2023
Title: Network / System Certification and Accreditation (C&A)	17.132	12.537	8.504
Articles:	-	-	-
<p>Description: This activity maintains the Assessment and Authorization (A&A) and Certification and Accreditation (C&A) data repository, capturing the RMF documentation (artifacts, validation results, Information Assurance Risk Assessment results, and Authorizing Official (AO) accreditation decisions) and Plan of Action and Milestones (POA&Ms) on all MDA information systems. This activity prepares and submits C&A documentation and accreditation recommendations to the MDA Chief Information Officer (CIO) / Security Controls Assessor and the AO. Leverages Cross Domain Solution (CDS) as single authority implementing standard security policies for C2BMC across the BMDS. Independent Verification and Validation team actions ensure the availability, integrity, authentication, confidentiality, and non-repudiation of the MDA mission, test, and administrative systems.</p> <ul style="list-style-type: none"> - Conduct cybersecurity design, engineering, and architecture planning for C2BMC information technology systems - Plan and test the cybersecurity controls for C2BMC systems - Conduct Security Controls Assessment testing continuous monitoring of C2BMC mission systems and provide POA&Ms to mitigate cybersecurity vulnerabilities <p>Specific and/or unique accomplishments for each FY are as follows:</p> <p>FY 2022 Plans:</p> <ul style="list-style-type: none"> - Maintain Cyber posture and support next Increment cyber integration, testing, and fielding into operations 			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency		Date: April 2022	
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603896C / <i>Ballistic Missile Defense Command and Control, Battle Management & Communication</i>	Project (Number/Name) MC01 / <i>Cyber Operations</i>	
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2021	FY 2022
- Support Agile and Development Operations (DevOps) development with cyber integration - Develop Advanced Persistent Threat and Heuristics capabilities with Tier 2 Cybersecurity Service Provider (CSSP) - Facilitate rapid development, test, and deployment of cybersecurity patches into operations as well as cybersecurity improvements to the developmental, operational and test architectures. FY 2023 Plans: - Transition Spiral 8.2-5 test assets to support sustainment testing, assessments, and evaluations - Update test labs to support next generation platform technology in support of Spiral 8.2-7 - Upgrade all testbed enclaves with next generation cyber tools FY 2022 to FY 2023 Increase/Decrease Statement: Decrease from FY 2022 to FY 2023 reflects MDS Cybersecurity Congressional Plus-up and replacement efforts for high priority hardware no longer supported by the original equipment manufacturer.			
Accomplishments/Planned Programs Subtotals		17.132	12.537
C. Other Program Funding Summary (\$ in Millions) N/A Remarks D. Acquisition Strategy A sole source C2BMC contract to Lockheed Martin was awarded 1st quarter FY 2012. The current ordering period is through 1st quarter FY 2025. Major team members to Lockheed are Northrop Grumman, Boeing, Raytheon, and General Dynamics. They are charged with the development, testing, fielding, training, operations and sustainment, and cyber operations support of the C2BMC system. Additionally, the DISA supports C2BMC worldwide long-haul communications. C2BMC Program Office government, FFRDC/UARC, and CSS personnel are also fully integrated as part of the Prime contractor's team to function in an Integrated Product Team environment. Furthermore, a sole source SWDC was awarded to Northrop Grumman in March 2018 (3 year base and 2 one year option periods) for continuation of the systems engineering, software development, test and integration for BOA.			

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603896C / Ballistic Missile Defense Co mmand and Control, Battle Management & Communication				Project (Number/Name) MC01 / Cyber Operations					
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Network / System Certification and Accreditation (C&A) - Civ Cyber Labor	Various	MDA Other : Various	1.863	0.540	Oct 2020	0.620	Oct 2021	0.646	Oct 2022	-		0.646	Continuing	Continuing	Continuing
Network / System Certification and Accreditation (C&A) - Consolidated Contractor Support	Various	MDA : Huntsville, AL; Colorado Springs, CO, NCR	3.752	1.623	Oct 2020	1.212	Oct 2021	1.182	Oct 2022	-		1.182	Continuing	Continuing	Continuing
Network / System Certification and Accreditation (C&A) - Core C2BMC	SS/CPAF	Lockheed Martin : Colorado Springs, CO / Huntsville, AL	32.662	11.542	Oct 2020	10.124	Oct 2021	6.081	Nov 2022	-		6.081	Continuing	Continuing	Continuing
Network / System Certification and Accreditation (C&A) - IA/ CND Network/System C&A	MIPR	Army, Air Force : Various	6.331	0.000		0.000		0.000		-		0.000	0.000	6.331	0.000
Network / System Certification and Accreditation (C&A) - Information Assurance	C/CPAF	Jacobs Technology : Colorado Springs, CO	12.696	3.427	Oct 2020	0.000		0.000		-		0.000	0.000	16.123	0.000
Network / System Certification and Accreditation (C&A) - Lab Infrastructure	SS/CPAF	Northrop Grumman : Colorado Springs, CO	5.551	0.000		0.581	Oct 2021	0.595	Nov 2022	-		0.595	Continuing	Continuing	Continuing
Subtotal			62.855	17.132		12.537		8.504		-		8.504	Continuing	Continuing	N/A
Remarks N/A															
			Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			62.855	17.132		12.537		8.504		-		8.504	Continuing	Continuing	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency							Date: April 2022			
Appropriation/Budget Activity 0400 / 4			R-1 Program Element (Number/Name) PE 0603896C / <i>Ballistic Missile Defense Command and Control, Battle Management & Communication</i>			Project (Number/Name) MC01 / <i>Cyber Operations</i>				
	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract	
Remarks Award Dates reflect date of first obligation. Additional obligations may incrementally occur throughout the year.										

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Missile Defense Agency														Date: April 2022															
Appropriation/Budget Activity 0400 / 4										R-1 Program Element (Number/Name) PE 0603896C / Ballistic Missile Defense Co mmand and Control, Battle Management & Communication										Project (Number/Name) MC01 / Cyber Operations									
Significant Event Complete ▲					Milestone Decision Complete ★					Element Test Complete ◆					System Level Test Complete ●					Complete Activity ◆									
Significant Event Planned △					Milestone Decision Planned ☆					Element Test Planned ◇					System Level Test Planned ○					Planned Activity ◇									
										FY 2021		FY 2022		FY 2023		FY 2024		FY 2025		FY 2026		FY 2027							
MC01 Cyber Operations Planned										◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇					

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Missile Defense Agency			Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603896C / Ballistic Missile Defense Co mmand and Control, Battle Management & Communication	Project (Number/Name) MC01 / Cyber Operations	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
MC01 Cyber Operations Planned	1	2021	4	2027

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency										Date: April 2022		
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0603896C / Ballistic Missile Defense Co mmand and Control, Battle Management & Communication				Project (Number/Name) MT01 / C2BMC Test			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
MT01: C2BMC Test	417.802	60.345	65.341	58.616	-	58.616	56.453	64.671	66.276	63.637	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Decrease from FY 2022 to FY 2023 is in accordance with the current Integrated Master Test Plan (IMTP).

A. Mission Description and Budget Item Justification

Command and Control, Battle Management and Communications (C2BMC) Test supports system flight and ground testing, wargames, and exercises as detailed in the Missile Defense Agency (MDA) IMTP to ensure C2BMC capabilities delivered are consistent with the Prioritized Capabilities List and are interoperable with other Missile Defense System (MDS) components.

MDA gains efficiencies and minimizes laboratory resource requirements (footprint, personnel, and hardware) by utilizing the C2BMC test bed and the Overhead Persistent Infrared Architecture (OPIR) Capabilities Lab test infrastructure as the laboratory environment supporting System Test, Development, and Sustainment. For System Ground and Flight Test, the labs are used for pre-test analysis, test execution, and post-test analysis. For Development, the labs are utilized for software verification and validation testing and system integration testing. For Sustainment, the labs are used to assist with root cause determination for issues discovered on the fielded system and validation of any required software patches.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2021	FY 2022	FY 2023
Title: Integrated Master Test Plan	60.345	65.341	58.616
Articles:	-	-	-
Description: This activity funds C2BMC participation in MDS flight and ground testing, wargames and exercises, and resources in accordance with the MDS IMTP. Recurring accomplishments include: Test Execution - Assess MDS interoperability, integration, and functionality in lab and distributed environments, leveraging a complex set of scenarios to test the limits of the C2BMC system. Participate in and analyze results of ground tests and flight tests in accordance with the MDS IMTP. Support all phases of the MDA Ground Test Concept of Operations (CONOPS) and the MDA Flight Test CONOPS. Provide Flight Test Predictive Analysis support. Generate, test, and distribute federated model compatible scenarios for Ground Test and Flight Test Experimentation test support. Use BMDS C2BMC Model (BCM) to support exercise integration testing activities including test case and scenario checkout. - Utilize the Enterprise Sensors Laboratory (ESL) to plan, coordinate, and provide test operations to demonstrate prototype algorithms through flight tests and United States-launched targets of opportunity. The development plans for algorithm			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency		Date: April 2022	
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603896C / <i>Ballistic Missile Defense Command and Control, Battle Management & Communication</i>	Project (Number/Name) MT01 / <i>C2BMC Test</i>	
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2021	FY 2022
<p>improvements focus on track and measurement level sensor data fusion and feature extraction to improve 3-D track formation utilizing a variety of space, airborne, and terrestrial-based sensors. Results from the tests and experiments are provided back to the algorithms development activity to enable algorithm refinement.</p> <ul style="list-style-type: none"> - Continue Long Range Discrimination Radar (LRDR) node integration, testing, and training with new C2BMC Spiral 8.2-5 Homeland Defense baseline changes at the Missile Defense Integration and Operation Center (MDIOC). Retain Existing Sensor Data Interfaces and provide LRDR Data for Risk Reduction for Ground-Based Missile Defense (GMD); Initial Hypersonic Tracking and Reporting; and Cyber Security Enhancements Risk Management Functions. - Utilize the C2BMC Experimentation Laboratory (X-Lab) to plan, coordinate, and provide test operations to demonstrate maturing C2BMC technologies and software builds within an integrated C2BMC environment through flight tests, ground tests, and real-world targets of opportunity before incorporation into formal C2BMC spiral builds. Results from the tests are provided back to the C2BMC and X-Lab development activity. - Participate in wargames and exercises using current and future C2BMC architectures to support all requesting Combatant Commands, North Atlantic Treaty Organization (NATO) partners, and Host Nations allowing warfighters to validate Ballistic Missile Defense (BMD) Techniques, Tactics, and Procedures (TTP) specific to all designated Areas of Operations (AOs) to include current and future C2BMC architectures. - Continue development, sustainment, and upgrades in the C2BMC Testbed (CTB) to support MDA IMTP Events (flight and ground tests). Continue Cyber Testing in the CTB to support continuous C2BMC spiral development. Continue Hardware in the Loop (HWIL) testing, C2BMC, and NATO planning exchanges, demonstrations, and support to NATO live fire events. Maintain Situational Awareness Nodes (Turkey, Romania, and Poland) in accordance with U.S. and Host nation Bi-lateral Agreements. Continue to enhance interoperability between U.S. BMD systems and the NATO BMD systems. Provide infrastructure, network, and troubleshooting support to C2BMC Command Center (CCC), to include the Ballistic Missile Defense System (BMDS) Network Operations and Security Center (BNOSC), System Test and Operations Center (STOC), C2BMC System Support Center (CSSC), BMDS Communications Network (BCN), the Distributed Training system (DTS), and Combined OPIR Laboratories (OCL). <p>Specific and/or unique accomplishments for each FY are as follows:</p> <p>FY 2022 Plans:</p> <ul style="list-style-type: none"> - Participate in flight and ground test events to support fielding of Spiral 8.2-5 and BOA 7.0 for Homeland Defense by testing the following capabilities: Initial MDS Integration with IBCS, Additional Hit Assessment using SKA, Additional Integration of External Mobile Sensor (MSI Phase IIA) - In flight test events: Continue to collect data for SKA algorithm development. Collect data in support of Hypersonic Tracking capability 			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency		Date: April 2022	
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603896C / <i>Ballistic Missile Defense Command and Control, Battle Management & Communication</i>	Project (Number/Name) MT01 / <i>C2BMC Test</i>	
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2021	FY 2022
<ul style="list-style-type: none"> - In ground test events: Continue to assess C2BMC incremental capability performance, to include support of SKA Hit Assessment fielding; assess alternatives for C2BMC system track typing, correlation, and launch event association processes in the presence of advanced threats. Continue to demonstrate interoperability with Aegis and collect data to assess Aegis Engage-on-Remote (EoR) capability - Continue to assess interoperability of C2BMC S8.2-5, BOA Baseline Release (BBR) 7.0, AN/TPY-2 FBM CX 4.0, LRDR 1.0.1, GS 8B, XBR 4.1.1, EKV 23.2/11.0, IBCS 4.6, PDB 8.1, SBR 19-1, and THAAD 4.0; assess C2BMC planning, monitoring, and tasking capabilities effect on Homeland Defense performance - In cyber events: Assess C2BMC and BOA BBR cyber security in Cooperative Vulnerability and Penetration Assessment (CVPA) events in the lab and operational asset environments; and Adversarial Assessment (AA) events in the operational asset environment prior to fielding - Continue upgrades and implementation of latest DoD required ACAS (Assured Compliance Assessment Solution), ESS (Endpoint Security Services), and Cyber Security increments within the C2BMC Test Bed (CTB) <p>FY 2023 Plans:</p> <ul style="list-style-type: none"> - Participate in flight test events to support fielding of Spiral 8.2-5 and BOA 7.0 additional capabilities by testing the following capabilities: Initial Integrated Air and Missile Defense Battle Command System (IBCS) Integration into MDS, Hit Assessment using SKA, and Conditioning & debris filtering of MSI tracks - Participate in ground test events to support fielding of Spiral 8.2-7 and BOA 7.1 BMD System Track (BST) with System Level Integrated Discrimination (SLD) by testing the following capabilities: Generation of BST with SLD to support GMD Engagements, BOA 7.1 Integration, SDA refinement, Reporting of Space Object Catalog (SOC) entities to AN/TPY-2 (FBM) Radars and LRDR for use in radar calibration, and Expanded Hypersonic Tracking and Link-16 Reporting - In flight test events: Continue to collect data for SKA algorithm development. Collect data in support of Hypersonic Tracking capability, to assess C2BMC incremental capability performance, to include support of SKA Hit Assessment fielding; assess alternatives for C2BMC system track typing, correlation, and launch event association processes in the presence of advanced threats. Continue to demonstrate interoperability with Aegis and collect data to assess Aegis EoR capability - Continue to assess interoperability of C2BMC S8.2-5, BBR 7.0, AN/TPY-2 FBM CX 4.0, LRDR 1.0.1, GS 8B, XBR 4.1.1, EKV 23.2/11.0, IBCS 4.6, PDB 8.1, SBR 19-1, and THAAD 4.0; assess C2BMC planning, monitoring, and tasking capabilities effect on Homeland Defense performance - Begin to assess interoperability of C2BMC S8.2-7, BOA 7.1, AN/TPY-2 FBM CX 5.0, LRDR 2.0, GS 9, XBR 4.2, EKV 24.0/11.0, IBCS 4.6, PDB 8.1, and THAAD 4.1 - In cyber events: Assess C2BMC and BBR cyber security in CVPA events in the lab and operational asset environments; and AA events in the operational asset environment prior to fielding 			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency			Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603896C / <i>Ballistic Missile Defense Command and Control, Battle Management & Communication</i>	Project (Number/Name) MT01 / <i>C2BMC Test</i>	

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023
<ul style="list-style-type: none"> - Continue upgrades and implementation of latest DoD required ACAS, ESS, and Cyber Security increments within the CTB including the OCL - Maintain CTB and OCLs to ensure availability for ground and cyber test events - Prepare, configure, and execute IMTP test events, Pairwise, Continuous Developmental Integration (CDI), and special test request <p><i>FY 2022 to FY 2023 Increase/Decrease Statement:</i> Decrease from FY 2022 to FY 2023 is in accordance with the current IMTP.</p>			
Accomplishments/Planned Programs Subtotals	60.345	65.341	58.616

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

Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• 0603881C: <i>Ballistic Missile Defense Terminal Defense Segment</i>	305.081	213.382	190.216	-	190.216	196.279	213.945	224.146	238.269	Continuing	Continuing
• 0603882C: <i>Ballistic Missile Defense Midcourse Defense Segment</i>	1,195.853	724.028	667.524	-	667.524	870.817	802.617	781.973	765.733	Continuing	Continuing
• 0603884C: <i>Ballistic Missile Defense Sensors</i>	259.605	254.962	231.134	-	231.134	250.028	274.705	276.254	257.575	Continuing	Continuing
• 0603890C: <i>BMD Enabling Programs</i>	607.167	623.644	591.847	-	591.847	613.589	625.761	635.633	640.374	Continuing	Continuing
• 0603892C: <i>AEGIS BMD</i>	861.809	639.549	600.072	-	600.072	658.798	574.014	570.018	580.496	Continuing	Continuing
• 0603904C: <i>Missile Defense Integration and Operations Center (MDIOC)</i>	54.026	52.403	49.367	-	49.367	51.744	56.502	57.833	59.006	Continuing	Continuing
• 0603907C: <i>Sea Based X-Band Radar (SBX)</i>	120.063	147.241	164.668	-	164.668	174.934	215.367	198.956	179.622	Continuing	Continuing
• 0603914C: <i>Ballistic Missile Defense Test</i>	364.994	389.156	367.824	-	367.824	363.963	421.261	476.991	490.176	Continuing	Continuing
• 0603915C: <i>Ballistic Missile Defense Targets</i>	534.348	560.478	559.513	-	559.513	555.341	623.995	628.146	632.072	Continuing	Continuing
• 0604181C: <i>Hypersonic Defense</i>	267.589	287.796	225.477	-	225.477	108.540	110.220	287.535	449.590	Continuing	Continuing

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency								Date: April 2022			
Appropriation/Budget Activity 0400 / 4				R-1 Program Element (Number/Name) PE 0603896C / <i>Ballistic Missile Defense Command and Control, Battle Management & Communication</i>				Project (Number/Name) MT01 / <i>C2BMC Test</i>			

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

Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• 0604672C: <i>Homeland Defense Radar-Hawaii</i>	133.000	75.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	208.000
• 0604873C: <i>Long Range Discrimination Radar (LRDR)</i>	135.088	133.335	75.120	-	75.120	103.451	95.712	71.715	76.316	Continuing	Continuing

Remarks

D. Acquisition Strategy

A sole source C2BMC contract to Lockheed Martin was awarded 1st quarter FY 2012. The current ordering period is through 1st quarter FY 2025. Major team members to Lockheed are Northrop Grumman, Boeing, Raytheon, and General Dynamics. They are charged with the development, testing, fielding, training, operations and sustainment, and cyber operations support of the C2BMC system. Additionally, the Defense Information Systems Agency (DISA) supports C2BMC worldwide long-haul communications. C2BMC Program Office government, Federally Funded Research and Development Center/University Affiliated Research Center (FFRDC/UARC), and Contract Support Services (CSS) personnel are also fully integrated as part of the Prime contractor's team to function in an Integrated Product Team environment. Furthermore, a sole source Specialized Warfighter Development Contract (SWDC) was awarded to Northrop Grumman in March 2018 (3 year base and 2 one year option periods) for continuation of the systems engineering, software development, test and integration for BMDS Overhead Persistent Infrared Architecture (BOA).

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603896C / Ballistic Missile Defense Co mmand and Control, Battle Management & Communication				Project (Number/Name) MT01 / C2BMC Test					
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	N/A
Remarks N/A															
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	N/A
Remarks N/A															
Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Integrated Master Test Plan - Consolidated Contractor Support	Various	MDA : Huntsville, AL; Colorado Springs, CO; NCR	0.223	0.498	Oct 2020	0.247	Oct 2021	0.252	Oct 2022	-		0.252	Continuing	Continuing	Continuing
Integrated Master Test Plan - Enterprise Sensors Lab Infrastructure Support	MIPR	Various : VA; OH; AL; NM; CA	17.189	2.121	Oct 2020	2.099	Oct 2021	1.692	Oct 2022	-		1.692	Continuing	Continuing	Continuing
Integrated Master Test Plan - Enterprise Sensors Lab Infrastructure/BOA Infrastructure-MDS Level Testing	SS/CPAF	Northrop Grumman Corporation : Colorado Springs, CO	51.593	2.480	Mar 2021	2.250	Mar 2022	2.617	Mar 2023	-		2.617	Continuing	Continuing	Continuing
Integrated Master Test Plan - FFRDC	MIPR	Institute for Defense Analyses (IDA) : Alexandria, VA	0.350	0.000		0.988	Oct 2021	1.008	Oct 2022	-		1.008	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603896C / Ballistic Missile Defense Co mmand and Control, Battle Management & Communication				Project (Number/Name) MT01 / C2BMC Test					
Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Integrated Master Test Plan - Information Assurance - Test Lab Infrastructure	C/CPAF	Jacobs Technology, Inc : Colorado Springs, CO	0.000	0.000		5.182	Oct 2021	4.514	Oct 2022	-		4.514	Continuing	Continuing	Continuing
Integrated Master Test Plan - Integrated Master Test Plan MDS Level Testing	SS/IDIQ	Lockheed Martin Team : Huntsville, AL; Colorado Springs, CO	162.731	17.256	Jul 2021	19.484	Jul 2022	15.994	Jul 2023	-		15.994	Continuing	Continuing	Continuing
Integrated Master Test Plan - Integrated Master Test Plan MDS level Testing - Element/System Test Lab Facilities	C/CPAF	Northrop Grumman Corporation : Colorado Springs, CO	23.021	12.977	Mar 2021	14.749	Mar 2022	10.997	Mar 2023	-		10.997	Continuing	Continuing	Continuing
Integrated Master Test Plan - Integrated Master Test Plan MDS level Testing (Element/System Test Lab Facilities)	C/CPAF	Jacobs Technology, Inc : Huntsville, AL; Colorado Springs, CO	59.710	23.809	Mar 2021	19.035	Mar 2022	19.521	Mar 2023	-		19.521	Continuing	Continuing	Continuing
Integrated Master Test Plan - MDS Level Testing GOV	MIPR	Army/Air Force : Various	12.284	1.204	Oct 2020	1.307	Oct 2021	2.021	Oct 2022	-		2.021	Continuing	Continuing	Continuing
Integrated Master Test Plan - Prior year IMTP no longer funded in the FYDP	Various	Various : Various	90.701	0.000		0.000		0.000		-		0.000	0.000	90.701	0.000
Subtotal			417.802	60.345		65.341		58.616		-		58.616	Continuing	Continuing	N/A
Remarks N/A															

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022		
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603896C / <i>Ballistic Missile Defense Command and Control, Battle Management & Communication</i>						Project (Number/Name) MT01 / <i>C2BMC Test</i>		

Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	N/A

Remarks N/A															
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	Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	417.802	60.345		65.341		58.616		-		58.616	Continuing	Continuing	N/A

Remarks Award Dates reflect date of first obligation. Additional obligations may incrementally occur throughout the year.													
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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Missile Defense Agency										Date: April 2022															
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0603896C / Ballistic Missile Defense Co mmand and Control, Battle Management & Communication										Project (Number/Name) MT01 / C2BMC Test										
Significant Event Complete ▲		Milestone Decision Complete ★		Element Test Complete ◆		System Level Test Complete ●		Complete Activity ◆																	
Significant Event Planned △		Milestone Decision Planned ☆		Element Test Planned ◇		System Level Test Planned ○		Planned Activity ◇																	
					FY 2021		FY 2022		FY 2023		FY 2024		FY 2025		FY 2026		FY 2027								
GTD-14 (N/I) (MDS Ground Test)																								◇	
FTM-44 (AEGIS 5.1, DT Intercept Flight Test)					▲																				
(WG) DEMONSTRATION, TABLE-TOP EXERCISES & EXPERIMENTS 20					◆																				
(EX) JOINT LIVE, VIRTUAL, AND CONSTRUCTIVE 2019/2020					◆																				
(EX) KEEN SWORD 21					◆																				
(EX) AUSTERE CHALLENGE 21					◆	◆																			
(EX) JOINT PROJECT OPTIC WINDMILL 2021					◆	◆																			
(EX) EUROPEAN AIR & MISSILE DEFENSE EXERCISE 21					◆	◆																			
(EX) AIR AND MISSILE DEFENSE EXERCISE 21					◆	◆	◆																		
(WG) NIMBLE TITAN 22					◇	◇	◇	◇	◇	◇	◇	◇													
Enterprise Sensor Lab Infrastructure Support Planned					◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	
(EX) EUROPEAN AIR & MISSILE DEFENSE EXERCISE 20						▲																			
(EX) RESILIENT SHIELD 21						▲																			
(EX) GLOBAL LIGHTNING 21						◆	◆																		
(EX) EUROPEAN TEST BED 21						◇	◇	◇																	
(EX) JOINT AIR AND MISSILE DEFENSE EXERCISE SERIES 21						◇	◇	◇																	
(EX) Joint Live, Virtual, and Constructive 2021/2022						◇	◇	◇	◇	◇	◇	◇	◇												
FS-21 E1 (AEGIS 5.1, DT Interceptor Only Flight Test)							▲																		
FS-21 E2 (AEGIS 5.1, DT Target Only Flight Test)							▲																		
FS-21 E3 (AEGIS 5.1, DT Target Only Flight Test)							▲																		
FS-21 E4 (AEGIS 5.1, DT Intercept Flight Test)							▲																		
(EX) PACIFIC SENTRY 21							◇																		
FTM-31 E1 (AEGIS SBT, DT/OT Intercept Flight Test)							▲																		
(WG) HUNTSVILLE WARGAMES 21							◇	◇																	

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Missile Defense Agency															Date: April 2022									
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0603896C / <i>Ballistic Missile Defense Command and Control, Battle Management & Communication</i>										Project (Number/Name) MT01 / <i>C2BMC Test</i>									
Significant Event Complete ▲ Significant Event Planned △					Milestone Decision Complete ★ Milestone Decision Planned ☆					Element Test Complete ◆ Element Test Planned ◇					System Level Test Complete ● System Level Test Planned ○					Complete Activity ◆ Planned Activity ◇				
(WG) Demonstration, Table-top Exercises & Experiments 21																								
(WG) SPACE & MISSILE DEFENSE SYMPOSIUM 21																								
GM BVT-03 (GM, DT Interceptor Only Flight Test)																								
(EX) VIGILANT SHIELD 22																								
(EX) GLOBAL THUNDER 21																								
(EX) KEEN EDGE 22																								
GTI-ISR (21) (MDS Ground Test)																								
FTP-21 E1 (P8.1.1)(LTPO, DT Intercept Flight Test)																								
(EX) JUNIPER COBRA 22																								
(EX) AIR AND MISSILE DEFENSE EXERCISE 22																								
FTT-21 (TH, DT Intercept Flight Test)																								
(EX) EAGLE RESOLVE 22																								
(EX) RESILIENT SHIELD 22																								
(EX) GLOBAL LIGHTNING 22																								
(EX) STEADFAST ALLIANCE 22																								
(EX) JOINT AIR AND MISSILE DEFENSE EXERCISE SERIES 22																								
(EX) EUROPEAN TEST BED 22																								
FTX-42 (OTHER, DT Target Only Flight Test)																								
(WG) Demonstration, Table-top Exercises & Experiments 22																								
GTI-09 Sprint 1 (E/C) (MDS Ground Test)																								
FTX-45																								
(EX) VIGILANT SHIELD 23																								
(EX) KEEN SWORD 23																								
(EX) GLOBAL RESPONSE EXERCISE 11																								

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Missile Defense Agency														Date: April 2022															
Appropriation/Budget Activity 0400 / 4										R-1 Program Element (Number/Name) PE 0603896C / Ballistic Missile Defense Co mmand and Control, Battle Management & Communication										Project (Number/Name) MT01 / C2BMC Test									
Significant Event Complete ▲ Significant Event Planned △					Milestone Decision Complete ★ Milestone Decision Planned ☆					Element Test Complete ◆ Element Test Planned ◇					System Level Test Complete ● System Level Test Planned ○					Complete Activity ◆ Planned Activity ◇									
										FY 2021		FY 2022		FY 2023		FY 2024		FY 2025		FY 2026		FY 2027							
(EX) GLOBAL THUNDER 22																◇	◇												
(EX) GLOBAL RESPONSE EXERCISE 12																◇	◇												
GTD-08a (N/I) (MDS Ground Test)																◇													
GTD-07b (Aegis Ashore)																◇													
(EX) Joint Project Optic Windmill 2023																◇	◇	◇											
(EX) AIR AND MISSILE DEFENSE EXERCISE 23																◇	◇	◇											
(WG) NIMBLE TITAN 24																◇	◇	◇	◇	◇	◇	◇							
GTI-09 Sprint 2 (E/C) (MDS Ground Test)																◇													
(EX) AUSTERE CHALLENGE 23																◇													
(EX) RESILIENT SHIELD 23																△													
(EX) STEADFAST ARMOUR 23																◇	◇												
(EX) GLOBAL LIGHTNING 23																◇	◇												
(EX) EUROPEAN TEST BED 23																◇	◇	◇											
FTT-25 (TH, DT/OT Intercept Flight Test)																	△												
(WG) Huntsville Wargames 23																◇	◇												
(WG) Demonstration, Table-top Exercises & Experiments 23																◇	◇	◇											
(WG) Space & Missile Defense Symposium 23																	△												
GTI-ISR (23) (MDS Ground Test)																	◇												
FTG-12 (GM, DT/OT Intercept Flight Test)																	△												
GTI-08b (N/I)																	◇												
(EX) GLOBAL THUNDER 23																◇	◇												
(EX) VIGILANT SHIELD 24																◇	◇												
(EX) KEEN EDGE 24																◇	◇	◇											
FTM-32 (AEGIS SBT, DT/OT Intercept Flight Test)																	△												

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Missile Defense Agency										Date: April 2022									
Appropriation/Budget Activity					R-1 Program Element (Number/Name)					Project (Number/Name)									
0400 / 4					PE 0603896C / Ballistic Missile Defense Command and Control, Battle Management & Communication					MT01 / C2BMC Test									
Significant Event Complete ▲		Milestone Decision Complete ★		Element Test Complete ◆		System Level Test Complete ●		Complete Activity ◆		Significant Event Planned △		Milestone Decision Planned ☆		Element Test Planned ◇		System Level Test Planned ○		Planned Activity ◇	
					FY 2021		FY 2022		FY 2023		FY 2024		FY 2025		FY 2026		FY 2027		
(EX) AIR AND MISSILE DEFENSE EXERCISE 24											◇	◇	◇						
GTI-ASI (24) (MDS Ground Test)											◇								
FTX-28 E2 (TH, DT/OT Tracking Exercise Flight Test)											△								
FTX-28 E1 (TH, DT/OT Tracking Exercise Flight Test)											△								
FTX-28 E3 (TH, DT/OT Tracking Exercise Flight Test)											△								
GTD-08b (N/I)											◇								
FTM-37 (AEGIS 5.1, DT/OT Intercept Flight Test)												△							
GTI-13 Sprint 1 (N/I) (MDS Ground Test)													◇						
GTI-ISR (25) (MDS Ground Test)														◇					
GTI-12 Sprint 1 (E/C) (MDS Ground Test)															◇				
GTI-13 Sprint 2 (N/I) (MDS Ground Test)															◇				
FTM-30 (AEGIS 5.1, DT/OT Intercept Flight Test)																△			
GTD-13 (N/I) (MDS Ground Test)																◇			
GTI-10 (E/C) (MDS Ground Test)																	◇		
GTI-12 Sprint 2 (E/C) (MDS Ground Test)																	◇		
GTD-10 (E/C) (MDS Ground Test)																		◇	
GTD-12 (E/C) (MDS Ground Test)																		◇	
GTI-ASI (26) (MDS Ground Test)																		◇	
GTI-14 Sprint 1 (N/I)																		◇	
FTM-41 (AEGIS 5.1, DT/OT Intercept Flight Test)																		△	
FTG-16 (GM, DT Intercept Flight Test)																		△	
GTI-14 (N/I) Sprint 2 (MDS Ground Test)																		◇	
GTI-15 Sprint 1 (E/C) (MDS Ground Test)																		◇	
FTG-17 (GM, DT/OT Intercept Flight Test)																		△	

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Missile Defense Agency										Date: April 2022																			
Appropriation/Budget Activity 0400 / 4										R-1 Program Element (Number/Name) PE 0603896C / Ballistic Missile Defense Co mmand and Control, Battle Management & Communication										Project (Number/Name) MT01 / C2BMC Test									
Significant Event Complete ▲		Significant Event Planned △		Milestone Decision Complete ★		Milestone Decision Planned ☆		Element Test Complete ◆		Element Test Planned ◇		System Level Test Complete ●		System Level Test Planned ○		Complete Activity ◆		Planned Activity ◇											
										FY 2021		FY 2022		FY 2023		FY 2024		FY 2025		FY 2026		FY 2027							
GTI-ISR (27) (MDS Ground Test)																							◇						
FTM-42 (AEGIS 5.1, DT/OT Intercept Flight Test)																								△					

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Missile Defense Agency			Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603896C / <i>Ballistic Missile Defense Command and Control, Battle Management & Communication</i>	Project (Number/Name) MT01 / <i>C2BMC Test</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
GTD-14 (N/I) (MDS Ground Test)	4	2027	4	2027
FTM-44 (AEGIS 5.1, DT Intercept Flight Test)	1	2021	1	2021
(WG) DEMONSTRATION, TABLE-TOP EXERCISES & EXPERIMENTS 20	1	2021	1	2021
(EX) JOINT LIVE, VIRTUAL, AND CONSTRUCTIVE 2019/2020	1	2021	1	2021
(EX) KEEN SWORD 21	1	2021	1	2021
(EX) AUSTERE CHALLENGE 21	1	2021	2	2021
(EX) JOINT PROJECT OPTIC WINDMILL 2021	1	2021	2	2021
(EX) EUROPEAN AIR & MISSILE DEFENSE EXERCISE 21	1	2021	2	2021
(EX) AIR AND MISSILE DEFENSE EXERCISE 21	1	2021	3	2021
(WG) NIMBLE TITAN 22	1	2021	4	2022
Enterprise Sensor Lab Infrastructure Support Planned	1	2021	4	2027
(EX) EUROPEAN AIR & MISSILE DEFENSE EXERCISE 20	2	2021	2	2021
(EX) RESILIENT SHIELD 21	2	2021	2	2021
(EX) GLOBAL LIGHTNING 21	2	2021	3	2021
(EX) EUROPEAN TEST BED 21	2	2021	4	2021
(EX) JOINT AIR AND MISSILE DEFENSE EXERCISE SERIES 21	2	2021	4	2021
(EX) Joint Live, Virtual, and Constructive 2021/2022	2	2021	1	2023
FS-21 E1 (AEGIS 5.1, DT Interceptor Only Flight Test)	3	2021	3	2021
FS-21 E2 (AEGIS 5.1, DT Target Only Flight Test)	3	2021	3	2021
FS-21 E3 (AEGIS 5.1, DT Target Only Flight Test)	3	2021	3	2021
FS-21 E4 (AEGIS 5.1, DT Intercept Flight Test)	3	2021	3	2021

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Missile Defense Agency			Date: April 2022	
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603896C / Ballistic Missile Defense Co mmand and Control, Battle Management & Communication		Project (Number/Name) MT01 / C2BMC Test	

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Missile Defense Agency				Date: April 2022	
Appropriation/Budget Activity 0400 / 4		R-1 Program Element (Number/Name) PE 0603896C / <i>Ballistic Missile Defense Command and Control, Battle Management & Communication</i>		Project (Number/Name) MT01 / <i>C2BMC Test</i>	
		Start		End	
Events	Quarter	Year	Quarter	Year	
(EX) KEEN SWORD 23	4	2022	1	2023	
(EX) GLOBAL RESPONSE EXERCISE 11	4	2022	1	2023	
(EX) GLOBAL THUNDER 22	4	2022	1	2023	
(EX) GLOBAL RESPONSE EXERCISE 12	4	2022	1	2023	
GTD-08a (N/I) (MDS Ground Test)	1	2023	1	2023	
GTD-07b (Aegis Ashore)	1	2023	1	2023	
(EX) Joint Project Optic Windmill 2023	1	2023	3	2023	
(EX) AIR AND MISSILE DEFENSE EXERCISE 23	1	2023	3	2023	
(WG) NIMBLE TITAN 24	1	2023	4	2024	
GTI-09 Sprint 2 (E/C) (MDS Ground Test)	2	2023	2	2023	
(EX) AUSTERE CHALLENGE 23	2	2023	2	2023	
(EX) RESILIENT SHIELD 23	2	2023	2	2023	
(EX) STEADFAST ARMOUR 23	2	2023	3	2023	
(EX) GLOBAL LIGHTNING 23	2	2023	3	2023	
(EX) EUROPEAN TEST BED 23	2	2023	4	2023	
FTT-25 (TH, DT/OT Intercept Flight Test)	3	2023	3	2023	
(WG) Huntsville Wargames 23	3	2023	4	2023	
(WG) Demonstration, Table-top Exercises & Experiments 23	3	2023	1	2024	
(WG) Space & Missile Defense Symposium 23	4	2023	4	2023	
GTI-ISR (23) (MDS Ground Test)	4	2023	4	2023	
FTG-12 (GM, DT/OT Intercept Flight Test)	4	2023	4	2023	
GTI-08b (N/I)	4	2023	4	2023	
(EX) GLOBAL THUNDER 23	4	2023	1	2024	
(EX) VIGILANT SHIELD 24	4	2023	1	2024	
(EX) KEEN EDGE 24	4	2023	2	2024	

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Missile Defense Agency			Date: April 2022	
Appropriation/Budget Activity	R-1 Program Element (Number/Name)		Project (Number/Name)	
0400 / 4	PE 0603896C / Ballistic Missile Defense Co mmand and Control, Battle Management & Communication		MT01 / C2BMC Test	
Events	Start		End	
	Quarter	Year	Quarter	Year
FTM-32 (AEGIS SBT, DT/OT Intercept Flight Test)	1	2024	1	2024
(EX) AIR AND MISSILE DEFENSE EXERCISE 24	1	2024	3	2024
GTI-ASI (24) (MDS Ground Test)	2	2024	2	2024
FTX-28 E2 (TH, DT/OT Tracking Exercise Flight Test)	2	2024	2	2024
FTX-28 E1 (TH, DT/OT Tracking Exercise Flight Test)	2	2024	2	2024
FTX-28 E3 (TH, DT/OT Tracking Exercise Flight Test)	2	2024	2	2024
GTD-08b (N/I)	2	2024	2	2024
FTM-37 (AEGIS 5.1, DT/OT Intercept Flight Test)	3	2024	3	2024
GTI-13 Sprint 1 (N/I) (MDS Ground Test)	1	2025	1	2025
GTI-ISR (25) (MDS Ground Test)	2	2025	2	2025
GTI-12 Sprint 1 (E/C) (MDS Ground Test)	3	2025	3	2025
GTI-13 Sprint 2 (N/I) (MDS Ground Test)	3	2025	3	2025
FTM-30 (AEGIS 5.1, DT/OT Intercept Flight Test)	4	2025	4	2025
GTD-13 (N/I) (MDS Ground Test)	4	2025	4	2025
GTI-10 (E/C) (MDS Ground Test)	1	2026	1	2026
GTI-12 Sprint 2 (E/C) (MDS Ground Test)	1	2026	1	2026
GTD-10 (E/C) (MDS Ground Test)	2	2026	2	2026
GTD-12 (E/C) (MDS Ground Test)	2	2026	2	2026
GTI-ASI (26) (MDS Ground Test)	3	2026	3	2026
GTI-14 Sprint 1 (N/I)	4	2026	4	2026
FTM-41 (AEGIS 5.1, DT/OT Intercept Flight Test)	1	2027	1	2027
FTG-16 (GM, DT Intercept Flight Test)	2	2027	2	2027
GTI-14 (N/I) Sprint 2 (MDS Ground Test)	2	2027	2	2027
GTI-15 Sprint 1 (E/C) (MDS Ground Test)	3	2027	3	2027
FTG-17 (GM, DT/OT Intercept Flight Test)	4	2027	4	2027

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Missile Defense Agency				Date: April 2022	
Appropriation/Budget Activity 0400 / 4		R-1 Program Element (Number/Name) PE 0603896C / Ballistic Missile Defense Co mmand and Control, Battle Management & Communication		Project (Number/Name) MT01 / C2BMC Test	
		Start		End	
Events		Quarter	Year	Quarter	Year
GTI-ISR (27) (MDS Ground Test)		4	2027	4	2027
FTM-42 (AEGIS 5.1, DT/OT Intercept Flight Test)		4	2027	4	2027

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency										Date: April 2022		
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0603896C / Ballistic Missile Defense Co mand and Control, Battle Management & Communication				Project (Number/Name) MX01 / Command & Control, Battle Management, Communications (C2BMC) Development Support			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
MX01: Command & Control, Battle Management, Communications (C2BMC) Development Support	841.802	129.960	125.086	131.903	-	131.903	138.665	139.480	142.259	145.342	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Increase from FY 2022 to FY 2023 provides additional Integrated Logistics Support (ILS) training material and engineering support for Spiral 8.2-5 and for preparation for development of Increment 9 training hardware and software.

A. Mission Description and Budget Item Justification

C2BMC Development Support provides operations engineering, integrated logistics, warfighter integration, deployment, and disposal of the current operational system and/or systems fielded in USSTRATCOM, USNORTHCOM, USINDOPACOM, USEUCOM, USCENTCOM, and U.S. Space Command (USSPACECOM) and the operation of the C2BMC Control Center. This activity provides continuous support of the development, deployment, sustainment of the C2BMC training systems, and updates training material to stay current with fielded capabilities.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2021	FY 2022	FY 2023
Title: Operations Engineering	104.084	107.728	113.079
Articles:	-	-	-
Description: This activity funds C2BMC support of current operational, test, and training systems. Recurring efforts include: <ul style="list-style-type: none"> - On-site maintenance, help-desk support, and developer reach-back support to ensure operational availability - C2BMC Command Center (CCC) provides 24 hours a day, 7 days a week, 365 days a year Ballistic Missile Defense System (BMDS) Overhead Persistent Infra-Red (OPIR) Architecture (BOA) and C2BMC operations including system and network monitoring, system administration, and network defense against cyber-attacks - Integrated logistics support by providing a secure supply chain; reliability, availability, and maintainability (RAM) engineering; obsolescence engineering; and sparing to ensure operational availability - Cybersecurity engineering providing C2BMC Commercial-off-the-shelf (COTS) software/hardware updates and CCC upgrades that address system vulnerabilities, field quarterly updates to reduce system component vulnerability to cyber-attacks - Information System Security Officers (ISSOs) ensuring C2BMC compliance with latest cybersecurity requirements and policies - System modifications driven by Warfighter Involvement Process (WIP), Continuous Improvement Process (CIP), RAM and obsolescence engineering, and external systems such as Space-Based Infrared Sensors (SBIRS), Ground-based 			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency			Date: April 2022	
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603896C / Ballistic Missile Defense Co mmand and Control, Battle Management & Communication	Project (Number/Name) MX01 / Command & Control, Battle Management, Communications (C2BMC) Development Support		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2021	FY 2022	FY 2023
<p>Midcourse Defense (GMD) Fire Control (GFC), Aegis, Terminal High Altitude Area Defense (THAAD), Navy Link Monitoring and Management Tool (LMMT), AN/TPY-2, standard Army communications, Defense Information Systems Agency (DISA) fiber networks, and Allied/Coalition interfaces</p> <p>- Combatant Command (CCMD) integration providing C2BMC training, on-site Subject Matter Experts (SMEs), and surge SME support for real-world events, flight tests, ground tests, exercises, cyber assessments, and wargames</p> <p>- Facility modifications required to house current or future C2BMC equipment and transportation for moving C2BMC equipment</p> <p>- Integrated product support for tactical satellite communications (SATCOM) used in flight tests, hardened SATCOM, and associated shelters</p> <p>- Provide transportation for flight test equipment and SME support and analysis for numerous test, exercise, and real world events</p> <p>- Provide recurring proficiency training to CCMDs and keep training material and systems consistent with operational capabilities</p> <p>Specific and/or unique accomplishments for each FY are as follow:</p> <p>FY 2022 Plans:</p> <p>- Transition from providing sustainment of fielded EPAA Phase 3/EOR (Spiral 8.2-3) deployed to USEUCOM, USCENTCOM, USNORTHCOM, and USINDOPACOM to Spiral 8.2-5.</p> <p>- Execute final deployment and integration and testing for LRDR for Homeland Defense (Spiral 8.2-5)</p> <p>- Continue hardware updates and software licenses to support protection of the system from vulnerability and operational sustainment</p> <p>FY 2023 Plans:</p> <p>- Begin sustainment of S8.2-5/BOA 7.0 capabilities</p> <p>- Complete BMDS Teleport Gateway architecture redesign, engineering and installation</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement:</p> <p>Increase from FY 2022 to FY 2023 provides additional ILS training material and engineering support for Spiral 8.2-5.</p>				
Title: Concurrent Test, Training, and Operations (CTTO)		25.876	17.358	18.824
Articles:		-	-	-
Description: This element provides the development and sustainment of the C2BMC Training Support System (TSS) and the Missions Specific Vendor Plug-in (MSVP) stand-alone operator training devices and the Distributed Training System (DTS) for USINDOPACOM, USNORTHCOM, USEUCOM, USCENTCOM, and USSPACECOM. C2BMC connects all Missile Defense System (MDS) Elements through virtual and physical networks to facilitate integrated test, training, operations, and certification within two coexistent realms. This enables the warfighter to become proficient on current and future software versions at the				

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency			Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603896C / <i>Ballistic Missile Defense Command and Control, Battle Management & Communication</i>	Project (Number/Name) MX01 / <i>Command & Control, Battle Management, Communications (C2BMC) Development Support</i>	

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023
operational console, increases the developer's capacity to perform a variety of tests and upgrades on the operational MDS, and decreases recall-to-mission operations times from weeks and days to hours and minutes. The recently acquired C2BMC MSVP is a gaming-based stand-alone trainer developed from a SBIR project. It delivers mission training simulation using core Standard Space Trainer (SST) and provides the same level of training fidelity as the legacy TSS but with greater flexibility in architecture and reduced long term cost. Recurring accomplishments include sustaining current training systems for MDS training events for the Unified Combatant Command developing the next generation training systems, to include the integration of Red Force / Blue Force capability, to keep current with the operational system capabilities.			
Specific and/or unique accomplishments for each FY are as follows:			
FY 2022 Plans: - Modifications of MSVP and DTS for inclusion of the capabilities that are planned for delivery in Spiral 8.2-7 - Continue support and deployment activities of MDS LRDR for Homeland Defense (Spiral 8.2-5) for MSVP and DTS - Complete C2BMC Increment 5 (Spiral 8.2-3) training efforts			
FY 2023 Plans: - Continue MSVP and DTS development for inclusion of the capabilities that are planned for delivery in Spiral 8.2-7 - Provide hardware updates for DTS simulation and stimulation			
FY 2022 to FY 2023 Increase/Decrease Statement: Increase from FY 2022 to FY 2023 provides for preparation for development of Increment 9 training hardware and software.			
Accomplishments/Planned Programs Subtotals	129.960	125.086	131.903

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

Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• 0603881C: <i>Ballistic Missile Defense Terminal Defense Segment</i>	305.081	213.382	190.216	-	190.216	196.279	213.945	224.146	238.269	Continuing	Continuing
• 0603882C: <i>Ballistic Missile Defense Midcourse Defense Segment</i>	1,195.853	724.028	667.524	-	667.524	870.817	802.617	781.973	765.733	Continuing	Continuing
• 0603884C: <i>Ballistic Missile Defense Sensors</i>	259.605	254.962	231.134	-	231.134	250.028	274.705	276.254	257.575	Continuing	Continuing

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency								Date: April 2022			
Appropriation/Budget Activity 0400 / 4				R-1 Program Element (Number/Name) PE 0603896C / <i>Ballistic Missile Defense Command and Control, Battle Management & Communication</i>				Project (Number/Name) MX01 / <i>Command & Control, Battle Management, Communications (C2BMC) Development Support</i>			

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

Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• 0603890C: <i>BMD Enabling Programs</i>	607.167	623.644	591.847	-	591.847	613.589	625.761	635.633	640.374	Continuing	Continuing
• 0603892C: <i>AEGIS BMD</i>	861.809	639.549	600.072	-	600.072	658.798	574.014	570.018	580.496	Continuing	Continuing
• 0603904C: <i>Missile Defense Integration and Operations Center (MDIOC)</i>	54.026	52.403	49.367	-	49.367	51.744	56.502	57.833	59.006	Continuing	Continuing
• 0603907C: <i>Sea Based X-Band Radar (SBX)</i>	120.063	147.241	164.668	-	164.668	174.934	215.367	198.956	179.622	Continuing	Continuing
• 0603914C: <i>Ballistic Missile Defense Test</i>	364.994	389.156	367.824	-	367.824	363.963	421.261	476.991	490.176	Continuing	Continuing
• 0603915C: <i>Ballistic Missile Defense Targets</i>	534.348	560.478	559.513	-	559.513	555.341	623.995	628.146	632.072	Continuing	Continuing
• 0604181C: <i>Hypersonic Defense</i>	267.589	287.796	225.477	-	225.477	108.540	110.220	287.535	449.590	Continuing	Continuing
• 0604672C: <i>Homeland Defense Radar-Hawaii</i>	133.000	75.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	208.000
• 0604873C: <i>Long Range Discrimination Radar (LRDR)</i>	135.088	133.335	75.120	-	75.120	103.451	95.712	71.715	76.316	Continuing	Continuing

Remarks

D. Acquisition Strategy

A sole source C2BMC contract to Lockheed Martin was awarded 1st quarter FY 2012. The current ordering period is through 1st quarter FY 2025. Major team members to Lockheed are Northrop Grumman, Boeing, Raytheon, and General Dynamics. They are charged with the development, testing, fielding, training, operations and sustainment, and cyber operations support of the C2BMC system. Additionally, the DISA supports C2BMC worldwide long-haul communications. C2BMC Program Office government, Federally Funded Research and Development Center/University Affiliated Research Center (FFRDC/UARC), and Contract Support Services (CSS) personnel are also fully integrated as part of the Prime contractor's team to function in an Integrated Product Team environment. Furthermore, a sole source Specialized Warfighter Development Contract (SWDC) was awarded to Northrop Grumman in March 2018 (3 year base and 2 one year option periods) for continuation of the systems engineering, software development, test and integration for BOA. A SBIR Phase III contract with Sonalysts provides a standalone training system which delivers mission training.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603896C / <i>Ballistic Missile Defense Command and Control, Battle Management & Communication</i>						Project (Number/Name) MX01 / <i>Command & Control, Battle Management, Communications (C2BMC) Development Support</i>			
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Operations Engineering - Operations Engineering - Contract Support Services (CSS)	MIPR	MDA Various : Huntsville, AL; Colorado Springs, CO; NCR	4.103	0.835	Oct 2020	0.609	Oct 2021	0.626	Nov 2022	-		0.626	Continuing	Continuing	Continuing
Operations Engineering - Operations Engineering - Indirect Support	MIPR	DISA DECC/DISA TECC : Various	48.028	0.000		0.000		0.000		-		0.000	0.000	48.028	0.000
Operations Engineering - Operations Engineering - Specialized Warfighter Development Contract	SS/CPAF	Northrop Grumman Corporation : Huntsville, AL	0.693	0.000		0.000		0.000		-		0.000	0.000	0.693	0.000
Operations Engineering - Operations Engineering - Sustaining Support	C/CPAF	Jacobs Technology : Huntsville, AL; Colorado Springs, CO	4.897	2.190	Oct 2020	1.810	Mar 2022	1.847	Nov 2022	-		1.847	Continuing	Continuing	Continuing
Operations Engineering - Operations Engineering - Training Support	C/FPIF	Boeing : Huntsville, AL	2.282	0.921	Oct 2020	1.666	Oct 2021	1.813	Nov 2022	-		1.813	Continuing	Continuing	Continuing
Operations Engineering - Operations Engineering - Unit Personnel, Control System Improvement Sustaining Support	MIPR	Army, Navy, Air Force : Various	20.268	6.462	Oct 2020	12.565	Oct 2021	12.095	Nov 2022	-		12.095	Continuing	Continuing	Continuing
Operations Engineering - Prior year Operations Engineering no longer funded in the FYDP	Various	Various : Various	9.845	0.000		0.000		0.000		-		0.000	0.000	9.845	9.845
Operations Engineering - Unit Personnel, Control System Improvement, Sustaining Support	SS/CPFF	Lockheed Martin Team : Huntsville, AL	590.446	93.676	Dec 2020	91.078	Dec 2021	96.698	Dec 2022	-		96.698	Continuing	Continuing	Continuing
Concurrent Test, Training, and Operations (CTTO) -	SS/CPFF	Sonalysts : Waterford, CT	7.049	8.726	Dec 2020	2.765	Dec 2021	2.707	Dec 2022	-		2.707	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency													Date: April 2022		
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603896C / <i>Ballistic Missile Defense Command and Control, Battle Management & Communication</i>				Project (Number/Name) MX01 / <i>Command & Control, Battle Management, Communications (C2BMC) Development Support</i>					

Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
(Training Enhancements) MSVP															
Concurrent Test, Training, and Operations (CTTO) - CTTO/Training Enhancements	MIPR	DOD - USA - COMBAT CAPABILITIES DEVELOPMENT COMMAND (CCDC) AVIATION AND MISSILE CENTER (AVMC) : Huntsville, AL	21.652	6.184	Dec 2020	8.388	Dec 2021	7.823	Dec 2022	-		7.823	Continuing	Continuing	Continuing
Concurrent Test, Training, and Operations (CTTO) - Prior year CTTO no longer funded in the FYDP	Various	Various : Various	8.443	0.000		0.000		0.000		-		0.000	0.000	8.443	4.610
Concurrent Test, Training, and Operations (CTTO) - Training Enhancements	SS/CPIF	Lockheed Martin Team : Huntsville, AL; Colorado Springs, CO	124.096	10.966	Dec 2020	6.205	Dec 2021	8.294	Dec 2022	-		8.294	Continuing	Continuing	Continuing
Subtotal			841.802	129.960		125.086		131.903		-		131.903	Continuing	Continuing	N/A

Remarks N/A															
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Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	N/A

Remarks N/A															
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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency													Date: April 2022		
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0603896C / <i>Ballistic Missile Defense Co mmand and Control, Battle Management & Communication</i>					Project (Number/Name) MX01 / <i>Command & Control, Battle Management, Communications (C2BMC) Development Support</i>					

Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	N/A

Remarks
N/A

Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	N/A

Remarks
N/A

	Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	841.802	129.960		125.086		131.903		-		131.903	Continuing	Continuing	N/A

Remarks
Award Dates reflect date of first obligation. Additional obligations may incrementally occur throughout the year.

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Missile Defense Agency										Date: April 2022									
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0603896C / Ballistic Missile Defense Co mmand and Control, Battle Management & Communication					Project (Number/Name) MX01 / Command & Control, Battle Management, Communications (C2BMC) Development Support									
Significant Event Complete ▲		Milestone Decision Complete ★		Element Test Complete ◆		System Level Test Complete ●		Complete Activity ◆											
Significant Event Planned △		Milestone Decision Planned ☆		Element Test Planned ◇		System Level Test Planned ○		Planned Activity ◇											
					FY 2021		FY 2022		FY 2023		FY 2024		FY 2025		FY 2026		FY 2027		
MX01 Command & Control, Battle Management, Communications (C2BMC) Development Support Planned					◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Missile Defense Agency			Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603896C / Ballistic Missile Defense Co mmand and Control, Battle Management & Communication	Project (Number/Name) MX01 / Command & Control, Battle Management, Communications (C2BMC) Development Support	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
MX01 Command & Control, Battle Management, Communications (C2BMC) Development Support Planned	1	2021	4	2027

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency										Date: April 2022		
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0603896C / Ballistic Missile Defense Co mmand and Control, Battle Management & Communication				Project (Number/Name) MD40 / Program-Wide Support			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
MD40: Program-Wide Support	169.217	25.754	22.266	21.401	-	21.401	20.724	20.171	23.144	23.080	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Program Wide Support (PWS) is allocated on a pro-rata basis across multiple Agency PEs each fiscal year based on the total Agency budget, and therefore fluctuates per PE by fiscal year.

A. Mission Description and Budget Item Justification

PWS contains non-headquarters management costs in support of MDA functions and activities across the entire MDS. These functions include Government Civilians and Contract Support Services. This effort provides integrity and oversight of the MDS as well as supports MDA in the development and evaluation of technologies that will respond to the changing threat. Additionally, PWS includes personnel to support global deployments performing deployment site preparation and activation, and provides facility capabilities for MDA Executing Agent locations worldwide. Other MDA wide costs include: physical and technical security; civilian drug testing; audit readiness; the Science, Technology, Engineering, and Mathematics (STEM) program; legal services and settlements; travel and agency training; office, equipment, vehicle, and warehouse leases; utilities and base operations across multiple geographic locations; commercial and ancillary facility services; management of all facility aspects regardless of lifecycle stage; supplies and maintenance; compliance with statutory environmental requirements; data and unified communications support; materiel and readiness and central property management of equipment; Facilities Sustainment, Restoration and Modernization (FSRM) program, (formerly Real Property Maintenance) to keep the Department's inventory of facilities in good working order; and similar operating expenses. PWS is allocated on a pro-rata basis across most Agency PEs and therefore fluctuates per PE by fiscal year based on the total Agency budget in that fiscal year.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

Title: Program Wide Support		FY 2021	FY 2022	FY 2023
Articles:		25.754	22.266	21.401
Description: PWS contains non-headquarters management costs in support of MDA functions and activities across the entire MDS. These functions include Government Civilians and Contract Support Services. This effort provides integrity and oversight of the MDS as well as supports MDA in the development and evaluation of technologies that will respond to the changing threat. Additionally, PWS includes personnel to support global deployments performing deployment site preparation and activation, and provides facility capabilities for MDA Executing Agent locations worldwide. Other MDA wide costs include: physical and technical security; civilian drug testing; audit readiness; the Science, Technology, Engineering, and Mathematics (STEM) program; legal services and settlements; travel and agency training; office, equipment, vehicle, and warehouse leases; utilities and base operations across multiple geographic locations; commercial and ancillary facility services; management of all facility aspects regardless of lifecycle stage; supplies and maintenance; compliance with statutory environmental requirements; data and		-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency		Date: April 2022	
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603896C / <i>Ballistic Missile Defense Command and Control, Battle Management & Communication</i>	Project (Number/Name) MD40 / <i>Program-Wide Support</i>	

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023
unified communications support; materiel and readiness and central property management of equipment; Facilities Sustainment, Restoration and Modernization (FSRM) program, (formerly Real Property Maintenance) to keep the Department's inventory of facilities in good working order; and similar operating expenses. PWS is allocated on a pro-rata basis across most Agency PEs and therefore fluctuates per PE by fiscal year based on the total Agency budget in that fiscal year. FY 2022 Plans: - SEE ABOVE. FY 2023 Plans: - SEE ABOVE. FY 2022 to FY 2023 Increase/Decrease Statement: N/A			
Accomplishments/Planned Programs Subtotals	25.754	22.266	21.401

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603896C / Ballistic Missile Defense Co mmand and Control, Battle Management & Communication				Project (Number/Name) MD40 / Program-Wide Support					
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Wide Support - Agency Operations Management	Various	Various : Multi: AL, CA, CO, VA	6.277	0.000		0.000		0.000		-		0.000	6.277	12.554	0.000
Program Wide Support - Agency Operations and Support Services	C/CPFF	NETWORK MANAGEMENT RESOURCES, INC. : AL	15.188	7.899	Jul 2021	4.146	Jul 2022	2.870	Dec 2022	-		2.870	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations and Support Services (FFP)	C/FFP	Veterans Technology, LLC : AL	23.049	0.510	Nov 2020	0.586	Nov 2021	0.498	Nov 2022	-		0.498	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations and Support Services Civilian Salaries, Travel, Training	Various	MDA : AL	72.329	16.765	Oct 2020	16.884	Oct 2021	17.537	Oct 2022	-		17.537	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations, Sustainment and GPC	IA	Department of State Embassies : VA	0.037	0.050	Nov 2020	0.050	Oct 2021	0.039	Oct 2022	-		0.039	Continuing	Continuing	Continuing
Program Wide Support - FFRDC/UARC	C/CPAF	JHU/APL : AL, VA	0.301	0.530	Dec 2020	0.600	Jan 2022	0.457	Jan 2023	-		0.457	Continuing	Continuing	Continuing
Program Wide Support - Prior year no longer funded in the FYDP	Various	Various : Various	52.036	0.000		0.000		0.000		-		0.000	0.000	52.036	0.000
Subtotal			169.217	25.754		22.266		21.401		-		21.401	Continuing	Continuing	N/A
Remarks N/A															
			Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			169.217	25.754		22.266		21.401		-		21.401	Continuing	Continuing	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency							Date: April 2022			
Appropriation/Budget Activity 0400 / 4			R-1 Program Element (Number/Name) PE 0603896C / <i>Ballistic Missile Defense Co mmand and Control, Battle Management & Communication</i>			Project (Number/Name) MD40 / <i>Program-Wide Support</i>				
	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract	
Remarks Award Date reflects date of first obligation. Additional obligations may incrementally occur throughout the year.										

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Missile Defense Agency												Date: April 2022																																
Appropriation/Budget Activity 0400 / 4												R-1 Program Element (Number/Name) PE 0603896C / Ballistic Missile Defense Co mmand and Control, Battle Management & Communication												Project (Number/Name) MD40 / Program-Wide Support																				
Significant Event Complete ▲				Milestone Decision Complete ★				Element Test Complete ◆				System Level Test Complete ●				Complete Activity ◆				Significant Event Planned △				Milestone Decision Planned ☆				Element Test Planned ◇				System Level Test Planned ○				Planned Activity ◇								
												FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027								
MD40 Program-Wide Support												◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Missile Defense Agency			Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603896C / Ballistic Missile Defense Co mmand and Control, Battle Management & Communication	Project (Number/Name) MD40 / Program-Wide Support	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
MD40 Program-Wide Support	1	2021	4	2027

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Missile Defense Agency										Date: April 2022		
Appropriation/Budget Activity					R-1 Program Element (Number/Name)							
0400: Research, Development, Test & Evaluation, Defense-Wide I BA 4: Advanced Component Development & Prototypes (ACD&P)					PE 0603898C I Ballistic Missile Defense Joint Warfighter Support							
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
Total Program Element	315.191	49.261	50.594	50.269	-	50.269	51.849	55.960	56.488	54.980	Continuing	Continuing
MD03: Joint Warfighter Support	137.145	15.743	18.490	17.537	-	17.537	18.107	21.846	21.504	19.282	Continuing	Continuing
MT03: Joint Warfighter Support Test	157.800	31.549	29.990	30.748	-	30.748	31.753	32.146	32.789	33.445	Continuing	Continuing
MC03: Cyber Operations	0.448	0.000	0.155	0.159	-	0.159	0.164	0.168	0.171	0.174	Continuing	Continuing
MD40: Program-Wide Support	19.798	1.969	1.959	1.825	-	1.825	1.825	1.800	2.024	2.079	Continuing	Continuing
Program MDAP/MAIS Code: 362												
Note												
N/A												
A. Mission Description and Budget Item Justification												
The Joint Warfighter Support Program (JWSP) is the Missile Defense Agency's (MDA's) primary means for providing direct technical support to Combatant Commands (CCMDs), the Military Services and the Joint Staff on Missile Defense System (MDS) development, testing, and operational support, to include Real World testing and validation of the warfighter's operational Common Integration Broadcast (CIB). It enables delivery of MDS capabilities to Warfighters and ensures their participation in the identification and development of new Missile Defense (MD) capabilities via the Warfighter Involvement Process (WIP). The JWSP allows the Warfighter and Missile Defense Agency to work together to identify gaps, seams, and needs in warfighting capability and enhance MDS attributes by submitting modification and fielding requests. It also provides 24 hours a day, 7 days a week, 365 days a year MD operational support to Warfighters worldwide, to include global system verification and validation over the operational Common Integrated Broadcast. The program enables rapid response to Warfighter Requests for Information (RFIs) and Requests for Analyses (RFAs), which are especially critical to mission success in protecting U.S. Forces and other defended assets during Real World threat events. The program supports improving products delivered to Warfighters through technical reviews and technical analyses supporting strategic and regional MD planning, development of shot doctrine and MD design. The JWSP also enables the inclusion of both CCMD and MDA MD objectives in CCMD/Joint Staff-sponsored wargames and exercises, which are used to sharpen and enhance joint Missile Defense (MD) warfighting skills.												

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Missile Defense Agency	Date: April 2022
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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 0603898C / <i>Ballistic Missile Defense Joint Warfighter Support</i>
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B. Program Change Summary (\$ in Millions)	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023 Base</u>	<u>FY 2023 OCO</u>	<u>FY 2023 Total</u>
Previous President's Budget	49.560	50.594	0.000	-	0.000
Current President's Budget	49.261	50.594	50.269	-	50.269
Total Adjustments	-0.299	0.000	50.269	-	50.269
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	-0.299	0.000			
• Missile Defeat and Defense Enhancement	0.000	0.000	0.000	-	0.000
• Other Adjustment	0.000	0.000	50.269	-	50.269

Change Summary Explanation

FY 2023 funding increase reflects the fact that the FY 2022 President's Budget request did not include out-year funding.

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency										Date: April 2022		
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0603898C / Ballistic Missile Defense Jo int Warfighter Support				Project (Number/Name) MD03 / Joint Warfighter Support			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
MD03: Joint Warfighter Support	137.145	15.743	18.490	17.537	-	17.537	18.107	21.846	21.504	19.282	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

N/A

A. Mission Description and Budget Item Justification

There are six primary functions in Joint Warfighter Support (MD03):

- (1) Missile Defense Operations Support
- (2) Combatant Command Integration
- (3) Military Service Integration
- (4) Operational MDS Verification and Validation
- (5) Warfighter Training and Education Support
- (6) Joint Staff Integration

Detailed descriptions and accomplishments are provided in section B. Accomplishments/Planned Program

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2021	FY 2022	FY 2023
Title: Strategic Warfighter Integration	15.743	18.490	17.537
Articles:	-	-	-
Description: (1) Missile Defense Operations Support: - Manage and operate the MDA Operations Support Center (OSC) 24 hours a day, 7 days a week, 365 days a year and two MDA Operations Centers (MOCs) in Virginia and Alabama for daily execution of scheduled MDS activities; and prepare and transmit Logistic Reports. - Manage and execute the MDS Asset Management (BAM) process of planning, coordinating, scheduling and executing access to operational and Research, Development, Test and Evaluation (RDT&E) assets operated by MDA and Warfighters dispersed globally with differing missions and competing priorities to facilitate assets in support of Warfighter BMD; Missile Warning/Space Surveillance (MW/SS) operations; MDA Research, Development, Test and Evaluation (RDT&E), training and sustainment activities. - Lead the MDA Operations Support Planning Team (OSPT), an MDA-wide task force supporting Warfighters, Services and the Joint Staff to address real-world contingencies and crisis events.			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency		Date: April 2022	
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603898C / <i>Ballistic Missile Defense Joint Warfighter Support</i>	Project (Number/Name) MD03 / <i>Joint Warfighter Support</i>	
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2021	FY 2022
<ul style="list-style-type: none"> - Develop MDS Annual Plan and MDS Operating Schedule facilitating key stakeholder coordination and maximizing operational availability of the MDS. - Develop and maintain the Integrated Scheduling Tool. - Facilitate major software/hardware additions to the Operational Capability Baseline for homeland/regional defenses. - Develop and maintain the MDS Operational Readiness Reporting System application to collect and report MDS operational availability and readiness data through the network-based tool to distribute data to Office of the Secretary of Defense (OSD), CCMDs, Joint Staff, Military Services, and MDS Operators. - Provide certification training to Ballistic Missile Defense Systems (BMDS) watch officers (BWO), BMDS Safety Officers (BSO), and other Operations Support Center staff. <p>(2) Combatant Command Integration (United States Strategic Command (USSTRATCOM), United States Northern Command (USNORTHCOM), United States Central Command (USCENTCOM), United States European Command (USEUCOM), United States Indo-Pacific Command (USINDOPACOM), and United States Space Command (USSPACECOM):</p> <ul style="list-style-type: none"> - Support the Warfighter Involvement Process (WIP) and other MDA Warfighter engagement efforts by assisting Warfighters in their update to the annual MDS Prioritized Capabilities List (PCL) and Modification and Fielding Request List (MFRL). - Aid CCMD participation in missile defense capability definition, design, development, integration, and delivery processes through the WIP to synchronize capability delivery with operational readiness and acceptance. - Support Joint Functional Component Command Integrated Missile Defense (JFCC IMD) integration by participating in the Warfighter Forum (WFF) a multi-lateral information and decision event to address CCMD, Service and Department of Defense (DoD) MDS equities. - Assist USNORTHCOM in broadening homeland defense planning to address the full range of USNORTHCOM threats by conducting the Homeland Defense Architecture Working Group (HDAWG) and Shot Management Analysis Cell (SMAC). - Prepare MDA senior leadership for engagements with CCMDs. - Interface with CCMDs on MD operational issues by providing planning and analysis support and translating warfighter responses to MDA issues. - Manage the Warfighter Requests for Information (RFIs); Requests for Analyses (RFAs); and Requests for Allied Participation in Tests (RFT) processes. <p>(3) Military Service Integration:</p> <ul style="list-style-type: none"> - Facilitate and coordinate Service Boards of Directors (BODs) on Lead Service MDS related equities, Program Objective Memorandum (POM) development and execution; element fielding, operations and maintenance, and the MDS capability delivery process. 			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency			Date: April 2022		
Appropriation/Budget Activity 0400 / 4		R-1 Program Element (Number/Name) PE 0603898C / <i>Ballistic Missile Defense Joint Warfighter Support</i>		Project (Number/Name) MD03 / <i>Joint Warfighter Support</i>	
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)			FY 2021	FY 2022	FY 2023
<ul style="list-style-type: none"> - Maintain daily, strategic-level interfaces with Military Services and Joint Staff plan for the delivery, fielding, and operation of respective Lead Service MDS capabilities via senior-level working groups, General Officer Air and Missile Defense and Space forums. - Support transition and transfer to the Military Services through participation in senior-level working groups, Joint Staff directorates, and facilitate General Officer forums. <p>(4) Operational MDS Verification and Validation:</p> <ul style="list-style-type: none"> - Provide 24 hours a day, 7 days a week, 365 days a year, global system verification and validation over the operational Common Integrated Broadcast, and Shared Early Warning System for MD early warning data. - Support Tactical Data Processor software development, MDA flight tests and other software development efforts using live real-world broadcasts of simulated missile threats. - Support Naval Board of Inspection and Survey (INSURV), Shipboard installation, Aegis On-Demand, Aegis program releases, US and Coalition operational readiness and BMD Exercise requirements to validate equipment, materiel, and tactical readiness while simultaneously providing deployment certification and crew operator qualification. - Verify operational readiness of both US and Coalition partners to detect a real-world launch of a ballistic threat. <p>(5) Warfighter Training and Education Support:</p> <ul style="list-style-type: none"> - Provide Missile Defense Space Warning tool (MDST) support to increase operator proficiency, competence, and confidence; provide initial qualification training; and ship certification for Aegis BMD crews. - Provide technical and programmatic updates for BMD Warfighter training; participates in MDS training and Education Working Group to coordinate MDS training issues with USSPACECOM and Joint Staff. - Support Fleet Synthetic and Aegis Operator Training to ensure operational readiness of Aegis as the first step in the kill chain for MD. - Provide Early Warning missile injects for MT03 war games and exercises and tailored support for other Joint Warfighter Support Test events (as listed in the Integrated Master Test Plan (IMTP) and R-4/4A schedule). <p>(6) Joint Staff Integration:</p> <ul style="list-style-type: none"> - Facilitate and coordinate all Joint Staff interactions with the MDA. - Maintain daily, strategic-level interfaces with the Joint Staff. <p>Specific and/or unique accomplishments for each FY are as follows:</p> <p>FY 2022 Plans:</p>					

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency										Date: April 2022		
Appropriation/Budget Activity 0400 / 4				R-1 Program Element (Number/Name) PE 0603898C / <i>Ballistic Missile Defense Joint Warfighter Support</i>				Project (Number/Name) MD03 / <i>Joint Warfighter Support</i>				
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)										FY 2021	FY 2022	FY 2023
- SEE ABOVE												
FY 2023 Plans: - SEE ABOVE												
FY 2022 to FY 2023 Increase/Decrease Statement: N/A												
Accomplishments/Planned Programs Subtotals										15.743	18.490	17.537
C. Other Program Funding Summary (\$ in Millions)												
<u>Line Item</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u> <u>Base</u>	<u>FY 2023</u> <u>OCO</u>	<u>FY 2023</u> <u>Total</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>	
• 0603882C: <i>Ballistic Missile Defense Midcourse Defense Segment</i>	1,195.853	724.028	667.524	-	667.524	870.817	802.617	781.973	765.733	Continuing	Continuing	
• 0603884C: <i>Ballistic Missile Defense Sensors</i>	259.605	254.962	231.134	-	231.134	250.028	274.705	276.254	257.575	Continuing	Continuing	
• 0603890C: <i>BMD Enabling Programs</i>	607.167	623.644	591.847	-	591.847	613.589	625.761	635.633	640.374	Continuing	Continuing	
• 0603892C: <i>AEGIS BMD</i>	861.809	639.549	600.072	-	600.072	658.798	574.014	570.018	580.496	Continuing	Continuing	
• 0603896C: <i>Ballistic Missile Defense Command and Control, Battle Management & Communication</i>	639.027	564.946	589.374	-	589.374	575.883	588.824	612.853	605.801	Continuing	Continuing	
• 0603904C: <i>Missile Defense Integration and Operations Center (MDIOC)</i>	54.026	52.403	49.367	-	49.367	51.744	56.502	57.833	59.006	Continuing	Continuing	
Remarks												
D. Acquisition Strategy												
The Integrated Research and Development for Enterprise Solutions (IRES) Contract and the Specialized Warfighter Development Contract are the major performing integrated contracts. The acquisition strategy for Strategic Warfighter Integration mission execution is to employ a contract to perform designated integration and sustainment tasks to conduct MDS Research, Development, Test and Evaluation (RDT&E). Strategic Warfighter Integration is operated by missile defense subject matter experts composed of Government, military, civilian personnel, Contract Support Services, and major defense contractors.												

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603898C / <i>Ballistic Missile Defense Joint Warfighter Support</i>						Project (Number/Name) MD03 / <i>Joint Warfighter Support</i>			
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	N/A
Remarks N/A															
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Strategic Warfighter Integration - Strategic Warfighter Integration - HR A&AS	C/CPFF	LSINC Corp : Colorado Springs	0.821	0.046	Dec 2020	0.000		0.000		-		0.000	0.000	0.867	0.000
Strategic Warfighter Integration - Strategic Warfighter Integration - Administrative A&AS	C/CPFF	Yorktown : Colorado Springs	1.972	0.000		0.000		0.000		-		0.000	0.000	1.972	0.000
Strategic Warfighter Integration - Strategic Warfighter Integration - Civilian Salaries/ Operations Sustainment	Allot	MDA : Colorado Springs/Huntsville, NCR	42.609	5.203	Oct 2020	5.190	Oct 2021	5.412	Oct 2022	-		5.412	Continuing	Continuing	Continuing
Strategic Warfighter Integration - Strategic Warfighter Integration - Current Operations	C/CPAF	Jacobs Technology/ IRES : Colorado Springs	26.621	1.155	Nov 2020	1.322	Dec 2021	1.248	Nov 2022	-		1.248	Continuing	Continuing	Continuing
Strategic Warfighter Integration - Strategic Warfighter Integration - IT Wireless Services (JRDC/ IRES)	C/CPAF	Jacobs Technology/ IRES : Colorado Springs, Huntsville	4.871	0.814	Jan 2021	1.750	Jan 2022	0.596	Jan 2023	-		0.596	Continuing	Continuing	Continuing
Strategic Warfighter Integration - Strategic	C/CPAF	Northrop Grumman/ SWDC : Colorado Springs	26.757	3.223	Nov 2020	4.337	Nov 2021	4.149	Nov 2022	-		4.149	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603898C / <i>Ballistic Missile Defense Joint Warfighter Support</i>						Project (Number/Name) MD03 / <i>Joint Warfighter Support</i>			
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Warfighter Integration - MDST															
Strategic Warfighter Integration - Strategic Warfighter Integration - Travel and Training	Allot	MDA : Colorado Springs, Huntsville, NCR	1.835	0.038	Oct 2020	0.119	Oct 2021	0.359	Nov 2022	-		0.359	Continuing	Continuing	Continuing
Strategic Warfighter Integration - Strategic Warfighter Integration - Warfighter Support A&AS	C/CPFF	STRATEGIC ALLIANCE SOLUTIONS LLC : Colorado Springs, Huntsville, NCR	31.659	5.264	Nov 2020	5.772	Nov 2021	5.773	Dec 2022	-		5.773	Continuing	Continuing	Continuing
Strategic Warfighter Integration - Test, Exercises and Wargames - A&AS	C/CPFF	Millennium Eng & Int. : Colorado Springs/Huntsville	0.000	0.000		0.000		0.000		-		0.000	0.000	0.000	0.000
Subtotal			137.145	15.743		18.490		17.537		-		17.537	Continuing	Continuing	N/A
Remarks N/A															
Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	N/A
Remarks N/A															

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022		
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603898C / <i>Ballistic Missile Defense Joint Warfighter Support</i>				Project (Number/Name) MD03 / <i>Joint Warfighter Support</i>				

Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	N/A

Remarks N/A															
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	Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	137.145	15.743		18.490		17.537		-		17.537	Continuing	Continuing	N/A

Remarks Funding in the All Prior Years column represents a summary of Prior Years Total Costs for active contracts, Military Interdepartmental Purchase Requests, and civilian salaries on the R-3. Award Date reflects date of first obligation. Additional obligations may incrementally occur throughout the year.													
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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Missile Defense Agency															Date: April 2022														
Appropriation/Budget Activity 0400 / 4										R-1 Program Element (Number/Name) PE 0603898C / Ballistic Missile Defense Joint Warfighter Support										Project (Number/Name) MD03 / Joint Warfighter Support									
Significant Event Complete ▲					Milestone Decision Complete ★					Element Test Complete ◆					System Level Test Complete ●					Complete Activity ◆									
Significant Event Planned △					Milestone Decision Planned ☆					Element Test Planned ◇					System Level Test Planned ○					Planned Activity ◇									
										FY 2021		FY 2022		FY 2023		FY 2024		FY 2025		FY 2026		FY 2027							
Strategic Integration Wargame Events in support of MT03										◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇						

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Missile Defense Agency		Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603898C / Ballistic Missile Defense Jo int Warfighter Support	Project (Number/Name) MD03 / Joint Warfighter Support

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Strategic Integration Wargame Events in support of MT03	1	2021	4	2027

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency										Date: April 2022		
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0603898C / Ballistic Missile Defense Jo int Warfighter Support				Project (Number/Name) MT03 / Joint Warfighter Support Test			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
MT03: Joint Warfighter Support Test	157.800	31.549	29.990	30.748	-	30.748	31.753	32.146	32.789	33.445	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

N/A

A. Mission Description and Budget Item Justification

Joint Warfighter Support Test is to provide support to MDS Wargames and Exercises.

Wargames and Exercises:

- Support the Warfighter to plan and conduct worldwide wargames and exercises supporting MDS development and fielding.
- Enable the Warfighter to define, test, deploy, and employ new missile defense capabilities.
- Support Joint Functional Component Commander for Integrated Missile Defense (JFCC IMD) MDS Table Top Exercises (TTX) to facilitate the global missile defense capability and to refine the European capability concept of operations through low-fidelity demonstration Models & Simulation (M&S).
- Continue test planning for Wargames and Exercises.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

		FY 2021	FY 2022	FY 2023
Title: Wargames and Exercises		26.545	26.755	27.092
Articles:		-	-	-
Description: The Missile Defense Agency provides operational-level interfaces to the Global Combatant Commands (GCCs) and ensures Warfighter participation to develop future missile defense capabilities.				
- Work with CCMDs on the inclusion of Allies and regional partners into MDA Ground and Flight tests and wargames and exercises simulations.				
- Support JFCC IMD and USEUCOM in the European Phased Adaptive Approach (EPAA) implementation process through the planning, testing, integration and execution of MDS wargames and exercises.				
- Support Joint Staff integration of MDA models into Tier I events through the Joint, Live Virtual Constructive (JLVC) campaign.				
- Work with Program Offices and the Warfighter; publish a Concept of Operations that will support future MDA Models and Simulation support to MDS wargames and exercises.				
- Coordinate and integrate CCMD requirements into the MDS Integrated Master Test Plan and Integrated Master Schedule.				
- Provide support to the development and update of Ballistic Missile Defense (BMD) portions of CCMD Operation Plans (OPLANS) and Contingency Plans (CONPLANS).				

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency		Date: April 2022	
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603898C / <i>Ballistic Missile Defense Joint Warfighter Support</i>	Project (Number/Name) MT03 / <i>Joint Warfighter Support Test</i>	
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2021	FY 2022
<ul style="list-style-type: none"> - Engage in MDA/GCC interface and synchronization of information regarding capabilities and security cooperation strategies. - Develop and provide wargames, exercises and Table Top Exercises (TTX) in support of CCMD-specific scenarios as listed in the R4-4A schedule for the USEUCOM, USINDOPACOM, USCENTCOM and USNORTHCOM/USSTRATCOM Geographic Combatant Commands. <p>USEUCOM Engagement:</p> <ul style="list-style-type: none"> - Coordinate with USEUCOM for continued MDA support of key EPAA Approach milestones in order to provide a full range of MDS capabilities addressing ballistic missile threats to the European theater. - Work with USEUCOM to include NATO Allies and regional partners during MDA Ground tests, Flight tests, exercises and wargames in order to improve Allied - US MDS interoperability. - Coordinate with MDA program elements to facilitate rapid agency responses to USEUCOM requests for analysis and information. Provide reach-back support for the MDA Assistant to the MDA Director (ATD) and Liaison Officer (LNO) in USEUCOM for activities requiring visibility by the MDA Director and Director for Test. - Coordinate with MDA Global Deployment Program Office to plan and execute actions required for deployment of MDS assets in the USEUCOM theater of operations. <p>USCENTCOM Engagement:</p> <ul style="list-style-type: none"> - Promote CCMD leadership in developing a regional partner data sharing system supporting USCENTCOM regional Integrated Air and Missile Defense (IAMD) architecture development. - Coordinate with MDA program elements, assisting in planning and execution activities supporting USCENTCOM's regional partners. <p>USINDOPACOM Engagement:</p> <ul style="list-style-type: none"> - Assist USINDOPACOM leadership in broadening Phased Adaptive Approach planning to address a full range of threats and integration of allies into the MDS. - Support USINDOPACOM (Operations Directorate)J3 in efforts to promote the Aegis Ashore system. - Share operational information and knowledge and help allies develop common operational procedures. <p>FY 2022 Plans:</p> <ul style="list-style-type: none"> - SEE ABOVE. <p>FY 2023 Plans:</p> <ul style="list-style-type: none"> - SEE ABOVE. <p>FY 2022 to FY 2023 Increase/Decrease Statement:</p>			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency		Date: April 2022	
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603898C / <i>Ballistic Missile Defense Joint Warfighter Support</i>	Project (Number/Name) MT03 / <i>Joint Warfighter Support Test</i>	

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023
N/A			
Title: Program, Planning and Operations <div style="text-align: right;">Articles:</div> Description: MDA provides and ensures Warfighter participation in the development of future missile defense capabilities and requirements. The key Warfighter interface activities include: - Provide resource management and administration of MT03 personnel and funding. - Manage and provide programmatic direction and oversight of the MDA Wargames and Exercise program. - Provide MDA Wargames and Exercises support to the Office of the Secretary of Defense (OSD), Military Service Components, the Joint Chiefs of Staff, the CCMD, the JFCC IMD, and international partners/allies to assist warfighter Tactics, Techniques, and Procedures (TTPs) validation and identify gaps that drive warfighter requirements. - Lead MDA planning, testing, integration and execution of all MDA-supported CCMD Wargames and Exercises. FY 2022 Plans: - SEE ABOVE FY 2023 Plans: -SEE ABOVE FY 2022 to FY 2023 Increase/Decrease Statement: - Increase from FY 2022 to FY 2023 is in accordance with the IMTP.	5.004 -	3.235 -	3.656 -
Accomplishments/Planned Programs Subtotals	31.549	29.990	30.748

C. Other Program Funding Summary (\$ in Millions) N/A
Remarks
D. Acquisition Strategy In order to optimize the performance of the Missile Defense System, MDA leverages Defense Department executive agents as well as the MDA Integrated Research and Development for Enterprise Solutions (IRES) contract. The executing agents utilize various contracting strategies in a flexible manner to maximize their contribution to the MDS. Products and Services are acquired by competitive means to the extent that is possible and practical.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603898C / <i>Ballistic Missile Defense Joint Warfighter Support</i>						Project (Number/Name) MT03 / <i>Joint Warfighter Support Test</i>			
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Wargames and Exercises - Test Support Sim Center	MIPR	Army Space and Missile Defense Command (USASMDC) : AL	0.000	0.000		0.000		0.750	Nov 2022	-		0.750	Continuing	Continuing	Continuing
Wargames and Exercises - Test Support Wargames	C/CPIF	JACOBS TECHNOLOGY INC. : Various	0.000	0.000		0.000		4.625	Nov 2022	-		4.625	Continuing	Continuing	Continuing
Wargames and Exercises - Wargames and Exercises - Combatant Commanders (COCOM)/Wargame Support	C/Various	IRES/MIPR : Jacobs / CO/TX/NH	100.102	24.148	Nov 2020	22.806	Nov 2021	21.717	Nov 2022	-		21.717	Continuing	Continuing	Continuing
Wargames and Exercises - Wargames and Exercises - Wargame Support	MIPR	SIM Center, SMDC/ LTPO, SPAWAR : CO/AL/TX/CA	27.743	2.397	Nov 2020	3.949	Nov 2021	0.000		-		0.000	0.000	34.089	0.000
Program, Planning and Operations - Civilian Salaries	Allot	MDA : Various	0.000	1.527	Nov 2020	1.396	Nov 2021	1.451	Nov 2022	-		1.451	Continuing	Continuing	Continuing
Program, Planning and Operations - Combatant Commanders (COCOM) Support A&AS	C/CPFF	TEAMS : Colorado Springs, Huntsville	6.454	2.385	Oct 2020	1.187	Nov 2021	1.555	Nov 2022	-		1.555	Continuing	Continuing	Continuing
Program, Planning and Operations - Government Travel & Training	Allot	MDA : Colorado Springs, Huntsville, NCR	2.788	0.000		0.000		0.000		-		0.000	0.000	2.788	0.000
Program, Planning and Operations - Operations Sustainment/Travel & Training	C/CPFF	MDA : Various	12.038	1.092	Oct 2020	0.652	Nov 2021	0.650	Oct 2022	-		0.650	Continuing	Continuing	Continuing
Program, Planning and Operations - Support to MDA Leadership A&AS	C/CPFF	TEAMS : Colorado Springs, Huntsville, NCR	8.675	0.000		0.000		0.000		-		0.000	0.000	8.675	0.000
Subtotal			157.800	31.549		29.990		30.748		-		30.748	Continuing	Continuing	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022		
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603898C / <i>Ballistic Missile Defense Joint Warfighter Support</i>				Project (Number/Name) MT03 / <i>Joint Warfighter Support Test</i>				

Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Remarks N/A															
			Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			157.800	31.549		29.990		30.748		-		30.748	Continuing	Continuing	N/A
Remarks Prior year funding was captured in the MD03 budget project. Award Dates reflect date of first obligation. Additional obligations may incrementally occur throughout the year.															

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Missile Defense Agency										Date: April 2022														
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0603898C / Ballistic Missile Defense Joint Warfighter Support										Project (Number/Name) MT03 / Joint Warfighter Support Test									
Significant Event Complete ▲ Significant Event Planned △		Milestone Decision Complete ★ Milestone Decision Planned ☆		Element Test Complete ◆ Element Test Planned ◇		System Level Test Complete ● System Level Test Planned ○								Complete Activity ◆ Planned Activity ◇										
					FY 2021		FY 2022		FY 2023		FY 2024		FY 2025		FY 2026		FY 2027							
(WG) DEMONSTRATION, TABLE-TOP EXERCISES & EXPERIMENTS 20					◆																			
(EX) JOINT LIVE, VIRTUAL, AND CONSTRUCTIVE 2019/2020					◆																			
(EX) KEEN SWORD 21					◆																			
(EX) COMBINED FLYING TRAINING EVENT (CFTE) 21					▲																			
(EX) COMBINED FLYING TRAINING EVENT (CFTE) 23					▲																			
(EX) COMBINED FLYING TRAINING EVENT (CFTE) 24					▲																			
(EX) COMBINED FLYING TRAINING EVENT (CFTE) 25					▲																			
(EX) COMBINED FLYING TRAINING EVENT (CFTE) 26					▲																			
(EX) AUSTERE CHALLENGE 21					◆	◆																		
(EX) JOINT PROJECT OPTIC WINDMILL 2021					◆	◆																		
(EX) EUROPEAN AIR & MISSILE DEFENSE EXERCISE 21					◆	◆																		
(EX) AIR AND MISSILE DEFENSE EXERCISE 21					◆	◆	◆																	
(WG) NIMBLE TITAN 22					◇	◇	◇	◇	◇	◇	◇													
(EX) EUROPEAN AIR & MISSILE DEFENSE EXERCISE 20						▲																		
(EX) RESILIENT SHIELD 21						▲																		
(EX) PACIFIC FURY 21						▲																		
(EX) GLOBAL LIGHTNING 21						◆	◆																	
(EX) STEADFAST ARMOUR 21						◇	◇																	
(EX) EUROPEAN TEST BED 21						◇	◇	◇																
(EX) JOINT AIR AND MISSILE DEFENSE EXERCISE SERIES 21						◇	◇	◇																
(WG) Missile Defense Wargame 22						◇	◇	◇	◇	◇	◇													
(EX) Joint Live, Virtual, and Constructive 2021/2022						◇	◇	◇	◇	◇	◇	◇												
(EX) PACIFIC SENTRY 21							◇																	
(EX) ASTRAL KNIGHT 21							△																	

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Missile Defense Agency										Date: April 2022									
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0603898C / Ballistic Missile Defense Joint Warfighter Support					Project (Number/Name) MT03 / Joint Warfighter Support Test									
Significant Event Complete ▲ Significant Event Planned △		Milestone Decision Complete ★ Milestone Decision Planned ☆		Element Test Complete ◆ Element Test Planned ◇		System Level Test Complete ● System Level Test Planned ○		Complete Activity ◆ Planned Activity ◇											
					FY 2021		FY 2022		FY 2023		FY 2024		FY 2025		FY 2026		FY 2027		
(WG) HUNTSVILLE WARGAMES 21							◇	◇											
(WG) Demonstration, Table-top Exercises & Experiments 21							◇	◇	◇										
(WG) SPACE & MISSILE DEFENSE SYMPOSIUM 21								△											
(EX) COMBINED COMMAND POST TRAINING 21-2								△											
(EX) VIGILANT SHIELD 22								◇	◇										
(EX) GLOBAL THUNDER 21								◇	◇										
(EX) KEEN EDGE 22								◇	◇	◇									
(EX) COMBINED FLYING TRAINING EVENT (CFTE) 22									△										
(EX) JUNIPER COBRA 22									◇	◇									
(EX) AIR AND MISSILE DEFENSE EXERCISE 22									◇	◇	◇								
(EX) EAGLE RESOLVE 22										△									
(EX) RESILIENT SHIELD 22										△									
(EX) COMBINED COMMAND POST TRAINING 22-1										△									
(EX) PACIFIC FURY 22										△									
(EX) GLOBAL LIGHTNING 22										◇	◇								
(EX) STEADFAST ALLIANCE 22										◇	◇								
(EX) JOINT AIR AND MISSILE DEFENSE EXERCISE SERIES 22										◇	◇	◇							
(EX) EUROPEAN TEST BED 22										◇	◇	◇							
(EX) ASTRAL KNIGHT 22											△								
(WG) Demonstration, Table-top Exercises & Experiments 22											◇	◇	◇						
(EX) PACIFIC SENTRY 22												△							
(EX) COMBINED COMMAND POST TRAINING 22-2												△							
(EX) VIGILANT SHIELD 23												◇	◇						
(EX) KEEN SWORD 23													◇	◇					

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Missile Defense Agency										Date: April 2022																			
Appropriation/Budget Activity 0400 / 4										R-1 Program Element (Number/Name) PE 0603898C / Ballistic Missile Defense Joint Warfighter Support										Project (Number/Name) MT03 / Joint Warfighter Support Test									
Significant Event Complete ▲ Significant Event Planned △					Milestone Decision Complete ★ Milestone Decision Planned ☆					Element Test Complete ◆ Element Test Planned ◇					System Level Test Complete ● System Level Test Planned ○					Complete Activity ◆ Planned Activity ◇									
										FY 2021		FY 2022		FY 2023		FY 2024		FY 2025		FY 2026		FY 2027							
(EX) GLOBAL RESPONSE EXERCISE 11														◇	◇														
(EX) GLOBAL THUNDER 22														◇	◇														
(EX) GLOBAL RESPONSE EXERCISE 12														◇	◇														
(EX) Joint Project Optic Windmill 2023															◇	◇	◇												
(EX) AIR AND MISSILE DEFENSE EXERCISE 23															◇	◇	◇												
(WG) NIMBLE TITAN 24															◇	◇	◇	◇	◇	◇	◇								
(EX) AUSTERE CHALLENGE 23															◇														
(EX) RESILIENT SHIELD 23															△														
(EX) COMBINED COMMAND POST TRAINING 23-1															△														
(EX) PACIFIC FURY 23															△														
(EX) STEADFAST ARMOUR 23															◇	◇													
(EX) GLOBAL LIGHTNING 23															◇	◇													
(EX) EUROPEAN TEST BED 23															◇	◇	◇												
(EX) JOINT AIR AND MISSILE DEFENSE EXERCISE SERIES 23															◇	◇	◇												
(WG) Missile Defense Wargame 24															◇	◇	◇	◇	◇	◇									
(EX) Joint Live, Virtual, and Constructive 2023/2024															◇	◇	◇	◇	◇	◇	◇	◇							
(EX) EUROPEAN AIR & MISSILE DEFENSE EXERCISE 23																◇													
(EX) ASTRAL KNIGHT 23																△													
(WG) Huntsville Wargames 23																◇	◇												
(WG) Demonstration, Table-top Exercises & Experiments 23																◇	◇	◇											
(WG) Space & Missile Defense Symposium 23																	△												
(EX) PACIFIC SENTRY 23																	△												
(EX) COMBINED COMMAND POST TRAINING 23-2																	△												
(EX) GLOBAL THUNDER 23																	◇	◇											

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Missile Defense Agency										Date: April 2022																			
Appropriation/Budget Activity 0400 / 4										R-1 Program Element (Number/Name) PE 0603898C / Ballistic Missile Defense Joint Warfighter Support										Project (Number/Name) MT03 / Joint Warfighter Support Test									
Significant Event Complete ▲ Significant Event Planned △					Milestone Decision Complete ★ Milestone Decision Planned ☆					Element Test Complete ◆ Element Test Planned ◇					System Level Test Complete ● System Level Test Planned ○					Complete Activity ◆ Planned Activity ◇									
										FY 2021		FY 2022		FY 2023		FY 2024		FY 2025		FY 2026		FY 2027							
(EX) VIGILANT SHIELD 24																◆	◆												
(EX) KEEN EDGE 24																◆	◆	◆											
(EX) JUNIPER COBRA 24																◆	◆												
(EX) AIR AND MISSILE DEFENSE EXERCISE 24																◆	◆	◆											
(EX) EAGLE RESOLVE 24																	△												
(EX) RESILIENT SHIELD 24																	△												
(EX) COMBINED COMMAND POST TRAINING 24-1																	△												
(EX) PACIFIC FURY 24																	△												
(EX) GLOBAL LIGHTNING 24																	◆	◆											
(EX) STEADFAST ALLIANCE 24																	◆	◆											
(EX) EUROPEAN TEST BED 24																	◆	◆	◆										
(EX) JOINT AIR AND MISSILE DEFENSE EXERCISE SERIES 24																	◆	◆	◆										
(EX) ASTRAL KNIGHT 24																		△											
(WG) DEMONSTRATION, TABLE-TOP EXERCISES & EXPERIMENTS 24																		◆	◆	◆									
(WG) DEMONSTRATION, TABLE-TOP EXERCISES & EXPERIMENTS 25																		◆	◆	◆									
(EX) PACIFIC SENTRY 24																			△										
(EX) COMBINED COMMAND POST TRAINING 24-2																			△										
(EX) GLOBAL THUNDER 24																		◆	◆										
(EX) GLOBAL RESPONSE EXERCISE 13																		◆	◆										
(EX) KEEN SWORD 25																		◆	◆										
(EX) VIGILANT SHIELD 25																		◆	◆										
(EX) AIR AND MISSILE DEFENSE EXERCISE 25																			◆	◆	◆								
(WG) NIMBLE TITAN 26																			◆	◆	◆	◆	◆	◆	◆				
(EX) AUSTERE CHALLENGE 25																				◆									

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Missile Defense Agency										Date: April 2022														
Appropriation/Budget Activity					R-1 Program Element (Number/Name)										Project (Number/Name)									
0400 / 4					PE 0603898C / Ballistic Missile Defense Joint Warfighter Support										MT03 / Joint Warfighter Support Test									
Significant Event Complete ▲		Milestone Decision Complete ★		Element Test Complete ◆		System Level Test Complete ●		Complete Activity ◆																
Significant Event Planned △		Milestone Decision Planned ☆		Element Test Planned ◇		System Level Test Planned ○		Planned Activity ◇																
					FY 2021		FY 2022		FY 2023		FY 2024		FY 2025		FY 2026		FY 2027							
(EX) JOINT PROJECT OPTIC WINDMILL 2025														◇										
(EX) RESILIENT SHIELD 25														△										
(EX) COMBINED COMMAND POST TRAINING 25-1														△										
(EX) PACIFIC FURY 25														△										
(EX) GLOBAL LIGHTNING 25														◇	◇									
(EX) STEADFAST ARMOUR 25														◇	◇									
(EX) EUROPEAN TEST BED 25														◇	◇	◇								
(EX) JOINT AIR AND MISSILE DEFENSE EXERCISE SERIES 25														◇	◇	◇								
(WG) MISSILE DEFENSE WARGAME 26														◇	◇	◇	◇	◇						
(EX) JOINT LIVE, VIRTUAL, AND CONSTRUCTIVE 2025/2026														◇	◇	◇	◇	◇						
(EX) EUROPEAN AIR & MISSILE DEFENSE EXERCISE 25														◇										
(EX) ASTRAL KNIGHT 25														△										
(WG) HUNTSVILLE WARGAMES 25														◇	◇									
(WG) DEMONSTRATION, TABLE-TOP EXERCISES & EXPERIMENTS 26														◇	◇	◇								
(WG) SPACE & MISSILE DEFENSE SYMPOSIUM 25															△									
(EX) PACIFIC SENTRY 25															△									
(EX) COMBINED COMMAND POST TRAINING 25-2															△									
(EX) GLOBAL RESPONSE EXERCISE 14														◇	◇									
(EX) GLOBAL THUNDER 25														◇	◇									
(EX) VIGILANT SHIELD 26														◇	◇									
(EX) KEEN EDGE 26														◇	◇	◇								
(EX) JUNIPER COBRA 26															◇	◇								
(EX) AIR AND MISSILE DEFENSE EXERCISE 26															◇	◇	◇							
(EX) COMBINED COMMAND POST TRAINING 26-1																△								

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Missile Defense Agency												Date: April 2022																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
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Significant Event Complete ▲ Significant Event Planned △				Milestone Decision Complete ★ Milestone Decision Planned ☆				Element Test Complete ◆ Element Test Planned ◇				System Level Test Complete ● System Level Test Planned ○				Complete Activity ◆ Planned Activity ◇																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Missile Defense Agency			Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603898C / <i>Ballistic Missile Defense Joint Warfighter Support</i>	Project (Number/Name) MT03 / <i>Joint Warfighter Support Test</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
(WG) DEMONSTRATION, TABLE-TOP EXERCISES & EXPERIMENTS 20	1	2021	1	2021
(EX) JOINT LIVE, VIRTUAL, AND CONSTRUCTIVE 2019/2020	1	2021	1	2021
(EX) KEEN SWORD 21	1	2021	1	2021
(EX) COMBINED FLYING TRAINING EVENT (CFTE) 21	1	2021	1	2021
(EX) COMBINED FLYING TRAINING EVENT (CFTE) 23	1	2021	1	2021
(EX) COMBINED FLYING TRAINING EVENT (CFTE) 24	1	2021	1	2021
(EX) COMBINED FLYING TRAINING EVENT (CFTE) 25	1	2021	1	2021
(EX) COMBINED FLYING TRAINING EVENT (CFTE) 26	1	2021	1	2021
(EX) AUSTERE CHALLENGE 21	1	2021	2	2021
(EX) JOINT PROJECT OPTIC WINDMILL 2021	1	2021	2	2021
(EX) EUROPEAN AIR & MISSILE DEFENSE EXERCISE 21	1	2021	2	2021
(EX) AIR AND MISSILE DEFENSE EXERCISE 21	1	2021	3	2021
(WG) NIMBLE TITAN 22	1	2021	4	2022
(EX) EUROPEAN AIR & MISSILE DEFENSE EXERCISE 20	2	2021	2	2021
(EX) RESILIENT SHIELD 21	2	2021	2	2021
(EX) PACIFIC FURY 21	2	2021	2	2021
(EX) GLOBAL LIGHTNING 21	2	2021	3	2021
(EX) STEADFAST ARMOUR 21	2	2021	3	2021
(EX) EUROPEAN TEST BED 21	2	2021	4	2021
(EX) JOINT AIR AND MISSILE DEFENSE EXERCISE SERIES 21	2	2021	4	2021
(WG) Missile Defense Wargame 22	2	2021	3	2022
(EX) Joint Live, Virtual, and Constructive 2021/2022	2	2021	1	2023

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Missile Defense Agency				Date: April 2022	
Appropriation/Budget Activity 0400 / 4		R-1 Program Element (Number/Name) PE 0603898C / <i>Ballistic Missile Defense Joint Warfighter Support</i>		Project (Number/Name) MT03 / <i>Joint Warfighter Support Test</i>	
		Start		End	
Events	Quarter	Year	Quarter	Year	
(EX) PACIFIC SENTRY 21	3	2021	3	2021	
(EX) ASTRAL KNIGHT 21	3	2021	3	2021	
(WG) HUNTSVILLE WARGAMES 21	3	2021	4	2021	
(WG) Demonstration, Table-top Exercises & Experiments 21	3	2021	1	2022	
(WG) SPACE & MISSILE DEFENSE SYMPOSIUM 21	4	2021	4	2021	
(EX) COMBINED COMMAND POST TRAINING 21-2	4	2021	4	2021	
(EX) VIGILANT SHIELD 22	4	2021	1	2022	
(EX) GLOBAL THUNDER 21	4	2021	1	2022	
(EX) KEEN EDGE 22	4	2021	2	2022	
(EX) COMBINED FLYING TRAINING EVENT (CFTE) 22	1	2022	1	2022	
(EX) JUNIPER COBRA 22	1	2022	2	2022	
(EX) AIR AND MISSILE DEFENSE EXERCISE 22	1	2022	3	2022	
(EX) EAGLE RESOLVE 22	2	2022	2	2022	
(EX) RESILIENT SHIELD 22	2	2022	2	2022	
(EX) COMBINED COMMAND POST TRAINING 22-1	2	2022	2	2022	
(EX) PACIFIC FURY 22	2	2022	2	2022	
(EX) GLOBAL LIGHTNING 22	2	2022	3	2022	
(EX) STEADFAST ALLIANCE 22	2	2022	3	2022	
(EX) JOINT AIR AND MISSILE DEFENSE EXERCISE SERIES 22	2	2022	4	2022	
(EX) EUROPEAN TEST BED 22	2	2022	4	2022	
(EX) ASTRAL KNIGHT 22	3	2022	3	2022	
(WG) Demonstration, Table-top Exercises & Experiments 22	3	2022	1	2023	
(EX) PACIFIC SENTRY 22	4	2022	4	2022	
(EX) COMBINED COMMAND POST TRAINING 22-2	4	2022	4	2022	
(EX) VIGILANT SHIELD 23	4	2022	1	2023	

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Missile Defense Agency

Date: April 2022

Appropriation/Budget Activity

0400 / 4

R-1 Program Element (Number/Name)

PE 0603898C / Ballistic Missile Defense Joint Warfighter Support

Project (Number/Name)

MT03 / Joint Warfighter Support Test

Events	Start		End	
	Quarter	Year	Quarter	Year
(EX) KEEN SWORD 23	4	2022	1	2023
(EX) GLOBAL RESPONSE EXERCISE 11	4	2022	1	2023
(EX) GLOBAL THUNDER 22	4	2022	1	2023
(EX) GLOBAL RESPONSE EXERCISE 12	4	2022	1	2023
(EX) Joint Project Optic Windmill 2023	1	2023	3	2023
(EX) AIR AND MISSILE DEFENSE EXERCISE 23	1	2023	3	2023
(WG) NIMBLE TITAN 24	1	2023	4	2024
(EX) AUSTERE CHALLENGE 23	2	2023	2	2023
(EX) RESILIENT SHIELD 23	2	2023	2	2023
(EX) COMBINED COMMAND POST TRAINING 23-1	2	2023	2	2023
(EX) PACIFIC FURY 23	2	2023	2	2023
(EX) STEADFAST ARMOUR 23	2	2023	3	2023
(EX) GLOBAL LIGHTNING 23	2	2023	3	2023
(EX) EUROPEAN TEST BED 23	2	2023	4	2023
(EX) JOINT AIR AND MISSILE DEFENSE EXERCISE SERIES 23	2	2023	4	2023
(WG) Missile Defense Wargame 24	2	2023	3	2024
(EX) Joint Live, Virtual, and Constructive 2023/2024	2	2023	1	2025
(EX) EUROPEAN AIR & MISSILE DEFENSE EXERCISE 23	3	2023	3	2023
(EX) ASTRAL KNIGHT 23	3	2023	3	2023
(WG) Huntsville Wargames 23	3	2023	4	2023
(WG) Demonstration, Table-top Exercises & Experiments 23	3	2023	1	2024
(WG) Space & Missile Defense Symposium 23	4	2023	4	2023
(EX) PACIFIC SENTRY 23	4	2023	4	2023
(EX) COMBINED COMMAND POST TRAINING 23-2	4	2023	4	2023
(EX) GLOBAL THUNDER 23	4	2023	1	2024

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Missile Defense Agency			Date: April 2022	
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603898C / Ballistic Missile Defense Jo int Warfighter Support		Project (Number/Name) MT03 / Joint Warfighter Support Test	
	Start		End	
Events	Quarter	Year	Quarter	Year
(EX) VIGILANT SHIELD 24	4	2023	1	2024
(EX) KEEN EDGE 24	4	2023	2	2024
(EX) JUNIPER COBRA 24	1	2024	2	2024
(EX) AIR AND MISSILE DEFENSE EXERCISE 24	1	2024	3	2024
(EX) EAGLE RESOLVE 24	2	2024	2	2024
(EX) RESILIENT SHIELD 24	2	2024	2	2024
(EX) COMBINED COMMAND POST TRAINING 24-1	2	2024	2	2024
(EX) PACIFIC FURY 24	2	2024	2	2024
(EX) GLOBAL LIGHTNING 24	2	2024	3	2024
(EX) STEADFAST ALLIANCE 24	2	2024	3	2024
(EX) EUROPEAN TEST BED 24	2	2024	4	2024
(EX) JOINT AIR AND MISSILE DEFENSE EXERCISE SERIES 24	2	2024	4	2024
(EX) ASTRAL KNIGHT 24	3	2024	3	2024
(WG) DEMONSTRATION, TABLE-TOP EXERCISES & EXPERIMENTS 24	3	2024	1	2025
(WG) DEMONSTRATION, TABLE-TOP EXERCISES & EXPERIMENTS 25	3	2024	1	2025
(EX) PACIFIC SENTRY 24	4	2024	4	2024
(EX) COMBINED COMMAND POST TRAINING 24-2	4	2024	4	2024
(EX) GLOBAL THUNDER 24	4	2024	1	2025
(EX) GLOBAL RESPONSE EXERCISE 13	4	2024	1	2025
(EX) KEEN SWORD 25	4	2024	1	2025
(EX) VIGILANT SHIELD 25	4	2024	1	2025
(EX) AIR AND MISSILE DEFENSE EXERCISE 25	1	2025	3	2025
(WG) NIMBLE TITAN 26	1	2025	4	2026
(EX) AUSTERE CHALLENGE 25	2	2025	2	2025
(EX) JOINT PROJECT OPTIC WINDMILL 2025	2	2025	2	2025

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Missile Defense Agency			Date: April 2022	
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603898C / Ballistic Missile Defense Joint Warfighter Support		Project (Number/Name) MT03 / Joint Warfighter Support Test	
Events	Start		End	
	Quarter	Year	Quarter	Year
(EX) RESILIENT SHIELD 25	2	2025	2	2025
(EX) COMBINED COMMAND POST TRAINING 25-1	2	2025	2	2025
(EX) PACIFIC FURY 25	2	2025	2	2025
(EX) GLOBAL LIGHTNING 25	2	2025	3	2025
(EX) STEADFAST ARMOUR 25	2	2025	3	2025
(EX) EUROPEAN TEST BED 25	2	2025	4	2025
(EX) JOINT AIR AND MISSILE DEFENSE EXERCISE SERIES 25	2	2025	4	2025
(WG) MISSILE DEFENSE WARGAME 26	2	2025	3	2026
(EX) JOINT LIVE, VIRTUAL, AND CONSTRUCTIVE 2025/2026	2	2025	1	2027
(EX) EUROPEAN AIR & MISSILE DEFENSE EXERCISE 25	3	2025	3	2025
(EX) ASTRAL KNIGHT 25	3	2025	3	2025
(WG) HUNTSVILLE WARGAMES 25	3	2025	4	2025
(WG) DEMONSTRATION, TABLE-TOP EXERCISES & EXPERIMENTS 26	3	2025	1	2026
(WG) SPACE & MISSILE DEFENSE SYMPOSIUM 25	4	2025	4	2025
(EX) PACIFIC SENTRY 25	4	2025	4	2025
(EX) COMBINED COMMAND POST TRAINING 25-2	4	2025	4	2025
(EX) GLOBAL RESPONSE EXERCISE 14	4	2025	1	2026
(EX) GLOBAL THUNDER 25	4	2025	1	2026
(EX) VIGILANT SHIELD 26	4	2025	1	2026
(EX) KEEN EDGE 26	4	2025	2	2026
(EX) JUNIPER COBRA 26	1	2026	2	2026
(EX) AIR AND MISSILE DEFENSE EXERCISE 26	1	2026	3	2026
(EX) COMBINED COMMAND POST TRAINING 26-1	2	2026	2	2026
(EX) EAGLE RESOLVE 26	2	2026	2	2026
(EX) PACIFIC FURY 26	2	2026	2	2026

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Missile Defense Agency				Date: April 2022	
Appropriation/Budget Activity 0400 / 4		R-1 Program Element (Number/Name) PE 0603898C / <i>Ballistic Missile Defense Joint Warfighter Support</i>		Project (Number/Name) MT03 / <i>Joint Warfighter Support Test</i>	
		Start		End	
Events		Quarter	Year	Quarter	Year
(EX) RESILIENT SHIELD 26		2	2026	2	2026
(EX) GLOBAL LIGHTNING 26		2	2026	3	2026
(EX) STEADFAST ALLIANCE 26		2	2026	3	2026
(EX) EUROPEAN TEST BED 26		2	2026	4	2026
(EX) JOINT AIR AND MISSILE DEFENSE EXERCISE SERIES 26		2	2026	4	2026
(EX) ASTRAL KNIGHT 26		3	2026	3	2026
(EX) COMBINED COMMAND POST TRAINING 26-2		4	2026	4	2026
(EX) PACIFIC SENTRY 26		4	2026	4	2026
(EX) GLOBAL RESPONSE EXERCISE 15		4	2026	1	2027
(EX) GLOBAL THUNDER 26		4	2026	1	2027

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency										Date: April 2022		
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0603898C / Ballistic Missile Defense Joint Warfighter Support				Project (Number/Name) MC03 / Cyber Operations			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
MC03: Cyber Operations	0.448	0.000	0.155	0.159	-	0.159	0.164	0.168	0.171	0.174	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
Note N/A												
A. Mission Description and Budget Item Justification This project verifies and validates that cybersecurity and/or cybersecurity-enabled products (firewalls, data/network encryption devices, routers, Intrusion Detection Systems, etc.) used within the MDA infrastructure have a current and Evaluated Assurance Level (EAL) certification and rating. They assure that validated IT products are listed on the DOD Approved Products List Integrated Tracking System (APLITS). There is an additional requirement to routinely identify findings and prepare a report with recommendations. This support is required in the IT product evaluation. Activities in the Project are necessary to comply with the Federal Information Systems Modernization Act of 2014 (FISMA).												
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)									FY 2021	FY 2022	FY 2023	
Title: Strategic Warfighter Integration Software Assurance Support Articles: Description: Perform manual and automated software code analysis, using GFE tools (e.g. Fortify 360), to detect false positives, weaknesses, and vulnerabilities. - Verify and validate cybersecurity and/or cybersecurity-enabled products (firewalls, data/network encryptors, routers, Intrusion Detection Systems, etc.) used within the MDA infrastructure have a current and Evaluated Assurance Level (EAL) certification and rating. Validate IT products are listed on the DoD APLITS. - Participate in meetings with customers to review software analysis findings and proposed courses of action for remediation. - Prepare a comprehensive report detailing the weaknesses and vulnerabilities found. Document the references to files and line numbers. - Maintain a record of all software code analysis documentation and organized in accordance with Government policy. Specific and/or unique accomplishments to each FY are as follows: FY 2022 Plans: - SEE ABOVE FY 2023 Plans:									0.000	0.155	0.159	
									-	-	-	

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency		Date: April 2022	
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603898C / <i>Ballistic Missile Defense Jo</i> <i>int Warfighter Support</i>	Project (Number/Name) MC03 / <i>Cyber Operations</i>	
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2021	FY 2022
- SEE ABOVE			
FY 2022 to FY 2023 Increase/Decrease Statement: N/A			
Accomplishments/Planned Programs Subtotals		0.000	0.155
C. Other Program Funding Summary (\$ in Millions) N/A			
Remarks			
D. Acquisition Strategy N/A			

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603898C / <i>Ballistic Missile Defense Joint Warfighter Support</i>				Project (Number/Name) MC03 / <i>Cyber Operations</i>					

Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Strategic Warfighter Integration Software Assurance Support - DW Cyber Support (ICVA)	C/CPFF	Decisive Analytics Corp. : COS	0.448	0.000		0.155	Jan 2022	0.159	Jan 2023	-		0.159	Continuing	Continuing	Continuing
Subtotal			0.448	0.000		0.155		0.159		-		0.159	Continuing	Continuing	N/A

Remarks N/A														
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	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.448	0.000	0.155	0.159	-	0.159	Continuing	Continuing	N/A

Remarks Award Dates reflect date of first obligation. Additional obligations may incrementally occur throughout the year.									
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PE 0603898C: *Ballistic Missile Defense Joint Warfight...*
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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Missile Defense Agency		Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603898C / Ballistic Missile Defense Jo int Warfighter Support	Project (Number/Name) MC03 / Cyber Operations

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
MC03 Cyber Operations	1	2021	4	2027

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency										Date: April 2022		
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0603898C / Ballistic Missile Defense Jo int Warfighter Support				Project (Number/Name) MD40 / Program-Wide Support			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
MD40: Program-Wide Support	19.798	1.969	1.959	1.825	-	1.825	1.825	1.800	2.024	2.079	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Program Wide Support (PWS) is allocated on a pro-rata basis across multiple Agency PEs each fiscal year based on the total Agency budget, and therefore fluctuates per PE by fiscal year.

A. Mission Description and Budget Item Justification

PWS contains non-headquarters management costs in support of MDA functions and activities across the entire MDS. These functions include Government Civilians and Contract Support Services. This effort provides integrity and oversight of the MDS as well as supports MDA in the development and evaluation of technologies that will respond to the changing threat. Additionally, PWS includes personnel to support global deployments performing deployment site preparation and activation, and provides facility capabilities for MDA Executing Agent locations worldwide. Other MDA wide costs include: physical and technical security; civilian drug testing; audit readiness; the Science, Technology, Engineering, and Mathematics (STEM) program; legal services and settlements; travel and agency training; office, equipment, vehicle, and warehouse leases; utilities and base operations across multiple geographic locations; commercial and ancillary facility services; management of all facility aspects regardless of lifecycle stage; supplies and maintenance; compliance with statutory environmental requirements; data and unified communications support; materiel and readiness and central property management of equipment; Facilities Sustainment, Restoration and Modernization (FSRM) program, (formerly Real Property Maintenance) to keep the Department's inventory of facilities in good working order; and similar operating expenses. PWS is allocated on a pro-rata basis across most Agency PEs and therefore fluctuates per PE by fiscal year based on the total Agency budget in that fiscal year.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2021	FY 2022	FY 2023
Title: Program Wide Support	1.969	1.959	1.825
Articles:	-	-	-
Description: PWS contains non-headquarters management costs in support of MDA functions and activities across the entire MDS. These functions include Government Civilians and Contract Support Services. This effort provides integrity and oversight of the MDS as well as supports MDA in the development and evaluation of technologies that will respond to the changing threat. Additionally, PWS includes personnel to support global deployments performing deployment site preparation and activation, and provides facility capabilities for MDA Executing Agent locations worldwide. Other MDA wide costs include: physical and technical security; civilian drug testing; audit readiness; the Science, Technology, Engineering, and Mathematics (STEM) program; legal services and settlements; travel and agency training; office, equipment, vehicle, and warehouse leases; utilities and base operations across multiple geographic locations; commercial and ancillary facility services; management of all facility aspects regardless of lifecycle stage; supplies and maintenance; compliance with statutory environmental requirements; data and unified communications support; materiel and readiness and central property management of equipment; Facilities Sustainment,			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency		Date: April 2022	
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603898C / <i>Ballistic Missile Defense Jo int Warfighter Support</i>	Project (Number/Name) MD40 / <i>Program-Wide Support</i>	
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2021	FY 2022
<p>Restoration and Modernization (FSRM) program, (formerly Real Property Maintenance) to keep the Department's inventory of facilities in good working order; and similar operating expenses. PWS is allocated on a pro-rata basis across most Agency PEs and therefore fluctuates per PE by fiscal year based on the total Agency budget in that fiscal year.</p> <p><i>FY 2022 Plans:</i> - SEE ABOVE</p> <p><i>FY 2023 Plans:</i> - SEE ABOVE</p> <p><i>FY 2022 to FY 2023 Increase/Decrease Statement:</i> N/A</p>			
Accomplishments/Planned Programs Subtotals		1.969	1.959
C. Other Program Funding Summary (\$ in Millions)			
N/A			
Remarks			
D. Acquisition Strategy			
N/A			

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603898C / Ballistic Missile Defense Joint Warfighter Support				Project (Number/Name) MD40 / Program-Wide Support					
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Wide Support - Agency Operations Management	Various	Various Multi: AL, CO, CA, VA : Various	0.938	0.060	Jul 2021	0.073	Jul 2022	0.000		-		0.000	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations and Support Civilian Salaries, Travel, Training	Various	MDA : Multi: AK,AL, CA, CO, VA	7.630	0.000		0.000		0.000		-		0.000	0.000	7.630	0.000
Program Wide Support - Agency Operations and Support Services	Reqn	DOD - DEFENSE ACQUISITION UNIVERSITY (DAU) : AL, CO, VA	8.277	1.909	Jul 2021	1.886	May 2022	1.825	Jan 2023	-		1.825	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations and Support Services (Reqn)	Reqn	Various : Multi: AK, AL, CA, CO, VA	1.496	0.000		0.000		0.000		-		0.000	0.000	1.496	0.000
Program Wide Support - Prior year no longer funded in the FYDP	Various	Various: : Various	1.457	0.000		0.000		0.000		-		0.000	0.000	1.457	0.000
Subtotal			19.798	1.969		1.959		1.825		-		1.825	Continuing	Continuing	N/A
Remarks N/A															
			Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			19.798	1.969		1.959		1.825		-		1.825	Continuing	Continuing	N/A
Remarks Award Dates reflects date of first obligation. Additional obligations may incrementally occur throughout the year.															

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Missile Defense Agency														Date: April 2022																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Missile Defense Agency			Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603898C / Ballistic Missile Defense Jo int Warfighter Support	Project (Number/Name) MD40 / Program-Wide Support	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
MD40 Program-Wide Support	1	2021	4	2027

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Missile Defense Agency										Date: April 2022		
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 0603904C I Missile Defense Integration and Operations Center (MDIOC)							
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
Total Program Element	579.176	54.026	52.403	49.367	-	49.367	51.744	56.502	57.833	59.006	Continuing	Continuing
MD22: Missile Defense Integration and Operations Center (MDIOC)	547.971	51.206	49.740	46.926	-	46.926	49.252	53.882	54.958	56.058	Continuing	Continuing
MC22: Cyber Operations	3.829	0.621	0.638	0.648	-	0.648	0.671	0.689	0.703	0.717	Continuing	Continuing
MD40: Program-Wide Support	27.376	2.199	2.025	1.793	-	1.793	1.821	1.931	2.172	2.231	Continuing	Continuing
Program MDAP/MAIS Code: 362												
Note N/A												
A. Mission Description and Budget Item Justification												
<p>The Missile Defense Integration and Operations Center (MDIOC) is the Missile Defense Agency's (MDA) field operating activity in Colorado Springs, Colorado. The MDIOC provides necessary infrastructure and support services through a mission execution platform for MDA elements/components and designated Combatant Commanders' Missile Defense System (MDS) operations executing missions at the MDIOC. The Integration Center is the organization responsible for providing a single, integrated set of skilled personnel matrixed from across MDA to manage this mission. The MDIOC mission facilities consist of a highly secure research and development complex and a consolidated support facility located at Schriever Space Force Base, just east of North American Aerospace Defense Command (NORAD) and United States Northern Command (USNORTHCOM). The MDIOC provides mission critical system technical capabilities and subject matter expertise in a dedicated and adaptable environment that enables developers, testers, and operators to evolve, assess and deliver the capabilities for layered missile defense execution for homeland defense and theater/regional support. The MDIOC interfaces with the Information Technology and Cybersecurity Enterprise to provide high availability access to worldwide secure communications, network health and status monitoring, mission critical restoral capability, and technical expertise for all MDA directed activities and events. The MDIOC functions as the mission control for MDS distributed ground tests and system wide flight tests enabling the mission and test directors to control both main and associated test operations using secure voice, test, and mission network hubs from the MDIOC. The MDIOC also functions as the only system-level integration and interoperability mission execution platform for MDS fire control; and it provides the physical interface between the developers and the Combatant Command (CCMD) warfighters.</p>												
<p>MDIOC mission facilities contribute to the MDS by directly supporting the concept of Concurrent Test, Training, and Operations (CTTO) for the MDS by providing mission assurance, engineering integration, resource scheduling, and configuration management for MDA and MDS-level test, training, and operational mission execution.</p>												
<p>MDIOC Major Program Goals:</p>												

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Missile Defense Agency				Date: April 2022		
Appropriation/Budget Activity		R-1 Program Element (Number/Name)				
0400: Research, Development, Test & Evaluation, Defense-Wide I BA 4: Advanced Component Development & Prototypes (ACD&P)		PE 0603904C I Missile Defense Integration and Operations Center (MDIOC)				
<div>- Provide the capabilities and services necessary to support mission assurance, engineering integration, resource scheduling for ground and flight tests, and configuration management of on-site systems and services</div> <div>- Ensure around the clock support and restoral of designated MDS operational systems and services</div> <div>- Maintain interface with designated CCMD missile defense activities; host/support the headquarters and operations center for the United States Strategic Command Joint Functional Component Command - Integrated Missile Defense</div> <div>- Maintain and improve the reliability, availability, and maintainability of MDIOC mission critical systems</div>						
B. Program Change Summary (\$ in Millions)		FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Previous President's Budget		55.356	52.403	0.000	-	0.000
Current President's Budget		54.026	52.403	49.367	-	49.367
Total Adjustments		-1.330	0.000	49.367	-	49.367
• Congressional General Reductions		0.000	0.000			
• Congressional Directed Reductions		0.000	0.000			
• Congressional Rescissions		0.000	0.000			
• Congressional Adds		0.000	0.000			
• Congressional Directed Transfers		0.000	0.000			
• Reprogrammings		0.000	0.000			
• SBIR/STTR Transfer		-1.330	0.000			
• Missile Defeat and Defense Enhancement		0.000	0.000	0.000	-	0.000
• Other Adjustment		0.000	0.000	49.367	-	49.367
Change Summary Explanation						
FY 2023 funding increase reflects the fact that the FY 2022 President's Budget request did not include out-year funding.						

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency										Date: April 2022		
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0603904C / Missile Defense Integration and Operations Center (MDIOC)				Project (Number/Name) MD22 / Missile Defense Integration and Operations Center (MDIOC)			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
MD22: Missile Defense Integration and Operations Center (MDIOC)	547.971	51.206	49.740	46.926	-	46.926	49.252	53.882	54.958	56.058	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

In FY 2023, Mission Engineering Services requirements are aligned across Facilities Mission Engineering and Program Integration; Infrastructure Systems and Support; Facilities Operations and Maintenance; and Infrastructure Systems Repair, Sustainment, and Critical Upgrades accomplishments.

A. Mission Description and Budget Item Justification

The Missile Defense Integration and Operations Center (MDIOC) sustains and operates a 24 hours a day, 7 days a week, 365 days a year mission complex for critical research, development, testing, training, and operations for Missile Defense System (MDS) activities. The MDIOC supports the Ground-based Midcourse Defense Mission Control Center Facility, as well as the Command, Control, Battle Management, and Communications (C2BMC) Integration and Test Centers and the C2BMC Experimentation Laboratories. It provides infrastructure support for the Space Sensors Missile Defense Space Center (MDSC); and the Targets and Countermeasures' (TC) Mission Control Center - Targets (MCC-T). The MDIOC also provides developmental support to the Enterprise Sensors Laboratory (ESL) composed of a common satellite ground station and sensor netting test bed for designated MDS elements. The MDIOC supports MDS test events based on the Integrated Master Test Plan (IMTP). It supports MDS Critical Engagement Conditions testing and analysis through the operation of the Test Execution Control node for distributed MDS ground tests. During system flight tests, the MDIOC provides infrastructure (power; Heating, Ventilation and Air Conditioning; and communications) support to the Flight Test Director and crew, and ensures the protection of facility and test assets throughout the test window. Further, the MDIOC provides the facilities that support operations of the Missile Defense Element, manned by the U.S. Army 100th Missile Defense Brigade, the United States Northern Command (USNORTHCOM) C2BMC Command and Control Center (CCC), and the United States Strategic Command's (USSTRATCOM's) Joint Functional Component Command-Integrated Missile Defense (JFCC-IMD). In addition, the MDIOC supports the MDA Operations Support Center, which provides situational awareness on the health and status of the end-to-end MDS. The MDIOC hosts MDS wargames and exercises in support of the warfighter, and delivers the requisite infrastructure to integrate the modeling and simulation assets that form system-level constructive simulations for full-envelope MDS performance assessments, with surrogate capability for MDS ground tests. The MDIOC maintains a technical repository of MDS Implementation Architectures for real-time operations and configuration control; provides state change management and asset management technical support for the MDS; and provides the technical environment for MDS Watch Officers, Safety Officers, and Information Assurance Officers to perform their assigned duties. The MDIOC also supports the operations of the Joint Early Warning Laboratory (JEWL), which provides USSTRATCOM with quick response analyses of real-world launches, and rapid anomaly identification and resolution.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2021	FY 2022	FY 2023
Title: Infrastructure Systems and Support	18.476	15.962	17.844
Articles:	-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency			Date: April 2022		
Appropriation/Budget Activity 0400 / 4		R-1 Program Element (Number/Name) PE 0603904C / <i>Missile Defense Integration and Operations Center (MDIOC)</i>		Project (Number/Name) MD22 / <i>Missile Defense Integration and Operations Center (MDIOC)</i>	
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)			FY 2021	FY 2022	FY 2023
<p>Description: RECURRING:</p> <p>MDIOC Communications and Special Purpose Processing Node (SPPN):</p> <ul style="list-style-type: none"> - Maintain a DoD compliant SPPN capable of meeting the unique network and data center services required to develop and deploy a layered MDS to defend the United States - Provide distinctive specifications and provisioning requirements associated with the MDA Research, Development, Test and Evaluation (RDT&E) Mission - Provide capabilities that dynamically interconnect and integrate multiple RDT&E systems to large data sets, and enable collaboration in near real-time with National Research Laboratories and Test Ranges; and Defense Industrial Base industry partners throughout the MDS acquisition lifecycle - Sustain the SPPN infrastructure with routers, switches, firewalls, and intrusion detection systems that provide IT support to over 10,500 MDA classified/unclassified users worldwide - Provide network operations and network monitoring; development of detailed solutions, designs, and plans; Disaster Recovery and Continuity of Operations rehearsals; internet access management; and web filtering - Sustain core communications distribution services across the MDA Enterprise - Plan, engineer, and implement sustainment projects for general IT services and business systems consistent with the IT architecture roadmap - Acquire and distribute mission critical unclassified and secure communication capability to resident MDA elements/components and MDS and Warfighter operational elements - Provide computer hosting of specified threat models and support the integration of other threat tools as required <p>End User Support:</p> <ul style="list-style-type: none"> - Sustain End User core service support via an Integrated Service Desk 24 hours a day, 7 days a week, 365 days a year for mission event/test and core information systems for unclassified and classified users - Monitor networks for user compliance with DoD policies and report incidents - Maintain Printing and Copy Services - Sustain email services (Exchange servers, BlackBerry Enterprise Services servers and archiving storage area networks) - Sustain file services (file servers and storage area networks) - Maintain Directory Services (Active Directory and domain controller servers) 					

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency			Date: April 2022		
Appropriation/Budget Activity 0400 / 4		R-1 Program Element (Number/Name) PE 0603904C / <i>Missile Defense Integration and Operations Center (MDIOC)</i>		Project (Number/Name) MD22 / <i>Missile Defense Integration and Operations Center (MDIOC)</i>	
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)			FY 2021	FY 2022	FY 2023
<ul style="list-style-type: none"> - Maintain Authentication services (Public Key Infrastructure/Common Access Card) - Maintain current hardware and software licenses for IT operational systems - Maintain IT life-cycle asset management of end user devices (desktops, laptops, monitors, printers, thin clients, and mobile devices) <p>Hardware and Software Asset Management:</p> <ul style="list-style-type: none"> - Manage government property and IT hardware and software in accordance with the Federal Acquisition Regulations (FAR)/DoD FAR Supplements (DFARs) to include accountability, reporting, warehouse management, asset transportation and excess asset management - Maintain an inventory of IT hardware and software assets connected or used in the Unclassified Local Area Network (ULAN), Classified Local Area Network (CLAN), Secret Internet Protocol Router Network (SIPRNET) and Top Secret/Special Compartmented Information (TS/SCI) networks - Specific and/or unique accomplishments to each FY are as follows: <p>FY 2022 Plans:</p> <ul style="list-style-type: none"> - SEE ABOVE <p>FY 2023 Plans:</p> <ul style="list-style-type: none"> - Provide cradle to grave event management for MDIOC support CTTO events - Provide a Mission Planning Element to oversee the event support life cycle provide by the MDIOC event management platform - Ensure the fulfillment of technical, personnel, facility and cybersecurity requirements - Coordination of Depot level support to MDIOC Defense Red Switch Network (DRSN) Command and Control Switching Systems - Provide Cybersecurity to ensure the protection of MDIOC networks, computers, programs and data from attack, damage or unauthorized access <p>FY 2022 to FY 2023 Increase/Decrease Statement:</p> <p>Increase from FY 2022 to FY 2023 provides for requirements moved from Facilities Mission Engineering and Program Integration (formerly Engineering and Event Services) for MDIOC supported CTTO events, life cycle support, and coordination of depot support</p>					
Title: Facilities and Maintenance			12.417	11.860	13.912
Articles:			-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency			Date: April 2022		
Appropriation/Budget Activity 0400 / 4		R-1 Program Element (Number/Name) PE 0603904C / <i>Missile Defense Integration and Operations Center (MDIOC)</i>		Project (Number/Name) MD22 / <i>Missile Defense Integration and Operations Center (MDIOC)</i>	
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)			FY 2021	FY 2022	FY 2023
<p>Description: RECURRING:</p> <p>Host Tenant Support (Electrical, Gas, Sewer, Water, Steam, Chilled Water, Waste Water, Landscaping, Refuse Removal, and Communications Support):</p> <ul style="list-style-type: none"> - Procure utility services through 50th Air Force Space Wing (Host Base) - Sustain utility infrastructure and delivery systems <p>Environmental, Safety and Occupational Health (ESOH):</p> <ul style="list-style-type: none"> - Maintain and update the program accident prevention plan - Provide required industrial safety training to facility services personnel - Procure and distribute personal protection equipment for contracted activities - Ensure compliance with Hazardous Waste, Hazardous Material Recycling, and National Environmental Policy Act (NEPA) programs - Conduct recurring safety and environmental audits <p>Facilities Operations and Sustainment:</p> <ul style="list-style-type: none"> - Provide 24 hours a day, 7 days a week, 365 days a year, facility maintenance break/fix response for all facility systems (electrical; Heating, Ventilation, and Air Conditioning; plumbing; locksmith) with a response time of 15 minutes after normal duty hours - Conduct preventative maintenance inspections (PMIs) for all building systems <p>Facilities Engineering:</p> <ul style="list-style-type: none"> - Conduct Management Process Facility Installation Standard Audits - Provide risk management analysis and mitigation plans - Maintain infrastructure drawings and configuration management databases - Develop and document facility long range planning programming - Provide consulting services, preliminary designs and engineering rough order of magnitude estimates for required infrastructure buildout changes <p>Missile Defense Integration and Operations Center (MDIOC) Operating Expenses:</p> <ul style="list-style-type: none"> - Lease General Services Administration (GSA) vehicles and a commercial warehouse - Calibration of measuring and monitoring equipment - Repair of classified and unclassified networks 					

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency			Date: April 2022		
Appropriation/Budget Activity 0400 / 4		R-1 Program Element (Number/Name) PE 0603904C / Missile Defense Integration and Operations Center (MDIOC)	Project (Number/Name) MD22 / Missile Defense Integration and Operations Center (MDIOC)		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)			FY 2021	FY 2022	FY 2023
Facility Services: - Provide custodial services for over 675,000 square feet of floor space in Buildings 720 and 730 - Provide Copy Center and Shuttle Services for over 2,000 personnel - Provide in and out of civilian and contractor support services personnel - Conduct personnel moves to include cubicle and workstation setup, teardown, and reconfiguration - Specific and/or unique accomplishments to each FY are as follows: FY 2022 Plans: - SEE ABOVE FY 2023 Plans: - SEE ABOVE FY 2022 to FY 2023 Increase/Decrease Statement: Increase from FY 2022 to FY 2023 provides increased rigor in developing the facility plan and increased custodial support					
Title: Engineering and Event Services Articles:			13.119 -	15.317 -	0.000 -
Description: RECURRING: Provide Mission Assurance by ensuring the successful execution of Concurrent Test, Training, and Operations (CTTO) activities at the MDIOC facility - Ensure independent verification, and coordinate customer validation of all activities, work products and requirements fulfilled by MDIOC Engineering - Provide Risk Management by identifying, assessing, and prioritizing risks. Coordinate resources to minimize, monitor and control the probability and impact of events. Develop strategies to manage risk, including avoidance, reduction, transfer and retention - Ensure Coordination and Integration through a proactive approach of sharing critical information necessary for the successful conduct of CTTO activities in a dynamic environment - Provide Systems Engineering oversight through the management and execution of the MDIOC Engineering Review Board (ERB) - Provide governance and training to stakeholders, enforce policy, establish and maintain the ERB for the vetting and implementation of requirements - Ensure Configuration Management so that CTTO events are not disrupted by multiple competing activities					

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency			Date: April 2022		
Appropriation/Budget Activity 0400 / 4		R-1 Program Element (Number/Name) PE 0603904C / <i>Missile Defense Integration and Operations Center (MDIOC)</i>		Project (Number/Name) MD22 / <i>Missile Defense Integration and Operations Center (MDIOC)</i>	
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)			FY 2021	FY 2022	FY 2023
<ul style="list-style-type: none"> - Maintain the Technical Baseline to establish a common reference, and implement a formalized process that provides stability across the MDIOC - Provide Change Management to the MDIOC Technical Baseline and MDIOC physical infrastructure. Research how any changes may affect CTTO activities, and determine when change is least likely to impact key functionality. Ensure all changes, across the technical baseline, are clearly recorded and identified on a near-real-time basis - Provide effective requirements management by documenting decisions and information generated during requirements development in conjunction with the design solution processes - Ensure Organizational Integration by establishing and enforcing seamless integration across the MDIOC. Provide a repeatable process for information sharing and coordination - Provide Contract Program Management including business, finance, contract administration and management. Identify and manage cross-project dependencies. Conduct activities within established cost, schedule, and performance parameters - Specific and/or unique accomplishments to each FY are as follows: <p>FY 2022 Plans: - SEE ABOVE</p> <p>FY 2023 Plans: - SEE ABOVE</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: Decrease from FY 2022 to FY 2023 reflects a realignment of requirements and funds to Facilities Mission Engineering and Program Integration to better reflect program responsibilities and requirements. Additional requirements were realigned to Infrastructure Systems and Support for event management/support and Defense Red Switch Network (DRSN) requirements; to Facilities and Maintenance for increased rigor in facility plan development; and to Infrastructure Systems Repair, Sustainment, and Critical Upgrades for aging infrastructure end-of-life component replacements and upgrades.</p>					
<p>Title: Operations and Sustainment</p> <p align="right">Articles:</p> <p>Description: RECURRING: - Includes Civilian and Contract Service Support for operations and sustainment of all Missile Defense Integration and Operations Center (MDIOC) activities contributing to the mission execution platform</p>			3.798 -	3.272 -	3.151 -

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency			Date: April 2022		
Appropriation/Budget Activity 0400 / 4		R-1 Program Element (Number/Name) PE 0603904C / Missile Defense Integration and Operations Center (MDIOC)	Project (Number/Name) MD22 / Missile Defense Integration and Operations Center (MDIOC)		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)			FY 2021	FY 2022	FY 2023
<div>- Provide quality event planning, coordination, logistics, security access and host support for all MDIOC events and visitors</div> <div>- Deliver integrated service coordination for all MDIOC event and protocol support</div> <div>- Training and Travel</div> <div>- Specific and/or unique accomplishments to each FY are as follows:</div> <div>FY 2022 Plans:</div> <div>- SEE ABOVE</div> <div>FY 2023 Plans:</div> <div>- SEE ABOVE</div> <div>FY 2022 to FY 2023 Increase/Decrease Statement:</div> <div>N/A</div>					
<div>Title: Infrastructure Systems Repair, Sustainment, and Critical Upgrades</div> <div>Articles:</div> <div>Description: RECURRING:</div> <div>- Heating, Ventilation, and Air Conditioning (Air Handlers) end-of-life component replacement and capacity upgrade to improve mission assurance to critical mission areas within the MDIOC facility</div> <div>- Annual Fire Suppression System Reviews</div> <div>- Specific and/or unique accomplishments to each FY are as follows:</div> <div>FY 2022 Plans:</div> <div>- SEE ABOVE</div> <div>FY 2023 Plans:</div> <div>- Conduct Fire Suppression System Upgrades (4 Quads)</div> <div>- Conduct Technical Utility Service (TUS) Switchgear replacement</div> <div>FY 2022 to FY 2023 Increase/Decrease Statement:</div> <div>Increase from FY 2022 to FY 2023 provides funding realignment from Facilities Mission Engineering and Program Integration (formerly Engineering and Event Services) as a result of shifting requirements and contract re-structuring resulting in an ability to provide high priority support to aging infrastructure end-of-life components</div>			3.396 -	3.329 -	4.876 -
<div>Title: Facilities Mission Engineering and Program Integration</div> <div>Articles:</div>			0.000 -	0.000 -	7.143 -

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency			Date: April 2022	
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603904C / Missile Defense Integration and Operations Center (MDIOC)	Project (Number/Name) MD22 / Missile Defense Integration and Operations Center (MDIOC)		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2021	FY 2022	FY 2023
<p>Description: RECURRING:</p> <ul style="list-style-type: none">- Provide Mission Assurance by ensuring the successful execution of Concurrent Test, Training, and Operations (CTTO) activities at the MDIOC facility- Ensure independent verification, and coordinate customer validation of all activities, work products and requirements fulfilled by MDIOC Engineering- Provide Risk Management by identifying, assessing, and prioritizing risks. Coordinate resources to minimize, monitor and control the probability and impact of events. Develop strategies to manage threats, including avoidance, reduction, transfer and retention- Ensure Coordination and Integration through a proactive approach of sharing critical information necessary for the successful conduct of CTTO activities in a dynamic environment- Provide Systems Engineering through the management and execution of the MDIOC Engineering Review Board (ERB)- Provide governance and training to stakeholders, enforce policy, establish and maintain the ERB for the vetting and implementation of requirements- Ensure Configuration Management so that CTTO events are not disrupted by multiple competing activities- Maintain the Technical Baseline to establish a common reference, and implement a formalized process that provides stability across the MDIOC- Provide Change Management to the MDIOC Technical Baseline and MDIOC physical infrastructure. Research how any changes may affect CTTO activities, and determine when change is least likely to impact key functionality. Ensure all changes, across the technical baseline, are clearly recorded and identified on a near-real-time basis- Provide effective requirements management by documenting decisions and information generated during requirements development in conjunction with the design solution processes- Ensure Organizational Integration by establishing and enforcing seamless integration across the MDIOC. Provide a repeatable process for information sharing and coordination- Provide Contract Program Management including business, finance, contract administration and management. Identify and manage cross-project dependencies. Conduct activities within established cost, schedule, and performance parameters- Specific and/or unique accomplishments to each FY are as follows:				

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency										Date: April 2022		
Appropriation/Budget Activity 0400 / 4				R-1 Program Element (Number/Name) PE 0603904C / <i>Missile Defense Integration and Operations Center (MDIOC)</i>				Project (Number/Name) MD22 / <i>Missile Defense Integration and Operations Center (MDIOC)</i>				
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)										FY 2021	FY 2022	FY 2023
FY 2022 Plans: N/A												
FY 2023 Plans: - SEE ABOVE												
FY 2022 to FY 2023 Increase/Decrease Statement: Increase from FY 2022 to FY 2023 provides a realignment of requirements and funds from Engineering and Event Services to better reflect program responsibilities and requirements												
Accomplishments/Planned Programs Subtotals										51.206	49.740	46.926
C. Other Program Funding Summary (\$ in Millions)												
Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost	
• 0603881C: <i>Ballistic Missile</i>	305.081	213.382	190.216	-	190.216	196.279	213.945	224.146	238.269	Continuing	Continuing	
<i>Defense Terminal Defense Segment</i>												
• 0603882C: <i>Ballistic</i>	1,195.853	724.028	667.524	-	667.524	870.817	802.617	781.973	765.733	Continuing	Continuing	
<i>Missile Defense Midcourse</i>												
<i>Defense Segment</i>												
• 0603890C: <i>BMD</i>	607.167	623.644	591.847	-	591.847	613.589	625.761	635.633	640.374	Continuing	Continuing	
<i>Enabling Programs</i>												
• 0603892C: <i>AEGIS BMD</i>	861.809	639.549	600.072	-	600.072	658.798	574.014	570.018	580.496	Continuing	Continuing	
• 0603896C: <i>Ballistic Missile</i>	639.027	564.946	589.374	-	589.374	575.883	588.824	612.853	605.801	Continuing	Continuing	
<i>Defense Command and</i>												
<i>Control, Battle Management</i>												
<i>& Communication</i>												
• 0603898C: <i>Ballistic Missile</i>	49.261	50.594	50.269	-	50.269	51.849	55.960	56.488	54.980	Continuing	Continuing	
<i>Defense Joint Warfighter Support</i>												
• 0603914C: <i>Ballistic</i>	364.994	389.156	367.824	-	367.824	363.963	421.261	476.991	490.176	Continuing	Continuing	
<i>Missile Defense Test</i>												
Remarks												

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency		Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603904C / Missile Defense Integration and Operations Center (MDIOC)	Project (Number/Name) MD22 / Missile Defense Integration and Operations Center (MDIOC)
D. Acquisition Strategy <p>The Integrated Research and Development for Enterprise Solutions (IRES) Contract is the major performing integrated contract. The acquisition strategy for MDIOC mission execution is to employ a contract to perform designated integration and sustainment tasks to conduct MDS Research, Development, Test and Evaluation (RDT&E). The MDIOC is operated by missile defense subject matter experts composed of government, military, civilian personnel, MDIOC Contract Support Services, and major defense contractors.</p>		

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603904C / <i>Missile Defense Integration and Operations Center (MDIOC)</i>						Project (Number/Name) MD22 / <i>Missile Defense Integration and Operations Center (MDIOC)</i>			
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	N/A
Remarks N/A															
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Infrastructure Systems and Support - Defense Red Switch Network	MIPR	Air Force Life Cycle Management Center (AFLCMC) : CO	0.000	0.000		0.000		0.417	Nov 2022	-		0.417	Continuing	Continuing	Continuing
Infrastructure Systems and Support - Infrastructure Systems and Support	C/CPAF	JACOBS TECHNOLOGY INC. : CO	190.805	0.000		0.000		17.427	Dec 2022	-		17.427	0.000	208.232	0.000
Infrastructure Systems and Support - Network Infrastructure Systems/ Support	C/CPIF	MDIOC/Jacobs Technology Inc. : Colorado Springs, CO	19.511	18.476	Dec 2020	15.962	Dec 2021	0.000		-		0.000	0.000	53.949	0.000
Facilities and Maintenance - MDIOC Bus Drivers	C/FFP	VENTURI, INC. : Colorado Springs, CO	94.064	0.405	Nov 2020	0.413	Nov 2021	0.218	Nov 2022	-		0.218	0.000	95.100	0.000
Facilities and Maintenance - MDIOC Custodial/ Mailroom/Drivers	C/FFP	HUNTSVILLE REHABILITATION FOUNDATION : Colorado Springs, CO	8.734	2.032	Dec 2020	2.122	Nov 2021	2.418	Dec 2022	-		2.418	0.000	15.306	0.000
Facilities and Maintenance - MDIOC GSA / Leases	IA	GSA - GENERAL SERVICES ADMINISTRATION (GSA) : Colorado Springs, CO	8.604	0.278	Nov 2020	0.277	Nov 2021	0.277	Nov 2022	-		0.277	0.000	9.436	0.000
Facilities and Maintenance - MDIOC IRES	C/CPIF	JACOBS TECHNOLOGY	21.773	6.257	Dec 2020	5.534	Nov 2021	7.281	Nov 2022	-		7.281	0.000	40.845	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603904C / <i>Missile Defense Integration and Operations Center (MDIOC)</i>						Project (Number/Name) MD22 / <i>Missile Defense Integration and Operations Center (MDIOC)</i>			
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
		INC. : Colorado Springs, CO													
Facilities and Maintenance - MDIOC Utilities	MIPR	50th Space Wing, Civil Engineering Squadron/CEOE : CO	29.968	3.445	Oct 2020	3.514	Oct 2021	3.718	Oct 2022	-		3.718	0.000	40.645	0.000
Engineering and Event Services - Engineering and Event Services	C/CPAF	MDIOC /Jacobs Technology Inc. : Colorado Springs, CO	94.693	13.119	Nov 2020	15.317	Nov 2021	0.000		-		0.000	0.000	123.129	0.000
Operations and Sustainment - Civilian Salaries	Allot	MDIOC : Colorado Springs, CO	30.544	1.991	Oct 2020	1.634	Oct 2021	1.502	Oct 2022	-		1.502	Continuing	Continuing	Continuing
Operations and Sustainment - Support Services	C/CPFF	MiDAESS/TEAMS Various : Colorado Springs, CO	24.669	1.757	Oct 2020	1.620	Nov 2021	1.617	Oct 2022	-		1.617	Continuing	Continuing	Continuing
Operations and Sustainment - Travel and Training	Allot	MDIOC : Colorado Springs, CO	0.853	0.050	Oct 2020	0.018	Nov 2021	0.032	Nov 2022	-		0.032	Continuing	Continuing	Continuing
Infrastructure Systems Repair, Sustainment, and Critical Upgrades - MDIOC IRES	C/CPIF	MDIOC/Jacobs Technology Inc. : Colorado Springs, CO	23.753	3.396	Dec 2020	3.329	Dec 2021	4.876	Dec 2022	-		4.876	0.000	35.354	0.000
Facilities Mission Engineering and Program Integration - Mission Engineering and Program Integration	C/CPIF	JACOBS TECHNOLOGY INC. : CO	0.000	0.000		0.000		7.143	Nov 2022	-		7.143	Continuing	Continuing	Continuing
Subtotal			547.971	51.206		49.740		46.926		-		46.926	Continuing	Continuing	N/A
Remarks Funds for utilities and base communications are specified in the Inter-service Support Agreement with the 50th Space Wing. In addition, the Missile Defense Integration and Operations Center (MDIOC) provides Technical Contract Support Services employees, for MDIOC operations and oversight of the Integrated Research and Development for Enterprise Solutions (IRES) contract, as well as funding for IRES work as required by the government.															

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency													Date: April 2022		
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603904C / <i>Missile Defense Integration and Operations Center (MDIOC)</i>				Project (Number/Name) MD22 / <i>Missile Defense Integration and Operations Center (MDIOC)</i>					

Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	N/A

Remarks
N/A

Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	N/A

Remarks
N/A

	Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	547.971	51.206		49.740		46.926		-		46.926	Continuing	Continuing	N/A

Remarks
Award Date reflects date of first obligation. Additional obligations may incrementally occur throughout the year.

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Missile Defense Agency										Date: April 2022														
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0603904C / Missile Defense Integration and Operations Center (MDIOC)										Project (Number/Name) MD22 / Missile Defense Integration and Operations Center (MDIOC)									
Significant Event Complete ▲		Milestone Decision Complete ★		Element Test Complete ◆		System Level Test Complete ●		Complete Activity ◆		Significant Event Planned △		Milestone Decision Planned ☆		Element Test Planned ◇		System Level Test Planned ○		Planned Activity ◇						
					FY 2021		FY 2022		FY 2023		FY 2024		FY 2025		FY 2026		FY 2027							
Heating, Ventilation, and Air Conditioning end-of-life component replacement and capacity for Building 720 (one quadrant) 2021					◆	◆	◆	◆																
Fire Suppression System Compliance Project (two quadrants)(FY 2021)						◆	◆	◆																
Availability/Arc Flash/Short Circuit Coordination Study 2021								◆																
Heating, Ventilation, and Air Conditioning end-of-life component replacement and capacity for Building 720 (one quadrant) 2022								◇	◇	◇	◇													
Fire Suppression System Compliance Project (two quadrants) (FY 2022)								◇	◇	◇	◇													
Fire Suppression System Compliance Project (two quadrants) (FY 2023)										◇	◇	◇	◇											
Heating, Ventilation, and Air Conditioning end-of-life component replacement and capacity for Building 720 (three quadrant) 2023										◇	◇	◇	◇											
TUS-3 Switchgear ReplacementTUS-3 Switchgear Replacement 2023										◇	◇	◇	◇											
BLDG 720 South Bathroom Repairs 2023										◇	◇	◇	◇											
Heating, Ventilation, and Air Conditioning end-of-life component replacement and capacity for Building 730 (three quadrant) 2024												◇	◇	◇	◇									
Exterior Seals Refresh 2025												◇	◇	◇	◇									
TUS-4 Switchgear Replacement 2024												◇	◇	◇	◇									
Fire Suppression System Compliance Project (two quadrants) 2024												◇	◇	◇	◇									
Heating, Ventilation, and Air Conditioning end-of-life component replacement and capacity for Building 720 (two quadrant) 2025														◇	◇	◇	◇							
CRAC Unit Replacement 2025														◇	◇	◇	◇							
Cafeteria Seating Refresh 2025														◇	◇	◇	◇							
Fire Suppression System Compliance Project (two quadrants) 2025														◇	◇	◇	◇							
Heating, Ventilation, and Air Conditioning end-of-life component replacement and capacity for Building 720 (one quadrant) 2026																◇	◇	◇	◇					

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Missile Defense Agency															Date: April 2022														
Appropriation/Budget Activity 0400 / 4										R-1 Program Element (Number/Name) PE 0603904C / Missile Defense Integration and Operations Center (MDIOC)										Project (Number/Name) MD22 / Missile Defense Integration and Operations Center (MDIOC)									
Significant Event Complete ▲					Milestone Decision Complete ★					Element Test Complete ◆					System Level Test Complete ●					Complete Activity ◆									
Significant Event Planned △					Milestone Decision Planned ☆					Element Test Planned ◇					System Level Test Planned ○					Planned Activity ◇									
										FY 2021		FY 2022		FY 2023		FY 2024		FY 2025		FY 2026		FY 2027							
Fire Suppression System Compliance Project (two quadrants) 2026																				◇	◇	◇	◇						
Heating, Ventilation, and Air Conditioning end-of-life component replacement and capacity for Building 720 (three quadrants) 2027																								◇	◇	◇	◇		
Fire Suppression System Compliance Project (two quadrants) 2027																								◇	◇	◇	◇		

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Missile Defense Agency			Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603904C / <i>Missile Defense Integration and Operations Center (MDIOC)</i>	Project (Number/Name) MD22 / <i>Missile Defense Integration and Operations Center (MDIOC)</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Heating, Ventilation, and Air Conditioning end-of-life component replacement and capacity for Building 720 (one quadrant) 2021	1	2021	4	2021
Fire Suppression System Compliance Project (two quadrants)(FY 2021)	2	2021	4	2021
Availability/Arc Flash/Short Circuit Coordination Study 2021	3	2021	3	2021
Heating, Ventilation, and Air Conditioning end-of-life component replacement and capacity for Building 720 (one quadrant) 2022	1	2022	4	2022
Fire Suppression System Compliance Project (two quadrants) (FY 2022)	1	2022	4	2022
Fire Suppression System Compliance Project (two quadrants) (FY 2023)	1	2023	4	2023
Heating, Ventilation, and Air Conditioning end-of-life component replacement and capacity for Building 720 (three quadrant) 2023	1	2023	4	2023
TUS-3 Switchgear ReplacementTUS-3 Switchgear Replacement 2023	1	2023	4	2023
BLDG 720 South Bathroom Repairs 2023	1	2023	4	2023
Heating, Ventilation, and Air Conditioning end-of-life component replacement and capacity for Building 730 (three quadrant) 2024	1	2024	4	2024
Exterior Seals Refresh 2025	1	2024	4	2024
TUS-4 Switchgear Replacement 2024	1	2024	4	2024
Fire Suppression System Compliance Project (two quadrants) 2024	1	2024	4	2024
Heating, Ventilation, and Air Conditioning end-of-life component replacement and capacity for Building 720 (two quadrant) 2025	1	2025	4	2025
CRAC Unit Replacement 2025	1	2025	4	2025
Cafeteria Seating Refresh 2025	1	2025	4	2025
Fire Suppression System Compliance Project (two quadrants) 2025	1	2025	4	2025
Heating, Ventilation, and Air Conditioning end-of-life component replacement and capacity for Building 720 (one quadrant) 2026	1	2026	4	2026

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Missile Defense Agency			Date: April 2022	
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603904C / Missile Defense Integration and Operations Center (MDIOC)	Project (Number/Name) MD22 / Missile Defense Integration and Operations Center (MDIOC)		
	Start		End	
Events	Quarter	Year	Quarter	Year
Fire Suppression System Compliance Project (two quadrants) 2026	1	2026	4	2026
Heating, Ventilation, and Air Conditioning end-of-life component replacement and capacity for Building 720 (three quadrants) 2027	1	2027	4	2027
Fire Suppression System Compliance Project (two quadrants) 2027	1	2027	4	2027

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency										Date: April 2022		
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0603904C / Missile Defense Integration and Operations Center (MDIOC)				Project (Number/Name) MC22 / Cyber Operations			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
MC22: Cyber Operations	3.829	0.621	0.638	0.648	-	0.648	0.671	0.689	0.703	0.717	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
Note N/A												
A. Mission Description and Budget Item Justification The Missile Defense Integration and Operations Center (MDIOC) conducts Cyber Defensive Operations through Key Management Infrastructure and Information Assurance Training which interfaces with the Information Technology/Information Assurance Enterprise to provide secure communications, network health and status monitoring, mission critical restoral capability, and technical expertise.												
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)									FY 2021	FY 2022	FY 2023	
Title: Cyber Defensive Operations Articles: Description: RECURRING: The Missile Defense Integration and Operations Center (MDIOC) conducts Defensive Cyber Operations in the following categories: Key Management Infrastructure - Interface with the Information Technology/Information Assurance Enterprise to provide for the generation, production, control and distribution, and training for utilizing the keying material used with the Agency's cryptographic devices Information Assurance Training - Maintain an Information Assurance (IA) certified workforce through continuous IA training as required by DoD Directive 8570 Specific and/or unique accomplishments to each FY are as follows: FY 2022 Plans: - SEE ABOVE FY 2023 Plans: - SEE ABOVE FY 2022 to FY 2023 Increase/Decrease Statement:									0.621	0.638	0.648	
									-	-	-	

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency		Date: April 2022	
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603904C / <i>Missile Defense Integration and Operations Center (MDIOC)</i>	Project (Number/Name) MC22 / <i>Cyber Operations</i>	
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2021	FY 2022
N/A			
Accomplishments/Planned Programs Subtotals		0.621	0.638
C. Other Program Funding Summary (\$ in Millions)			
N/A			
Remarks			
D. Acquisition Strategy			
N/A			

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603904C / Missile Defense Integration and Operations Center (MDIOC)				Project (Number/Name) MC22 / Cyber Operations					
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Cyber Defensive Operations - Cyber Defensive Operations	C/CPIF	MDIOC/IRES : Jacobs Technology Inc.	3.829	0.621	Jan 2021	0.638	Jan 2022	0.648	Jan 2023	-		0.648	Continuing	Continuing	Continuing
Subtotal			3.829	0.621		0.638		0.648		-		0.648	Continuing	Continuing	N/A
Remarks N/A															
			Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			3.829	0.621		0.638		0.648		-		0.648	Continuing	Continuing	N/A
Remarks N/A															

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Missile Defense Agency														Date: April 2022																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
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MC22 Cyber Operations														◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Missile Defense Agency		Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603904C / Missile Defense Integration and Operations Center (MDIOC)	Project (Number/Name) MC22 / Cyber Operations

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
MC22 Cyber Operations	1	2021	4	2027

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency										Date: April 2022		
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0603904C / Missile Defense Integration and Operations Center (MDIOC)				Project (Number/Name) MD40 / Program-Wide Support			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
MD40: Program-Wide Support	27.376	2.199	2.025	1.793	-	1.793	1.821	1.931	2.172	2.231	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Program Wide Support (PWS) is allocated on a pro-rata basis across multiple Agency PEs each fiscal year based on the total Agency budget, and therefore fluctuates per PE by fiscal year.

A. Mission Description and Budget Item Justification

PWS contains non-headquarters management costs in support of MDA functions and activities across the entire MDS. These functions include Government Civilians and Contract Support Services. This effort provides integrity and oversight of the MDS as well as supports MDA in the development and evaluation of technologies that will respond to the changing threat. Additionally, PWS includes personnel to support global deployments performing deployment site preparation and activation, and provides facility capabilities for MDA Executing Agent locations worldwide. Other MDA wide costs include: physical and technical security; civilian drug testing; audit readiness; the Science, Technology, Engineering, and Mathematics (STEM) program; legal services and settlements; travel and agency training; office, equipment, vehicle, and warehouse leases; utilities and base operations across multiple geographic locations; commercial and ancillary facility services; management of all facility aspects regardless of lifecycle stage; supplies and maintenance; compliance with statutory environmental requirements; data and unified communications support; materiel and readiness and central property management of equipment; Facilities Sustainment, Restoration and Modernization (FSRM) program, (formerly Real Property Maintenance) to keep the Department's inventory of facilities in good working order; and similar operating expenses. PWS is allocated on a pro-rata basis across most Agency PEs and therefore fluctuates per PE by fiscal year based on the total Agency budget in that fiscal year.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2021	FY 2022	FY 2023
Title: Program Wide Support	2.199	2.025	1.793
Articles:	-	-	-
Description: PWS contains non-headquarters management costs in support of MDA functions and activities across the entire MDS. These functions include Government Civilians and Contract Support Services. This effort provides integrity and oversight of the MDS as well as supports MDA in the development and evaluation of technologies that will respond to the changing threat. Additionally, PWS includes personnel to support global deployments performing deployment site preparation and activation, and provides facility capabilities for MDA Executing Agent locations worldwide. Other MDA wide costs include: physical and technical security; civilian drug testing; audit readiness; the Science, Technology, Engineering, and Mathematics (STEM) program; legal services and settlements; travel and agency training; office, equipment, vehicle, and warehouse leases; utilities and base operations across multiple geographic locations; commercial and ancillary facility services; management of all facility aspects regardless of lifecycle stage; supplies and maintenance; compliance with statutory environmental requirements; data and unified communications support; materiel and readiness and central property management of equipment; Facilities Sustainment,			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency		Date: April 2022	
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603904C / <i>Missile Defense Integration and Operations Center (MDIOC)</i>	Project (Number/Name) MD40 / <i>Program-Wide Support</i>	
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2021	FY 2022
<p>Restoration and Modernization (FSRM) program, (formerly Real Property Maintenance) to keep the Department's inventory of facilities in good working order; and similar operating expenses. PWS is allocated on a pro-rata basis across most Agency PEs and therefore fluctuates per PE by fiscal year based on the total Agency budget in that fiscal year.</p> <p><i>FY 2022 Plans:</i> - SEE ABOVE.</p> <p><i>FY 2023 Plans:</i> - SEE ABOVE.</p> <p><i>FY 2022 to FY 2023 Increase/Decrease Statement:</i> Decrease from FY 2022 to FY 2023 reflects the PWS allocation on a pro-rata basis across multiple Agency PE's each fiscal year based on the total Agency budget, and therefore fluctuates per PE by fiscal year.</p>			
Accomplishments/Planned Programs Subtotals		2.199	2.025
C. Other Program Funding Summary (\$ in Millions)			
N/A			
Remarks			
D. Acquisition Strategy			
N/A			

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603904C / Missile Defense Integration and Operations Center (MDIOC)				Project (Number/Name) MD40 / Program-Wide Support					
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Wide Support - Agency Operations Management	Various	Various : Multi: AL, CA, CO, VA	0.903	0.000		0.000		0.000		-		0.000	0.241	1.144	0.000
Program Wide Support - Agency Operations and Support Services	Reqn	Various : Multi: AK, AL, CA, CO, VA	17.764	0.066	Oct 2020	0.046	Oct 2021	0.000		-		0.000	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations and Support Services.	C/CPFF	LSINC : AL	0.198	2.133	May 2021	1.979	Mar 2022	1.793	Nov 2022	-		1.793	Continuing	Continuing	Continuing
Program Wide Support - Facilities and Maintenance SRM	MIPR	Various : Multi: CO	3.200	0.000		0.000		0.000		-		0.000	0.000	3.200	0.000
Program Wide Support - Prior year no longer funded in the FYDP	Various	Various : Various	5.311	0.000		0.000		0.000		-		0.000	0.000	5.311	0.000
Subtotal			27.376	2.199		2.025		1.793		-		1.793	Continuing	Continuing	N/A
Remarks N/A															
			Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			27.376	2.199		2.025		1.793		-		1.793	Continuing	Continuing	N/A
Remarks Award Date reflects date of first obligation. Additional obligations may incrementally occur throughout the year.															

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Missile Defense Agency															Date: April 2022																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
Appropriation/Budget Activity 0400 / 4										R-1 Program Element (Number/Name) PE 0603904C / <i>Missile Defense Integration and Operations Center (MDIOC)</i>										Project (Number/Name) MD40 / <i>Program-Wide Support</i>																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Missile Defense Agency		Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603904C / Missile Defense Integration and Operations Center (MDIOC)	Project (Number/Name) MD40 / Program-Wide Support

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
MD40 Program-Wide Support	1	2021	4	2027

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Missile Defense Agency	Date: April 2022
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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 0603906C / <i>Regarding Trench</i>
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COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
Total Program Element	118.023	10.213	11.952	12.146	-	12.146	12.564	12.902	13.155	13.418	Continuing	Continuing
MD35: <i>Regarding Trench</i>	118.023	10.213	11.952	12.146	-	12.146	12.564	12.902	13.155	13.418	Continuing	Continuing

Program MDAP/MAIS Code: 362

Note

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.

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.

B. Program Change Summary (\$ in Millions)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Previous President's Budget	11.863	11.952	0.000	-	0.000
Current President's Budget	10.213	11.952	12.146	-	12.146
Total Adjustments	-1.650	0.000	12.146	-	12.146
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Missile Defeat and Defense Enhancement	0.000	0.000	0.000	-	0.000
• Other Adjustment	-1.650	0.000	12.146	-	12.146

Change Summary Explanation

Further program details are reported in accordance with Title 10, United States Code, Section 119(a)(1) in the Special Access Program Annual Report to Congress.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Missile Defense Agency	Date: April 2022
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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 0603907C / <i>Sea Based X-Band Radar (SBX)</i>
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COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
Total Program Element	952.395	120.063	147.241	164.668	-	164.668	174.934	215.367	198.956	179.622	Continuing	Continuing
MX46: <i>Sea Based X-Band Radar Development Support</i>	917.254	115.363	141.567	158.689	-	158.689	168.779	208.689	192.046	173.020	Continuing	Continuing
MD40: <i>Program-Wide Support</i>	35.141	4.700	5.674	5.979	-	5.979	6.155	6.678	6.910	6.602	Continuing	Continuing

Program MDAP/MAIS Code: 362

Note

Increase from FY 2022 to FY 2023 provides for the radome replacement scheduled to complete in FY 2025 and additional software sustainment and X-Band Radar (XBR) contractor logistics support.

A. Mission Description and Budget Item Justification

The Sea Based X-Band Radar (SBX) is an advanced XBR that provides the capability for mid-course acquisition, tracking, discrimination, and hit-assessment of missile threats. The SBX radar is mounted on a mobile, ocean-going, semi-submersible platform, enabling it to cover any region of the globe. The SBX supports the Missile Defense System (MDS) Homeland Defense mission by tracking and discriminating sophisticated Intercontinental Ballistic Missile (ICBM) threats.

The SBX operates at sea for MDS flight and ground test participation or in an active, operational status when indications and warnings signal the need for enhanced discrimination. The SBX is located in a Pacific port when not required at sea. The SBX maintains vessel certifications for operations at sea as well as software compatibility with the MDS.

<u>B. Program Change Summary (\$ in Millions)</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023 Base</u>	<u>FY 2023 OCO</u>	<u>FY 2023 Total</u>
Previous President's Budget	118.318	147.241	0.000	-	0.000
Current President's Budget	120.063	147.241	164.668	-	164.668
Total Adjustments	1.745	0.000	164.668	-	164.668
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Missile Defeat and Defense Enhancement	0.000	0.000	0.000	-	0.000
• Other Adjustment	1.745	0.000	164.668	-	164.668

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Missile Defense Agency		Date: April 2022
Appropriation/Budget Activity 0400: Research, Development, Test & Evaluation, Defense-Wide / BA 4: Advanced Component Development & Prototypes (ACD&P)	R-1 Program Element (Number/Name) PE 0603907C / Sea Based X-Band Radar (SBX)	
<div>Change Summary Explanation</div> <div>FY 2023 funding increase reflects the fact that the FY 2022 President's Budget request did not include out-year funding.</div>		

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency										Date: April 2022		
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0603907C / Sea Based X-Band Radar (SBX)				Project (Number/Name) MX46 / Sea Based X-Band Radar Development Support			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
MX46: Sea Based X-Band Radar Development Support	917.254	115.363	141.567	158.689	-	158.689	168.779	208.689	192.046	173.020	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Increase from FY 2022 to FY 2023 provides for the radome replacement scheduled to complete in FY 2025 and additional software sustainment and X-Band Radar (XBR) contractor logistics support.

A. Mission Description and Budget Item Justification

This project provides developmental operations and support of the SBX Radar and its four major sub-systems: the self-propelled vessel; the X-Band Radar (XBR); the In-Flight Interceptor Communications System Data Terminal; and the communications network. Developmental operations and support activities include operation and sustainment of the vessel, developmental operation and sustainment of the XBR, limited XBR software support, and vessel and shore side security. The FY 2023 budget reflects the continued development required to deliver MDS enhanced discrimination capability.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2021	FY 2022	FY 2023
Title: Vessel Operations and Support	62.663	71.124	69.422
Articles:	-	-	-
<p>Description: Vessel Operations and Support provides for sustainment of the SBX vessel for full operations. This effort maintains annual surveys and U.S. Coast Guard Certifications to ensure readiness for operational contingencies, provides for resupply of SBX, and conducts in port and underway maintenance. The SBX participates in MDS ground tests and flight tests per the Integrated Master Test Plan (IMTP). This effort also provides force protection for SBX, maintenance repair, air charter transportation, and supply vessel charters.</p> <p>Specific and/or unique accomplishments to each FY are as follows:</p> <p>FY 2022 Plans:</p> <ul style="list-style-type: none"> - Conduct in port SBX maintenance period and recurring 2.5-year U.S. Coast Guard/American Bureau of Shipping surveys. <p>FY 2023 Plans:</p> <ul style="list-style-type: none"> - Operate at sea for Homeland Defense, including annual surveys at sea. <p>FY 2022 to FY 2023 Increase/Decrease Statement:</p>			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency			Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603907C / Sea Based X-Band Radar (SBX)	Project (Number/Name) MX46 / Sea Based X-Band Radar Development Support	

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023
N/A			
Title: XBR Operations and Support Articles: Description: This effort operates and sustains the XBR at full operations, operates and sustains SBX communications systems, performs mission integration functions, and provides support for contingency operations with manning for improved readiness enabling rapid response time from notification to underway. XBR Operations and Support maintains limited software sustainment for system capability with the MDS and fields additional XBR capability to the Warfighter with the MDS capability increment. This effort also provides precision track, discrimination, and hit assessment for engagement support in MDS ground tests and flight tests per the approved IMTP. Additional development includes continuation of the radome replacement effort, expected to complete in 2025. Specific and/or unique accomplishments to each FY are as follows: FY 2022 Plans: - Complete XBR x86 software initial fielding to increase the XBR processing capabilities. - Continuation of radome replacement effort, expected to complete in 2025. FY 2023 Plans: - Operate at sea for Homeland Defense, including recurring routine maintenance and testing. FY 2022 to FY 2023 Increase/Decrease Statement: Increase from FY 2022 to FY 2023 provides for the radome replacement and additional software sustainment and X-Band Radar (XBR) contractor logistics support.	52.700 -	70.443 -	89.267 -
Accomplishments/Planned Programs Subtotals	115.363	141.567	158.689

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

<u>Line Item</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023 Base</u>	<u>FY 2023 OCO</u>	<u>FY 2023 Total</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• 0603882C: Ballistic Missile Defense Midcourse Defense Segment	1,195.853	724.028	667.524	-	667.524	870.817	802.617	781.973	765.733	Continuing	Continuing
• 0603884C: Ballistic Missile Defense Sensors	259.605	254.962	231.134	-	231.134	250.028	274.705	276.254	257.575	Continuing	Continuing

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency									Date: April 2022		
Appropriation/Budget Activity 0400 / 4				R-1 Program Element (Number/Name) PE 0603907C / Sea Based X-Band Radar (SBX)				Project (Number/Name) MX46 / Sea Based X-Band Radar Development Support			
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• 0603891C: Special Programs - MDA	380.204	413.374	316.977	-	316.977	276.846	281.065	286.880	292.589	Continuing	Continuing
• 0603896C: Ballistic Missile Defense Command and Control, Battle Management & Communication	639.027	564.946	589.374	-	589.374	575.883	588.824	612.853	605.801	Continuing	Continuing
• 0603898C: Ballistic Missile Defense Joint Warfighter Support	49.261	50.594	50.269	-	50.269	51.849	55.960	56.488	54.980	Continuing	Continuing
• 0603904C: Missile Defense Integration and Operations Center (MDIOC)	54.026	52.403	49.367	-	49.367	51.744	56.502	57.833	59.006	Continuing	Continuing
• 0604879C: Ballistic Missile Defense Sensor Test	64.245	77.428	88.326	-	88.326	91.495	98.146	103.010	145.810	Continuing	Continuing
Remarks											
D. Acquisition Strategy											
The SBX is contractor operated and maintained through a variety of contracts between the Navy and MDA. SBX-1 Vessel Management, Offshore Supply Vessel (OSV), and Security contracts are managed by Military Sealift Command. The SBX radar is operated and maintained on contracts managed by MDA.											

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603907C / Sea Based X-Band Radar (SBX)						Project (Number/Name) MX46 / Sea Based X-Band Radar Development Support			
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
XBR Operations and Support - XBR Operations & Support-Radome Replacement	SS/CPFF	RAYTHEON : MA	6.500	6.241	May 2021	16.002	Jan 2022	22.828	Nov 2022	-		22.828	Continuing	Continuing	Continuing
Subtotal			6.500	6.241		16.002		22.828		-		22.828	Continuing	Continuing	N/A
Remarks N/A															
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Vessel Operations and Support - Air Charter	MIPR	Military Sealift Command : VA	0.000	0.000		1.050	Oct 2021	1.079	Oct 2022	-		1.079	Continuing	Continuing	Continuing
Vessel Operations and Support - Force Protection	MIPR	Military Sealift Command : VA	12.081	6.482	Oct 2020	5.850	Oct 2021	6.011	Oct 2022	-		6.011	Continuing	Continuing	Continuing
Vessel Operations and Support - Fuel	MIPR	Military Sealift Command : VA	75.611	10.535	Oct 2020	8.500	Oct 2021	12.342	Oct 2022	-		12.342	Continuing	Continuing	Continuing
Vessel Operations and Support - Navy Program Management Office	MIPR	Military Sealift Command : VA	10.559	2.910	Oct 2020	3.571	Oct 2021	4.930	Oct 2022	-		4.930	Continuing	Continuing	Continuing
Vessel Operations and Support - Navy Transition Office	MIPR	U.S. Navy : AL	5.732	0.000		0.000		0.000		-		0.000	0.000	5.732	0.000
Vessel Operations and Support - Operational Support Vessel (OSV Resupply)	MIPR	Military Sealift Command : VA	63.152	19.667	Oct 2020	14.600	Oct 2021	17.181	Oct 2022	-		17.181	Continuing	Continuing	Continuing
Vessel Operations and Support - SBX Operations & Support (Vessel)	MIPR	Military Sealift Command : VA	223.855	23.069	Oct 2020	37.553	Oct 2021	27.879	Oct 2022	-		27.879	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603907C / Sea Based X-Band Radar (SBX)						Project (Number/Name) MX46 / Sea Based X-Band Radar Development Support			
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Vessel Operations and Support - SBX Vessel Maintenance	MIPR	Tote : HI/NJ	36.963	0.000		0.000		0.000		-		0.000	0.000	36.963	0.000
Vessel Operations and Support - Vessel Mission Integration	C/CPIF	Gryphon Tech. : AL/ HI	77.234	0.000		0.000		0.000		-		0.000	0.000	77.234	0.000
XBR Operations and Support - Civilian Salaries/ Travel	Allot	MDA : Various	1.456	1.910	Oct 2020	1.356	Oct 2021	1.399	Oct 2022	-		1.399	Continuing	Continuing	Continuing
XBR Operations and Support - Contract Support Services	C/CPFF	Various : Various	1.200	1.293	Oct 2020	2.059	Oct 2021	1.017	Oct 2022	-		1.017	Continuing	Continuing	Continuing
XBR Operations and Support - Contract Support Services - Engineering	C/CPFF	PARSONS GOVERNMENT SERVICES INC. : Various	0.000	0.000		0.000		1.140	Oct 2022	-		1.140	Continuing	Continuing	Continuing
XBR Operations and Support - Mission Integration	C/CPIF	MANTECH : AL/ HI	0.000	7.302	Feb 2021	9.286	Dec 2021	10.682	Nov 2022	-		10.682	Continuing	Continuing	Continuing
XBR Operations and Support - Network And Infrastructure Services	C/CPAF	Jacobs Engineering : AL, CO, HI, NM, VA	0.855	0.439	Jan 2021	0.438	Jan 2022	0.446	Jan 2023	-		0.446	Continuing	Continuing	Continuing
XBR Operations and Support - SBX Communications Support	SS/CPIF	Boeing : AL/ HI	17.120	2.705	Jan 2021	2.565	Jan 2022	2.931	Jan 2023	-		2.931	Continuing	Continuing	Continuing
XBR Operations and Support - UARC -JHU/APL	SS/CPFF	JOHNS HOPKINS UNIVERSITY APPLIED PHYSICS LABORATORY LLC, THE : MD	0.000	0.000		0.349	Nov 2021	0.361	Nov 2022	-		0.361	Continuing	Continuing	Continuing
XBR Operations and Support - XBR Operations & Support	SS/CPFF	RAYTHEON : AL/AK/ HI	384.936	32.810	Dec 2020	38.388	Dec 2021	48.463	Dec 2022	-		48.463	Continuing	Continuing	Continuing
Subtotal			910.754	109.122		125.565		135.861		-		135.861	Continuing	Continuing	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency													Date: April 2022		
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0603907C / Sea Based X-Band Radar (SBX)					Project (Number/Name) MX46 / Sea Based X-Band Radar Development Support					
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Remarks N/A															
Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	N/A
Remarks N/A															
Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	N/A
Remarks N/A															
			Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			917.254	115.363		141.567		158.689		-		158.689	Continuing	Continuing	N/A
Remarks Award Dates reflect date of first obligation. Additional obligations may incrementally occur throughout the year.															

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Missile Defense Agency														Date: April 2022															
Appropriation/Budget Activity										R-1 Program Element (Number/Name)										Project (Number/Name)									
0400 / 4										PE 0603907C / Sea Based X-Band Radar (SBX)										MX46 / Sea Based X-Band Radar Development Support									
Significant Event Complete ▲					Milestone Decision Complete ★					Element Test Complete ◆					System Level Test Complete ●					Complete Activity ◆									
Significant Event Planned △					Milestone Decision Planned ☆					Element Test Planned ◇					System Level Test Planned ○					Planned Activity ◇									
										FY 2021		FY 2022		FY 2023		FY 2024		FY 2025		FY 2026		FY 2027							
FTM-44 (AEGIS 5.1, DT Intercept Flight Test)										▲																			
GTI-08a (N/I) (MDS Ground Test)													◇																
FTX-26 (OT) (SN, OT Target Only Flight Test)														△															
FTX-45														△															
GTD-08a (N/I) (MDS Ground Test)															◇														
GTI-08b (N/I)																◇													
FTG-12 (GM, DT/OT Intercept Flight Test)																△													
GTD-08b (N/I)																	◇												
GTI-13 Sprint 1 (N/I) (MDS Ground Test)																		◇											
GTI-13 Sprint 2 (N/I) (MDS Ground Test)																			◇										
GTD-13 (N/I) (MDS Ground Test)																				◇									
GTI-14 Sprint 1 (N/I)																					◇								
GTI-14 (N/I) Sprint 2 (MDS Ground Test)																						◇							
FTG-16 (GM, DT Intercept Flight Test)																							△						
FTG-17 (GM, DT/OT Intercept Flight Test)																								△					
GTD-14 (N/I) (MDS Ground Test)																								◇					

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Missile Defense Agency			Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603907C / Sea Based X-Band Radar (SBX)	Project (Number/Name) MX46 / Sea Based X-Band Radar Development Support	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
FTM-44 (AEGIS 5.1, DT Intercept Flight Test)	1	2021	1	2021
GTI-08a (N/I) (MDS Ground Test)	3	2022	3	2022
FTX-26 (OT) (SN, OT Target Only Flight Test)	4	2022	4	2022
FTX-45	4	2022	4	2022
GTD-08a (N/I) (MDS Ground Test)	1	2023	1	2023
GTI-08b (N/I)	4	2023	4	2023
FTG-12 (GM, DT/OT Intercept Flight Test)	4	2023	4	2023
GTD-08b (N/I)	2	2024	2	2024
GTI-13 Sprint 1 (N/I) (MDS Ground Test)	1	2025	1	2025
GTI-13 Sprint 2 (N/I) (MDS Ground Test)	3	2025	3	2025
GTD-13 (N/I) (MDS Ground Test)	4	2025	4	2025
GTI-14 Sprint 1 (N/I)	4	2026	4	2026
GTI-14 (N/I) Sprint 2 (MDS Ground Test)	2	2027	2	2027
FTG-16 (GM, DT Intercept Flight Test)	2	2027	2	2027
FTG-17 (GM, DT/OT Intercept Flight Test)	4	2027	4	2027
GTD-14 (N/I) (MDS Ground Test)	4	2027	4	2027

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency										Date: April 2022		
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0603907C / Sea Based X-Band Radar (SBX)				Project (Number/Name) MD40 / Program-Wide Support			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
MD40: Program-Wide Support	35.141	4.700	5.674	5.979	-	5.979	6.155	6.678	6.910	6.602	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Program Wide Support (PWS) is allocated on a pro-rata basis across multiple Agency program elements (PEs) each fiscal year based on the total Agency budget, and therefore fluctuates per PE by fiscal year.

A. Mission Description and Budget Item Justification

PWS contains non-headquarters management costs in support of MDA functions and activities across the entire MDS. These functions include Government Civilians and Contract Support Services. This effort provides integrity and oversight of the MDS as well as supports MDA in the development and evaluation of technologies that will respond to the changing threat. Additionally, PWS includes personnel to support global deployments performing deployment site preparation and activation, and provides facility capabilities for MDA Executing Agent locations worldwide. Other MDA wide costs include: physical and technical security; civilian drug testing; audit readiness; the Science, Technology, Engineering, and Mathematics (STEM) program; legal services and settlements; travel and agency training; office, equipment, vehicle, and warehouse leases; utilities and base operations across multiple geographic locations; commercial and ancillary facility services; management of all facility aspects regardless of lifecycle stage; supplies and maintenance; compliance with statutory environmental requirements; data and unified communications support; materiel and readiness and central property management of equipment; Facilities Sustainment, Restoration and Modernization (FSRM) program, (formerly Real Property Maintenance) to keep the Department's inventory of facilities in good working order; and similar operating expenses. PWS is allocated on a pro-rata basis across most Agency PEs and therefore fluctuates per PE by fiscal year based on the total Agency budget in that fiscal year.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2021	FY 2022	FY 2023
Title: Program Wide Support	4.700	5.674	5.979
Articles:	-	-	-
Description: PWS contains non-headquarters management costs in support of MDA functions and activities across the entire MDS. These functions include Government Civilians and Contract Support Services. This effort provides integrity and oversight of the MDS as well as supports MDA in the development and evaluation of technologies that will respond to the changing threat. Additionally, PWS includes personnel to support global deployments performing deployment site preparation and activation, and provides facility capabilities for MDA Executing Agent locations worldwide. Other MDA wide costs include: physical and technical security; civilian drug testing; audit readiness; the Science, Technology, Engineering, and Mathematics (STEM) program; legal services and settlements; travel and agency training; office, equipment, vehicle, and warehouse leases; utilities and base operations across multiple geographic locations; commercial and ancillary facility services; management of all facility aspects regardless of lifecycle stage; supplies and maintenance; compliance with statutory environmental requirements; data and unified communications support; materiel and readiness and central property management of equipment; Facilities Sustainment,			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency		Date: April 2022	
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603907C / Sea Based X-Band Radar (SBX)	Project (Number/Name) MD40 / Program-Wide Support	
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2021	FY 2022
<p>Restoration and Modernization (FSRM) program, (formerly Real Property Maintenance) to keep the Department's inventory of facilities in good working order; and similar operating expenses. PWS is allocated on a pro-rata basis across most Agency PEs and therefore fluctuates per PE by fiscal year based on the total Agency budget in that fiscal year.</p> <p>FY 2022 Plans: - SEE ABOVE.</p> <p>FY 2023 Plans: - SEE ABOVE.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: N/A</p>			
Accomplishments/Planned Programs Subtotals		4.700	5.674
C. Other Program Funding Summary (\$ in Millions) N/A			
Remarks			
D. Acquisition Strategy N/A			

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603907C / Sea Based X-Band Radar (SBX)				Project (Number/Name) MD40 / Program-Wide Support					
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Wide Support - Agency Facilities and Maintenance SRM	MIPR	Various : Various	0.000	0.000		0.000		1.743	Nov 2022	-		1.743	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations and Support Services	C/CPFF	Various : Various	0.000	0.000		0.000		4.236	Nov 2022	-		4.236	Continuing	Continuing	Continuing
Program Wide Support - Prior year no longer funded in the FYDP	Various	Various : Various	9.154	0.000		0.000		0.000		-		0.000	0.000	9.154	0.000
Program Wide Support - Program Wide Support - Agency Operations Management	Various	Various Multi : AK, AL, CA, CO, VA	2.070	0.142	Jul 2021	0.145	Jul 2022	0.000		-		0.000	Continuing	Continuing	Continuing
Program Wide Support - Program Wide Support - Agency Operations and Support Civilian Salaries, Travel, Training	Various	MDA Multi : AK, AL, CA, CO, VA	0.000	1.606	Jan 2021	0.000		0.000		-		0.000	0.000	1.606	0.000
Program Wide Support - Program Wide Support - Agency Operations and Support Other Agency Services (MIPRs)	MIPR	Various Multi: : AK, AL, CA, CO, VA	23.699	2.799	Nov 2020	5.395	Nov 2021	0.000		-		0.000	Continuing	Continuing	Continuing
Program Wide Support - Program Wide Support - Agency Operations and Support Services (FFP)	C/FFP	Various Multi: : VA, WA	0.218	0.153	Jun 2021	0.134	May 2022	0.000		-		0.000	Continuing	Continuing	Continuing
Subtotal			35.141	4.700		5.674		5.979		-		5.979	Continuing	Continuing	N/A
Remarks N/A															

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022		
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603907C / Sea Based X-Band Radar (SBX)				Project (Number/Name) MD40 / Program-Wide Support				

Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total					
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-		-	-	-	N/A

Remarks N/A																	
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	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	35.141	4.700	5.674	5.979	-	5.979	Continuing	Continuing	N/A

Remarks Award Date reflects date of first obligation. Additional obligations may incrementally occur throughout the year.									
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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Missile Defense Agency																Date: April 2022							
Appropriation/Budget Activity 0400 / 4								R-1 Program Element (Number/Name) PE 0603907C / Sea Based X-Band Radar (SBX)								Project (Number/Name) MD40 / Program-Wide Support							
Significant Event Complete ▲				Milestone Decision Complete ★				Element Test Complete ◆				System Level Test Complete ●				Complete Activity ◆							
Significant Event Planned △				Milestone Decision Planned ☆				Element Test Planned ◇				System Level Test Planned ○				Planned Activity ◇							
								FY 2021		FY 2022		FY 2023		FY 2024		FY 2025		FY 2026		FY 2027			
MD40 Program-Wide Support								◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Missile Defense Agency			Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603907C / Sea Based X-Band Radar (SBX)	Project (Number/Name) MD40 / Program-Wide Support	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
MD40 Program-Wide Support	1	2021	4	2027

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Missile Defense Agency	Date: April 2022
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Appropriation/Budget Activity	R-1 Program Element (Number/Name)											
0400: <i>Research, Development, Test & Evaluation, Defense-Wide / BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	PE 0603913C / <i>Israeli Cooperative Programs</i>											
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
Total Program Element	2,158.391	300.000	300.000	300.000	-	300.000	300.000	300.000	300.000	300.000	Continuing	Continuing
MD26: <i>Arrow Weapon System</i>	833.645	173.000	173.000	173.000	-	173.000	173.000	173.000	173.000	173.000	Continuing	Continuing
MD34: <i>Short Range Ballistic Missile Defense (SRBMD) (David's Sling Weapon System (DSWS))</i>	1,324.746	127.000	127.000	127.000	-	127.000	127.000	127.000	127.000	127.000	Continuing	Continuing

Program MDAP/MAIS Code: 362

Note

Content supports expected contributions from Israel per international agreements.

A. Mission Description and Budget Item Justification

Since 1986, the United States (U.S.) and the State of Israel have cooperated on missile defense. Currently, the Missile Defense Agency (MDA) has two major projects with Israel to develop and improve their indigenous capability to defend against short range rockets, cruise missiles, and short and medium range ballistic missiles. These include the Arrow Weapon System (AWS) (MD26) and the Short Range Ballistic Missile Defense (SRBMD) David's Sling Weapon System (DSWS)(MD34). Within these projects MDA along with Israeli Missile Defense Organization (IMDO) develops and produces weapon systems, conducts tests, and exercises interoperability between the U.S. Missile Defense System (MDS) and the Israeli Missile Defense Architecture.

The U.S. and State of Israel entered into a Memorandum of Understanding (MOU) on September 2016, in which "Such funding, should over a ten year period beginning in FY 2019 and ending in FY 2028, be provided at a level of \$500 million per year." (U.S. contributions only). These funds will be distributed between the Israeli Programs in Research Development Test & Evaluation (RDT&E) and Procurement Funds.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Missile Defense Agency	Date: April 2022
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Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide / BA 4:</i> <i>Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0603913C / <i>Israeli Cooperative Programs</i>
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B. Program Change Summary (\$ in Millions)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Previous President's Budget	300.000	300.000	0.000	-	0.000
Current President's Budget	300.000	300.000	300.000	-	300.000
Total Adjustments	0.000	0.000	300.000	-	300.000
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Missile Defeat and Defense Enhancement	0.000	0.000	0.000	-	0.000
• Other Adjustment	0.000	0.000	300.000	-	300.000

Change Summary Explanation

FY 2023 funding increase reflects the fact that the FY 2022 President's Budget request did not include out-year funding.

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency										Date: April 2022		
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0603913C / Israeli Cooperative Programs				Project (Number/Name) MD26 / Arrow Weapon System			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
MD26: Arrow Weapon System	833.645	173.000	173.000	173.000	-	173.000	173.000	173.000	173.000	173.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

This project encompasses the Missile Defense Agency's (MDA) U.S.-Israeli cooperative program for the Israeli AWS Program.

A. Mission Description and Budget Item Justification

Israeli AWS: This system includes block upgrades to the AWS components which enhances capabilities against evolving medium range threats by increasing the total defended area. AWS elements include the Arrow-2 and Arrow-3 missiles and launchers, Citron Tree Battle Management Center (BMC), Green Pine (GP) and Super Green Pine (SGP) Radars, and the Hazelnut Tree Launcher Control Center (LCC).

Arrow Block 5 development incorporates a Long Range Detection Suite (LRDS) that consists of an Airborne Early Warning System (ABEWS) and Sharp Eye Radar for increased sensor range, early detection and enhanced raid size capacity. In addition, an Arrow-4 interceptor is being developed. The program also includes the continued development of Arrow's interoperability with U.S. MDS.

The U.S. and State of Israel entered into a Memorandum of Understanding (MOU) on September 2016, in which "Such funding, should over a ten year period beginning in FY 2019 and ending in FY 2028, be provided at a level of \$500 million per year." (U.S. contributions only). These funds will be distributed between the Israeli Programs in Research Development Test & Evaluation (RDT&E) and Procurement Funds.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2021	FY 2022	FY 2023
Title: Arrow Weapon System	167.940	167.940	167.940
Articles:	-	-	-
Description: The AWS continues Block 5 spiral development and target development. Included is the integration of Block 5 assets, which consists of the Arrow-3 missile, launcher, LRDS and Arrow-4 interceptor. Continue proven Interoperability with U.S. Assets and enhancements to existing AWS System Components. Specific and/or unique planned accomplishments to each FY are as follows:			
FY 2022 Plans: -Continue Block 5.0 and Initiate Block 5.1 Development -Conduct Arrow-4 Critical Design Review (CDR) and Launcher Development -Conduct Block 5.0 Flight Test proving improved system performance			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency		Date: April 2022		
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603913C / Israeli Cooperative Programs	Project (Number/Name) MD26 / Arrow Weapon System		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2021	FY 2022	FY 2023
<div>-Begin System Integration of Sharp Eye Sensors</div> <div>FY 2023 Plans: -Complete Block 5.0 and Continue Block 5.1 Development (Conduct System Readiness Review (SRR)) -Continue Arrow-4 Interceptor and Launcher Development and Conduct an Arrow 4 Fly Out -Conduct Block 5.0 Flight Test proving improved system performance -Continue LRDS development and Integration into the AWS -Procurement of Targets for Future AWS System Tests</div> <div>FY 2022 to FY 2023 Increase/Decrease Statement: N/A</div>				
<div>Title: Israeli Test Bed (ITB)</div> <div>Articles:</div> <div>Description: The Israeli Test Bed (ITB) provides experiments to evaluate Human Machine Interface (HMI) battle management and integration of Block 5 AWS Techniques Tactics and Procedures (TTPs) and CONOPS. Specific and/or unique accomplishments to each FY are as follows:</div> <div>FY 2022 Plans: -SEE ABOVE.</div> <div>FY 2023 Plans: -SEE ABOVE.</div> <div>FY 2022 to FY 2023 Increase/Decrease Statement: N/A</div>		3.535 -	3.535 -	3.535 -
<div>Title: Israeli Systems Architecture and Integration (ISA&I)</div> <div>Articles:</div> <div>Description: The Israeli Systems Architecture and Integration (ISA&I) conducts studies to assess Israel's future 2032 Missile Defense Architecture. This identifies the preferred missile defense architecture and reference threat for 10-15 year future epoch and interoperability special studies on regional threats and growth path options. Specific and/or unique accomplishments to each FY are as follows:</div> <div>FY 2022 Plans:</div>		1.525 -	1.525 -	1.525 -

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency							Date: April 2022		
Appropriation/Budget Activity 0400 / 4				R-1 Program Element (Number/Name) PE 0603913C / <i>Israeli Cooperative Programs</i>			Project (Number/Name) MD26 / <i>Arrow Weapon System</i>		

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023
-SEE ABOVE.			
<i>FY 2023 Plans:</i> -SEE ABOVE.			
<i>FY 2022 to FY 2023 Increase/Decrease Statement:</i> N/A			
Accomplishments/Planned Programs Subtotals	173.000	173.000	173.000

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

<u>Line Item</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u> <u>Base</u>	<u>FY 2023</u> <u>OCO</u>	<u>FY 2023</u> <u>Total</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• 0208866C: MD26: Arrow 3	77.000	62.000	80.000	-	80.000	80.000	80.000	80.000	80.000	Continuing	Continuing
<i>Upper Tier System Procurement</i>											

Remarks

D. Acquisition Strategy

The MDA - U.S. Israeli Cooperative Program Office jointly manages the Arrow Program with IMDO to ensure that all systems are delivered with quality, on time, on budget, and meet the needs of the warfighter. The program funding is equitably funded between the U.S. and Israel with Israel providing matching contributions. However, a portion of the Israeli cost share comes from non-financial contributions such as previously completed work prior to joint program initiation. Contracts are awarded by IMDO or MDA, dependent on what is most advantageous to the Joint Governments. In regard to AWS, IMDO contracts on behalf of U.S. government with Israel Aerospace Industries (IAI). IAI subcontracts with Israeli and U.S. companies. For the ITB, the MDA contracts directly with Elbit Systems, Ltd. while IMDO provides an equitable share of the funding to the U.S. Finally, MDA provides funding and contracts directly with WALES, Ltd. for the ISA&I program.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603913C / Israeli Cooperative Programs				Project (Number/Name) MD26 / Arrow Weapon System					
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Arrow Weapon System - AWS	C/CPFF	Israel Aerospace Industries (IAI) : Israel	761.333	167.940	Dec 2020	167.940	Dec 2021	167.940	Dec 2022	-		167.940	Continuing	Continuing	Continuing
Israeli Test Bed (ITB) - ITB	C/FFP	Elbit Systems : Israel	42.420	3.535	Nov 2020	3.535	Nov 2021	3.535	Nov 2022	-		3.535	Continuing	Continuing	Continuing
Israeli Systems Architecture and Integration (ISA&I) - ISA&I	C/FFP	Wales LTD : Israel	29.892	1.525	Dec 2020	1.525	Dec 2021	0.000		-		0.000	Continuing	Continuing	Continuing
Israeli Systems Architecture and Integration (ISA&I) - ISA&I- New Contract	C/FFP	TBD : TBD	0.000	0.000		0.000		1.525	Dec 2022	-		1.525	Continuing	Continuing	Continuing
Subtotal			833.645	173.000		173.000		173.000		-		173.000	Continuing	Continuing	N/A
Remarks ISA&I Contract will be recompeted.															
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	N/A
Remarks N/A															
Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	N/A
Remarks N/A															

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022		
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603913C / <i>Israeli Cooperative Programs</i>				Project (Number/Name) MD26 / <i>Arrow Weapon System</i>				

Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	N/A

Remarks N/A															
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	Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	833.645	173.000		173.000		173.000		-		173.000	Continuing	Continuing	N/A

Remarks Contract cost reflect U.S. contribution only. Award Date reflects date of first obligation. Additional obligations may incrementally occur throughout the year.													
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PE 0603913C: *Israeli Cooperative Programs* **UNCLASSIFIED** Volume 2a - 490
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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Missile Defense Agency			Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603913C / <i>Israeli Cooperative Programs</i>	Project (Number/Name) MD26 / <i>Arrow Weapon System</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Israeli Test Bed Exercise to include Ground Test (GT) Support FY 2021	1	2021	4	2021
Israeli Test Bed Experiments FY 2021	1	2021	4	2021
Israeli Test Bed Experiments FY 2022	1	2022	4	2022
Arrow Weapon System Flight Test FY 2022	1	2022	4	2022
Israeli Test Bed Experiments FY 2023	1	2023	4	2023
Israeli Test Bed Exercise to include Ground Test (GT) Support FY 2023	1	2023	4	2023
Arrow Weapon System Flight Test FY 2023	1	2023	4	2023
Israeli Test Bed Experiments FY 2024	1	2024	4	2024
Arrow Weapon System Flight Test FY 2024	1	2024	4	2024
Israeli Test Bed Exercise to include Ground Test (GT) Support FY 2025	1	2025	4	2025
Israeli Test Bed Experiments FY 2025	1	2025	4	2025
Arrow Weapon System Flight Test FY 2025	1	2025	4	2025
Israeli Test Bed Experiments FY 2026	1	2026	4	2026
Arrow Weapon System Flight Test FY 2026	1	2026	4	2026
Israeli Test Bed Experiments FY 2027	1	2027	4	2027
Arrow Weapon System Flight Test FY 2027	1	2027	4	2027

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency										Date: April 2022		
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0603913C / Israeli Cooperative Programs				Project (Number/Name) MD34 / Short Range Ballistic Missile Defense (SRBMD)(David's Sling Weapon System (DSWS))			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
MD34: Short Range Ballistic Missile Defense (SRBMD) (David's Sling Weapon System (DSWS))	1,324.746	127.000	127.000	127.000	-	127.000	127.000	127.000	127.000	127.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

This project encompasses the Missile Defense Agency's (MDA) U.S.-Israeli cooperative program for the Israeli David's Sling Weapon System Program.

A. Mission Description and Budget Item Justification

Israeli SRBMD, also known as the DSWS, is designed to counter short range rockets, cruise missiles, and tactical ballistic missiles and is integrated into the Israeli Missile Defense Architecture. The DSWS includes the Stunner Interceptor for Block 2 and a modified Stunner for Block 3 Capabilities, Missile Firing Unit (MFU), Multi-Mission Radar (MMR), Launch Site Controller (LSC), Data Link (DL), Elevated Sensor (ES), and the Golden Almond Battle Management Center (BMC).

The United States (U.S.) and State of Israel entered into a Memorandum of Understanding (MOU) on September 2016, in which "Such funding, should over a ten year period beginning in FY 2019 and ending in FY 2028, be provided at a level of \$500 million per year." (U.S. contributions only). These funds will be distributed between the Israeli Programs in Research Development Test & Evaluation (RDT&E) and Procurement Funds.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2021	FY 2022	FY 2023
Title: SRBMD Program	127.000	127.000	127.000
Articles:	-	-	-
Description: The DSWS continues system development, testing, and integration of spiral software development for Blocks 2-3. Block 2 will add capability to defend against cruise missiles and tactical ballistic missiles. Block 3 will provide robust defense capability and add significant detection capability to the Israeli Air Defense Architecture. Recurring Planned Accomplishments include: - Conduct Testing of the DSWS - Continue Blocks 2 and 3 Spiral Development of the DSWS - Establish and Continue Interoperability with Israeli Air Missile Defense Network Specific and/or unique accomplishments to each FY are as follows: FY 2022 Plans:			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency		Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603913C / <i>Israeli Cooperative Programs</i>	Project (Number/Name) MD34 / <i>Short Range Ballistic Missile Defense (SRBMD)(David's Sling Weapon System (DSWS))</i>

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023
<ul style="list-style-type: none"> -Continue Block 2/3.1 enhanced DSWS capability development -Begin Block 3 Stunner Initial Lot Production (ILP) Long Lead Items -Testing of the Elevated Sensor -Procurement of U.S. Targets for Future DSWS System Tests <p><i>FY 2023 Plans:</i></p> <ul style="list-style-type: none"> -Conduct Block 3 Interceptor Flight Test in support of Initial Lot Production (ILP) Production Readiness Review (PRR) -Continue Block 3.1 spiral development (conduct Critical Design Review (CDR)) -Continue testing of the Elevated Sensor -Procurement of U.S. Targets for Future DSWS System Tests -Conduct Block 2.2 Flight Test <p><i>FY 2022 to FY 2023 Increase/Decrease Statement:</i> N/A</p>			
Accomplishments/Planned Programs Subtotals	127.000	127.000	127.000

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

<u>Line Item</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u> <u>Base</u>	<u>FY 2023</u> <u>OCO</u>	<u>FY 2023</u> <u>Total</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• 06028866C: MD34: <i>Short Range Ballistic Missile Defense (SRBMD)(David's Sling Weapon System (DSWS)) Procurement</i>	50.000	30.000	40.000	-	40.000	40.000	40.000	40.000	40.000	Continuing	Continuing

Remarks

D. Acquisition Strategy

The MDA- U.S. Israeli Cooperative Program Office jointly manages the DSWS Program with IMDO to ensure that all systems are delivered with quality, on time, on budget, and meet the needs of the warfighter. The program funding is equitably funded between the U.S. and Israel with Israel providing matching contributions. However, a portion of the Israeli cost share comes from non-financial contributions such as previously completed work prior to joint program initiation. Contracts are awarded by IMDO or MDA, dependent on what is most advantageous to the Joint Governments. In regard to DSWS, IMDO contracts on behalf of U.S. government with Rafael. Rafael subcontracts with Israeli and U.S. companies.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603913C / Israeli Cooperative Programs						Project (Number/Name) MD34 / Short Range Ballistic Missile Defense (SRBMD)(David's Sling Weapon System (DSWS))			
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
SRBMD Program - SRBMD Program	C/CPFF	Rafael : Israel	1,324.746	127.000	Dec 2020	127.000	Dec 2021	127.000	Dec 2022	-		127.000	Continuing	Continuing	Continuing
Subtotal			1,324.746	127.000		127.000		127.000		-		127.000	Continuing	Continuing	N/A
Remarks N/A															
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	N/A
Remarks N/A															
Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	N/A
Remarks N/A															
Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022		
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603913C / <i>Israeli Cooperative Programs</i>				Project (Number/Name) MD34 / <i>Short Range Ballistic Missile Defense (SRBMD)(David's Sling Weapon System (DSWS))</i>				

Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total					
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Remarks N/A																	
			Prior Years												Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			1,324.746	127.000		127.000		127.000		-		127.000		Continuing	Continuing	N/A	
Remarks Contract cost reflect U.S. contribution only. Award Date reflects date of first obligation. Additional obligations may incrementally occur throughout the year.																	

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Missile Defense Agency													Date: April 2022					
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0603913C / Israeli Cooperative Progra ms					Project (Number/Name) MD34 / Short Range Ballistic Missile Defense (SRBMD)(David's Sling Weapon System (DSWS))								
Significant Event Complete ▲		Milestone Decision Complete ★		Element Test Complete ◆		System Level Test Complete ●		Complete Activity ◆										
Significant Event Planned △		Milestone Decision Planned ☆		Element Test Planned ◇		System Level Test Planned ○		Planned Activity ◇										
					FY 2021		FY 2022		FY 2023		FY 2024		FY 2025		FY 2026		FY 2027	
System Flight Test #7 FY 2021					◆	◆	◆	◆										
System Flight Test #8 FY 2023									◇	◇	◇	◇						
System Flight Test #9 FY 2024											◇	◇	◇	◇				
System Flight Test #10 FY 2025													◇	◇	◇	◇		
System Flight Test #11 FY 2026																◇	◇	◇
System Flight Test #12 FY 2027																	◇	◇

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Missile Defense Agency			Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603913C / <i>Israeli Cooperative Programs</i>	Project (Number/Name) MD34 / <i>Short Range Ballistic Missile Defense (SRBMD)(David's Sling Weapon System (DSWS))</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
System Flight Test #7 FY 2021	1	2021	4	2021
System Flight Test #8 FY 2023	1	2023	4	2023
System Flight Test #9 FY 2024	1	2024	4	2024
System Flight Test #10 FY 2025	1	2025	4	2025
System Flight Test #11 FY 2026	1	2026	4	2026
System Flight Test #12 FY 2027	1	2027	4	2027

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Missile Defense Agency										Date: April 2022		
Appropriation/Budget Activity					R-1 Program Element (Number/Name)							
0400: Research, Development, Test & Evaluation, Defense-Wide I BA 4: Advanced Component Development & Prototypes (ACD&P)					PE 0603914C I Ballistic Missile Defense Test							
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
Total Program Element	3,280.229	364.994	389.156	367.824	-	367.824	363.963	421.261	476.991	490.176	Continuing	Continuing
MT04: BMDS Test Program	3,083.424	343.376	363.674	346.263	-	346.263	342.656	398.141	450.183	462.576	Continuing	Continuing
MC04: Cyber Operations	63.572	6.591	8.254	8.205	-	8.205	8.498	8.720	8.891	9.068	Continuing	Continuing
MD40: Program Wide Support	133.233	15.027	17.228	13.356	-	13.356	12.809	14.400	17.917	18.532	Continuing	Continuing
Program MDAP/MAIS Code: 362												

Note

Decrease from FY 2022 to FY 2023 reflects completion of FY2022 Congressional Plus Up efforts for Test Infrastructure Improvements.

A. Mission Description and Budget Item Justification

Missile Defense Agency (MDA) utilizes a disciplined system engineering process to develop and integrate the Missile Defense System (MDS) into an effective, layered defense against ballistic missiles of all ranges during all phases of flight. This process consists of the following steps: Plan, Define, Design, Build, Test and Verify, Assess, and Deliver MDS Capability, followed by transfer of selected capabilities. The MDS Test Program Element (PE) is responsible for testing that provides critical data to: determine validity of models and simulations used to verify and assess MDS capabilities; validate that Elements and Components are properly designed, built, and integrated; and provide confidence that the MDS will perform as designed. Results from the Test and Verify step provide feedback into the Plan, Define, and Design steps to identify areas for system improvements. Key to the systems engineering process is Modeling and Simulation (M&S), which reflects the integrated operational system's performance. Confidence in M&S is based on a comprehensive Verification, Validation, and Accreditation (VV&A) process. The MDS Test Program, as documented in the Integrated Master Test Plan (IMTP), has a primary emphasis to provide the data necessary to verify and assess MDS capabilities in support of Technical Capability Declarations, and to anchor MDS M&S. As models are validated and accredited, MDA and the MDS Operational Test Agency (OTA) Team will utilize these models to assess MDS capabilities through a campaign of ground testing.

MDS Test Program Functions include:

- Represent MDA as the single test authority to the test and evaluation community, international cooperative program representatives, and other organization representatives.
- Develop and implement MDA test policy, standards, tools, products, and processes to enable effective tests while balancing MDA and element programmatic needs.
- Develop an IMTP that compiles all MDA test objectives, test schedules, and funding requirements from the year of execution through the Future Years Defense Program (FYDP) time period and beyond.
- Act as the single point of contact in MDA for all external ranges and common test resources.
- Provide, maintain, and develop common test resources and infrastructure required to execute tests in the MDA Test Program by leveraging element laboratories, ranges, executing agents, and functional expertise, as applicable.
- Certify that test personnel are trained and equipped to conduct safe and effective tests.
- Provide test personnel and support services to plan and execute tests.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Missile Defense Agency	Date: April 2022
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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 0603914C / <i>Ballistic Missile Defense Test</i>
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- Collect, archive, and distribute all MDA test data/information.

B. Program Change Summary (\$ in Millions)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Previous President's Budget	365.208	362.906	0.000	-	0.000
Current President's Budget	364.994	389.156	367.824	-	367.824
Total Adjustments	-0.214	26.250	367.824	-	367.824
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	26.250			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	-0.214	0.000			
• Missile Defeat and Defense Enhancement	0.000	0.000	0.000	-	0.000
• Other Adjustment	0.000	0.000	367.824	-	367.824

Change Summary Explanation

Increase of \$26.2 million in FY 2022 provides the Congressional Plus-ups for Test Infrastructure Improvements.

FY 2023 funding increase reflects the fact that the FY 2022 President's Budget request did not include out-year funding.

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency										Date: April 2022		
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0603914C / Ballistic Missile Defense Test				Project (Number/Name) MT04 / BMDS Test Program			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
MT04: BMDS Test Program	3,083.424	343.376	363.674	346.263	-	346.263	342.656	398.141	450.183	462.576	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Decrease from FY 2022 to FY 2023 reflects completion of FY2022 Congressional Plus Up efforts for Test Infrastructure Improvements.

A. Mission Description and Budget Item Justification

The Test Program provides consolidated Missile Defense Agency (MDA) capabilities and resources to support the management and execution of Missile Defense System (MDS) and Element-level testing.

The MDA Test Program is responsible for all MDS testing and relies on MDS Systems Engineering to provide the system test objectives that define the test architecture by developing, updating, coordinating, and assessing the Integrated Master Test Plan (IMTP). The MDA Test Program plans and executes MDS test events and develops the necessary test policy, test plans, and test infrastructure to conduct an effective test program. The goals of this budget project are to sustain and improve a robust testing program and to enhance Modeling and Simulation (M&S) efforts to provide, in conjunction with flight and ground testing, confidence to the Combatant Commanders that the missile defense system works.

Activities are grouped into six major areas: 1) Program Planning and Operations; 2) Flight Test; 3) Ground Test; 4) Test Infrastructure; 5) Engineering Test Analysis; and 6) Joint Emerging Operational Needs (JEON).

Note: MDA has modified the Ground-based Midcourse Defense (GMD) test program to reinforce the Agency's commitment to reducing concurrency risk in the development program and to inform the deployment of Ground-based Interceptors (GBIs) with improved capabilities. Due to the cancellation of the Remote Kill Vehicle (RKV) program, the GMD Flight Test Program is under review.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2021	FY 2022	FY 2023
Title: Program Planning and Operations	106.728	95.114	102.087
Articles:	-	-	-
Description: The MDS Test Program is responsible for the following Program, Planning, and Operational activities: - Maintain a professional and diverse civilian workforce to plan and execute flight, ground, and cyber test events. - Serve as the MDA Test Interface/Liaison to the Director, Operational Test and Evaluation (DOT&E), Deputy Assistant Secretary of Defense (DASD)(DT&E)), Joint Functional Component Command for Integrated Missile Defense (JFCC IMD), Joint Interoperability Test Command (JITC) and the Service Operational Test Agencies (OTA).			

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2021	FY 2022	FY 2023
<p>- Provide MDS OTA System Team resources and funding for civilian salaries and personnel support to conduct system-level test and evaluation activities of the entire MDS portfolio. The MDS OTA Team actively participates in test planning, conducts and reports of flight and ground test evaluation activities, and conducts cyber assessments of the MDS.</p> <p>- Implement cyber test requirements as directed by the National Defense Authorization Act (NDAA) for Fiscal Year 2016, Pub. L. No. 114-92, Sec. 1647 (a), DOT&E, and DASD(DT&E) to include planning, coordination, and execution of Cooperative Vulnerability and Penetration Assessments and Adversarial Assessments.</p> <p>- Establish, maintain, and execute the MDS Test program budget.</p> <p>- Provide IMTP cost modeling.</p> <p>- Provide day-to-day Test Functional Area (TFA) management.</p> <p>- Provide Test organizational property accountability.</p> <p>- Establish and standardize Test issuance documents.</p> <p>- Manage test contracting and acquisition activities as well as manpower activities ensuring proper integration of contracts, support agreements; oversight and maintenance of the Test Directorate Inter/Intra-agency Acquisition Review (IAR) database.</p> <p>- Provide oversight and coordination of test policy guidance to ensure compliance and strategic synchronization across the Test Directorate and MDA.</p> <p>- Manage travel, including travel to support IMTP flight and ground test events.</p> <p>Specific and/or unique accomplishments to each FY are as follows:</p> <p>FY 2022 Plans:</p> <p>- SEE ABOVE</p> <p>FY 2023 Plans:</p> <p>- SEE ABOVE</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement:</p> <p>Increase from FY 2022 to FY 2023 provides increased OTA requirements and transition of Test Functional Area support from Test Infrastructure accomplishment.</p>				
Title: Flight Test		3.646	4.002	8.185
Articles:		-	-	-
Description: The Flight Test Execution Program solely reflects the IMTP cost model. The program integrates, manages, and executes flight tests using certified personnel and standardized processes and products to support MDS fielding to the warfighter.				
<p>- Develop flight test training requirements for Test Directors and other console operators.</p> <p>- Implement cyber test requirements as directed by the NDAA for Fiscal Year 2016, Pub. L. No. 114-92, Sec. 1647 (a), Director, Operational Test and Evaluation (DOT&E), and Deputy Assistant Secretary of Defense, Developmental Test and Evaluation</p>				

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)			FY 2021	FY 2022	FY 2023
<p>(DT&E) to include planning, coordination, and execution of Cooperative Vulnerability and Penetration Assessments and Adversarial Assessments.</p> <ul style="list-style-type: none"> - Develop and manage the cyber test organization including plans, policy and strategy, resources, and tracking of information and coordinating cyber test schedules in support of Flight Tests. - Identify mission risks and implement mitigation practices as required ensuring safe and successful test outcomes. - Provide a Failure Response Team to ensure implementation of the response plan and capture lessons learned for process improvement. - Train test personnel for each flight test and maintain training records for all test personnel. - Train and resource System Mission Managers to lead Integrated Event Test Team mission management and readiness activities across all four test event phases for System and Element flight test and contingency operations. - Complete test planning for MDS Flight Test events. - Conduct mission planning and range coordination activities; provide communications security equipment and management for MDS Flight Test events. - Design and develop the Lessons Learned database. - Execute Flight Test events in accordance with the IMTP schedule. <p>Specific and/or unique accomplishments to each FY are as follows:</p> <p>FY 2022 Plans:</p> <ul style="list-style-type: none"> - SEE ABOVE. <p>FY 2023 Plans:</p> <ul style="list-style-type: none"> - SEE ABOVE. <p>FY 2022 to FY 2023 Increase/Decrease Statement:</p> <p>Increase from FY 2022 to FY 2023 is in accordance with the IMTP requirements.</p>					
<p>Title: Ground Test</p> <p align="right">Articles:</p> <p>Description: The Ground Test Execution Program plans, designs, and executes MDS ground tests in support of flight test risk reduction; MDS fielding decisions; and Doctrine, Organization, Training, Materiel, Leadership and Education, and Personnel and Facilities (DOTMLPF) assessments. In addition, enables the warfighter to effectively employ, maintain, and sustain the MDS and participate in the development of future missile defense capabilities through efficient ground testing.</p> <ul style="list-style-type: none"> - Conduct System Pre-Mission Tests (SPMTs) as required to support MDS Flight Test Risk Reduction Analysis. - Refine and continue development of the Ground Test Mission Directors, System Mission Manager and Mission Director Training Plan. 			36.308 -	52.409 -	51.038 -

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2021	FY 2022
<p>- Implement cyber test requirements as directed by the NDAA for FY 2018, Pub. L. No. 1159, *164, Director, Operational Test and Evaluation (DOT&E), and Deputy Assistant Secretary of Defense, Developmental Test and Evaluation (DT&E) to include planning, coordination, and execution of Cooperative Vulnerability and Penetration Assessments and Adversarial Assessments.</p> <p>- Develop and manage the cyber test organization including plans, policy and strategy, resources, and tracking of information and coordinating cyber test schedules in support of the IMTP.</p> <p>- Execute baseline Ground Tests in accordance with the IMTP.</p> <p>Maintain Ground Test Infrastructure:</p> <p>- Execute ground test planning activities supporting MDA test requirements and priorities to include test design, test integration, and international testing.</p> <p>- Verify all test assets and resources are reserved and operationally available to support each test event.</p> <p>- Coordinate requirements for laboratory facilities.</p> <p>- Coordinate and identify communication requirements (e.g., tactical data, truth data, test data, tactical voice and test voice).</p> <p>- Maintain the hardware-in-the-loop (HWIL) Labs and communication test assets.</p> <p>Specific and/or unique accomplishments to each FY are as follows:</p> <p>FY 2022 Plans:</p> <p>- Execute the following Ground Tests in FY 2022: GTD-08a NORTHCOM/USINDOPACOM (N/I), GTI-08b Sprint 1 (N/I), GTI-09 Sprint 1 EUCOM/CENTCOM (E/C), GTI-09 Sprint 2 (E/C), GTD-09 (E/C), GTI-ISR (21).</p> <p>FY 2023 Plans:</p> <p>- Execute the following Ground Tests in FY 2023: GTI-11 Sprint 1 (N/I) (MDS Ground Test), GTD-08b (N/I) (MDS Ground Test), GTI-11 Sprint 2 (N/I) (MDS Ground Test), and GTI-ISR (23) (MDS Ground Test).</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement:</p> <p>N/A</p>			
<p>Title: Test Infrastructure</p> <p align="right">Articles:</p> <p>Description: The MDS Test Program procures, maintains, and manages test resource infrastructure and provides all resources and requirements in support of a robust IMTP schedule in five primary functions:</p> <p>1) Flight Test Ranges and Infrastructure Upgrades</p> <p>2) Mobile Instrumentation Systems</p> <p>3) Airborne Sensors</p>		157.531 -	187.585 -
		163.839 -	

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2021	FY 2022
<p>4) Test Communications</p> <p>5) Data Management and Labs</p> <p>The primary function responsibilities are as follows:</p> <p>Flight Test Ranges and Infrastructure Upgrades:</p> <ul style="list-style-type: none"> - Manage, develop, sustain, and modernize MDA test facilities and infrastructure used to support MDS element and system-level flight tests, including range facilities, support vehicles and equipment, fixed and mobile sensors and instrumentation, test communications networks, and test situational awareness tools. - Develop and maintain test execution products that include flight vehicle and ground systems telemetry verification capabilities, good target call data and displays, flight safety data processing, sensor pointing, and data driven Subject Matter Expert (SME) displays. - Facilities Sustainment Restoration/Modernization (FSRM) Funds are required to repair, upgrade, and sustain numerous facilities, test infrastructure, and equipment maintained by MDA world-wide. <p>Mobile Instrumentation Upgrades:</p> <ul style="list-style-type: none"> - Provide Sea Based Systems (SBS) continued sustainment of test instrumentation ships, Pacific Collector and Pacific Tracker, and associated telemetry and radar systems. <p>Airborne Sensors:</p> <ul style="list-style-type: none"> - Maintain existing Gulfstream Aircraft (HALOs) that collect radiometric and photo-documentary performance data for strategic and tactical defense systems flight and ground tests. - Three replacements are HALO Fleet Renewal Program procured in FY 2019; Modification work ongoing with HALO-IR scheduled to be completed by 1Q FY 2022 and HALO-IIR and HALO-IIIR completed by 1Q FY 2023. <p>Test Communications:</p> <ul style="list-style-type: none"> - Provide operations and maintenance support for the Mission Voice Communications (MVC). - Maintain accreditation for the Transportable Telemetry Systems (TTS), Pacific Collector Range Safety System (PCRSS), and the MVC. - Manage, develop, maintain, and modernize the Ground Test (GT) communications network to support MDS ground testing. <p>Data Management and Labs:</p> <ul style="list-style-type: none"> - Establish authority and maintain configuration control of the test baseline. - Develop, update, coordinate and deliver the IMTP, coordinated within MDA and External stakeholders (Director, Operational Test and Evaluation (DOT&E); the Deputy Assistant Secretary of Defense for Developmental Test and Evaluation (DASD(DT&E))); 			

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2021	FY 2022
<p>the Joint Functional Component Command for Integrated Missile Defense (JFCC IMD); the Service Operational Test Agencies (OTAs)); and the Joint Interoperability Test Command (JITC)); and provides an affordable and executable test plan to meet Warfighter needs and National Security commitments.</p> <ul style="list-style-type: none"> - Coordinate the IMTP Special Access Programs (SAP) Annex with respect to changes to SAP Program Test Baseline and synchronize with the collateral IMTP. - Manage the approved test baseline by assessing all proposed changes to the MDS Test Schedule and Test Configurations for each MDS test event identified in the IMTP. - Support the Developmental Baseline Reviews and the annual MDS Accountability Reviews to assess baseline execution risk and verify MDS components are consistent with the approved test baseline. - Update and maintain the classified Test Resource Mission Planning-Tool (TRMP-T(C)) database. - Execute Flight Test Design Analysis ensuring test designs are safe and sufficient to meet test objectives. - Develop and maintain integrated test tools to support Truth Data Requirements Documents, Truth Data Packages, on-site Truth Quick-Look product development, pre- and post-test analysis test planning, and resource de-confliction; Integrated Data Management Plans (IDMPs), Data Handling Plans (DHPs), Cyber documentation, data planning and management, library operations, deployment process; infrastructure requirements process; and test operations support. - Provide analytical capability for Flight and Ground test planning to include: test design feasibility assessments, truth data and sensor analysis, truth data requirements documentation and data packages; flight safety analysis and flight safety data packages; and telemetry link margin, collision avoidance, and pre- and post-test trajectory analyses. - Review MDS component programs' content on a quarterly basis to ensure consistency with the approved IMTP. - Maintain and extend the Directorate of Test Support System (DTSS) classified Computer Network Defense Service Provider (CNDSP) to support network cyber defense for ground test network systems. Continue to define cyber investments, risks and benefits used to reduce vulnerabilities and protect critical administrative and test data. - Maintain accreditation of the Orion Voice Switch Conferencing System (VSCS). - Co-chair the Signature Working Group to review all signature models and identify technical limitations associated with radar and optical signatures used to support MDS ground and flight testing. - Manage the Missile Defense Data Center (MDDC) Program and its library, operations, and infrastructure providing centralized data management, archival, and distribution services. - Provide Range safety risk analysis through model development of target and interceptor debris assessments to determine mission risk assessment for mission risk decisions. - Operations and Maintenance (O&M) for test communications networks and data acquisition, display, and distribution systems in support of flight and ground test events <p>Specific and/or unique accomplishments to each FY are as follows:</p>			
			FY 2023

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2021	FY 2022	FY 2023
<p>FY 2022 Plans:</p> <ul style="list-style-type: none">- Complete development of HALO-IR and declare Initial Operational Capability (IOC) in support of the Missile Defense System (MDS) test program in 1QFY22; Add next Gen Sensor to HALO-IR and convert over to HALO-IIR configuration to allow for total redundancy throughout the fleet; Retire HALO-I once HALO-IR reaches Full Operational Capability (FOC) in 3Q FY 2022.- Initiate the phased modernization of the X-band Transportable Radar (XTR) in FY 2022.- Continue Wake Island projects, to include; replace heavy equipment; housing design; kitchen/dining design; expand solid waste accumulation capacity; vehicle wash rack facility design.- Begin Meck Island Pipe Pier replacement; Target Launch stand pad construction.- Begin Kauai Test Facility (KTF) Power plant Upgrades.- Establish a White Sands Missile Range (WSMR) infrastructure footprint.- Begin first phase of Meck Island Electrical Distribution Replacement.- Establish the Mission Execution and Display Distribution System (MEDDS) capability to meet flight and ground test execution requirements.- Support Facilities, Sustainment, Restoration, and Modernization (FSRM) efforts.- Complete repairs of White Sands Missile Range Building 312 to house the Transportable Telemetry System/Early Launch Tracking System String Zero, meeting cyber compliance requirements for these programs.- Complete major modernization efforts required at Meck Island, Reagan Test Site, to maintain capability to support MDS testing.- Modernize multiple facilities and instrumentation systems at the Pacific Missile Range Facility required to maintain the capability required to support MDS Testing.- Complete repairs to infrastructure at the Kauai Test Facility to launch targets required to support MDS testing. <p>FY 2023 Plans:</p> <ul style="list-style-type: none">- Complete development of HALO-IIR and HALO-IIIR, and declare Initial Operational Capability (IOC) in support of the MDS test program; Retire HALO-II and HALO-IV once HALO-IIR and HALO-IIIR reach IOC.- Continue the phased modernization of the XTR in FY 2023.- Continue FSRM efforts to meet mission facility condition requirements; to include, Meck Island Pipe Pier Replacement and Bldg 5050 & 5098 HVAC replacements.- Continue the Meck Island Electrical Distribution Replacement.- Perform study for future Pacific Tracker/Pacific Collector replacement program.- Initiate Agency Ground Test Facility Infrastructure project.- Provide resources for the Department of Defense - Defense of Guam Architecture solution. <p>FY 2022 to FY 2023 Increase/Decrease Statement:</p>				

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2021	FY 2022	FY 2023
Decrease from FY2022 to FY2023 reflects the FY2022 Congressional Plus Up for Test Infrastructure upgrade efforts at test ranges required to support MDS testing.				
<p>Title: Engineering and Test Analysis</p> <p>Articles:</p> <p>Description: The Engineering and Test Analysis effort provides essential MDS ground and flight test event planning, execution, and evaluation activities for each test event:</p> <ul style="list-style-type: none">- Design test architecture, define test objectives and evaluation criteria, and define target requirements appropriate to the data collection requirements to assess MDS performance and anchor Models and Simulations.- Produce threat data for MDS ground and flight tests.- Coordinate with MDS OTA to address test issues, disposition them, coordinate them, and recommend action plans to achieve closure.- Deliver HWIL M&S integration test cases.- Integrate, test, and deliver end-to-end MDS simulations supporting ground test missions.- Analyze system-level interoperability.- Conduct modeling and technical analysis for Combatant Command Wargames and Exercises.- Utilize M&S for pre-test assessment and post-test review, and M&S updates.- Provide test configuration management risk assessments and anomaly/deficiency review, assessment and closure.- Analyze test results to identify verification and validation data collection shortfalls and reassign objectives to future test events as required.- Document MDS test observations for system-level test anomalies and coordinate the resulting Discrepancy Reports within the Failure Reporting, Analysis, and Corrective Action System (FRACAS).- Upgrade test analysis tools (e.g., Modular Analysis and Reporting Suite (MARS)) to enhance analysis capability and efficiency. <p>Specific and/or unique accomplishments to each FY are as follows:</p> <p>FY 2022 Plans:</p> <ul style="list-style-type: none">- SEE ABOVE <p>FY 2023 Plans:</p> <ul style="list-style-type: none">- SEE ABOVE <p>FY 2022 to FY 2023 Increase/Decrease Statement:</p> <p>Decrease from FY 2022 to FY 2023 is in accordance with the IMTP requirements.</p>		18.230 -	24.564 -	21.114 -
Title: Joint Emerging Operational Need (JEON)		20.933	0.000	0.000

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023
Articles: Description: JEON Testing. - JEON testing concluded in FY 2021. FY 2022 Plans: N/A FY 2023 Plans: N/A FY 2022 to FY 2023 Increase/Decrease Statement: N/A	-	-	-
Accomplishments/Planned Programs Subtotals	343.376	363.674	346.263

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

Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• 0603890C: <i>BMD Enabling Programs</i>	607.167	623.644	591.847	-	591.847	613.589	625.761	635.633	640.374	Continuing	Continuing

Remarks

D. Acquisition Strategy

The MDS Test Program acquisition strategy is consistent with the MDA capabilities-based acquisition strategy that emphasizes testing, evolutionary acquisition, and knowledge-based funding. Test directs a team of various internal staff (government and scientific, engineering and technical assistance support), executing agents including DoD agencies, Service Organizations, Laboratories and Program Offices, Federally Funded Research and Development Center (FFRDC) and other MDA programs to execute the various diverse efforts within the MDS test program through competition. When a specific effort/activity being conducted, acquired, or maintained requires the use of an executing agent, respective headquarter regulations are used to conform the acquisition strategy.

The MDA IMTP establishes and documents the test requirements for the MDS with the specific focus on collecting the data needed for the Verification, Validation, and Accreditation (VV&A) of the MDS Models and Simulations. This paradigm uses critical factor analysis to drive test design, planning, and execution for accrediting M&S, which is used to validate and assess system performance. With this test approach, MDA will establish confidence that the M&S used to evaluate the MDS represent real world behavior, thereby enabling simulation-based performance assessment to verify system functionality.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
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Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	N/A
Remarks N/A															
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	N/A
Remarks N/A															
Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Planning and Operations - Civilian Salaries	Allot	MDA : AL	0.000	32.724	Nov 2020	31.326	Nov 2021	32.580	Nov 2022	-		32.580	Continuing	Continuing	Continuing
Program Planning and Operations - IMTP Planning and Data Management Tools	C/FP	Various : AL	140.088	0.000		0.000		0.000		-		0.000	0.000	140.088	0.000
Program Planning and Operations - Lab Analysis Infrastructure	MIPR	MIT-LL/Aerospace : AL/CA/MA	73.204	0.000		0.000		0.000		-		0.000	0.000	73.204	0.000
Program Planning and Operations - MT Contractor Support	C/CPFF	Various : AL/VA/CO/MA	0.000	0.000		35.565	Nov 2021	38.951	Nov 2022	-		38.951	Continuing	Continuing	Continuing

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Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Planning and Operations - Operational Test Agency	MIPR	ATEC, COTF, AFOTEC, JITC, CCDC, DAC : AL/CO/MD/TX/VA/AZ	139.851	24.509	Nov 2020	25.315	Nov 2021	26.279	Nov 2022	-		26.279	Continuing	Continuing	Continuing
Program Planning and Operations - Support to Flight Testing	C/CPAF	Northrop Grumman/ Lockheed Martin : AL/CO	72.822	0.000		0.000		0.000		-		0.000	0.000	72.822	0.000
Program Planning and Operations - Support to Ground Testing	C/CPAF	MDIOC/JRDC/IRES/ Northrop Grumman : AL/CO/VA/DC	28.675	0.000		0.000		0.000		-		0.000	0.000	28.675	0.000
Program Planning and Operations - Support to Test Resources	C/CPAF	Various : AL	30.969	0.000		0.000		0.000		-		0.000	0.000	30.969	0.000
Program Planning and Operations - Test Functional Management Office	C/CPFF	Various : AL/VA/CO/MA	506.362	49.495	Nov 2020	2.908	Nov 2021	3.106	Nov 2022	-		3.106	Continuing	Continuing	Continuing
Program Planning and Operations - Test Support Operations	C/CPFF	Various : Various	0.000	0.000		0.000		1.171	Nov 2022	-		1.171	Continuing	Continuing	Continuing
Flight Test - IMTP Flight Test	C/Various	Various : L3, ASI, Jacobs / OK / CO	0.000	0.000		1.181	Oct 2021	1.751	Oct 2022	-		1.751	Continuing	Continuing	Continuing
Flight Test - IMTP Flight Testing	MIPR	Various OGAs : AL/CO/CA/AK/NM/HI	344.396	3.646	Oct 2020	2.821	Oct 2021	6.434	Oct 2022	-		6.434	Continuing	Continuing	Continuing
Flight Test - Layered Homeland Defense	MIPR	Various OGA : AL / CO / AK / NM / HI	0.000	0.000		0.000		0.000		-		0.000	0.000	0.000	0.000
Ground Test - Advanced Research Center	C/CPIF	Davidson : AL	0.000	0.000		0.000		22.982	Nov 2022	-		22.982	Continuing	Continuing	Continuing
Ground Test - Ground Test Infrastructure	MIPR	Various : CA/CO/AL/ NM	90.164	30.618	Oct 2020	26.024	Oct 2021	24.243	Oct 2022	-		24.243	Continuing	Continuing	Continuing
Ground Test - Ground Test Infrastructure 2	C/CPIF	JACOBS TECHNOLOGY INC. : Various	0.000	0.000		0.000		2.700	Nov 2022	-		2.700	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603914C / Ballistic Missile Defense Test				Project (Number/Name) MT04 / BMDs Test Program					
Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Ground Test - Ground Test Non-IMTP	C/CPAF	COLSA CORPORATION : AL	0.000	4.058	Nov 2020	0.000		0.000		-		0.000	0.000	4.058	0.000
Ground Test - IMTP Ground Testing	MIPR	AvMC, COLSA : AL/CA	73.628	1.632	Oct 2020	1.255	Oct 2021	1.113	Oct 2022	-		1.113	Continuing	Continuing	Continuing
Ground Test - IRES Test resources & Event Funding	C/CPFF	JACOBS TECHNOLOGY INC. : Various	0.000	0.000		25.130	Oct 2021	0.000		-		0.000	0.000	25.130	0.000
Test Infrastructure - Ground Test Infrastructure	MIPR	Naval Information Warfare Systems Command : AL/CA	27.501	0.000		0.000		0.000		-		0.000	0.000	27.501	0.000
Test Infrastructure - ARC Facilities	MIPR	GSA - GENERAL SERVICES ADMINISTRATION (GSA) : TBD	0.000	0.000		0.000		3.400	Nov 2022	-		3.400	Continuing	Continuing	Continuing
Test Infrastructure - Airborne Optics Mobile Assets	C/CPIF	L3 : OK	307.164	13.151	Feb 2021	32.973	Oct 2021	20.837	Oct 2022	-		20.837	Continuing	Continuing	Continuing
Test Infrastructure - Compliance and Accreditations	C/CPIF	NORTHROP GRUMMAN : CO	0.000	1.065	Nov 2020	1.500	Nov 2021	1.451	Nov 2022	-		1.451	Continuing	Continuing	Continuing
Test Infrastructure - Core Ground Test Labs and HWILS	C/IDIQ	Colsa/CCDC Aviation & Missile Center : AL/MD/FL/CA/OH/CO	193.698	24.292	Nov 2020	0.000		0.000		-		0.000	0.000	217.990	0.000
Test Infrastructure - Enhanced GT Capability Assets	C/IDIQ	Colsa/Northrop Gurmman : AL/CO/FL/MD/HI	41.604	0.000		0.000		0.000		-		0.000	0.000	41.604	0.000
Test Infrastructure - Facilities Sustainment, Restoration & Modernization	MIPR	SMDC/Northrup Grumman/Colsa : AL/CO/NM	47.852	0.203	Nov 2020	0.695	Nov 2021	0.585	Nov 2022	-		0.585	Continuing	Continuing	Continuing
Test Infrastructure - Flight Test Communications	MIPR	NAWCAD, CCDC, SAIC, NRL, Boeing :	0.000	30.314	Nov 2020	16.645	Nov 2021	20.941	Nov 2022	-		20.941	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603914C / Ballistic Missile Defense Test				Project (Number/Name) MT04 / BMDs Test Program					
Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
		WSMR / NSWC / CO / AL / NM / MD													
Test Infrastructure - Flight Test Non-IMTP	MIPR	CCDC - AvMC : AL / GA	0.000	0.607	Nov 2020	0.574	Nov 2021	0.000		-		0.000	0.000	1.181	0.000
Test Infrastructure - Flight Test Ranges and Infrastructure	MIPR	WSMR/SNL/PMRF/ ATEC : AL /CA / CO/ FL / HI / NM	123.952	42.828	Nov 2020	16.706	Nov 2021	16.535	Nov 2022	-		16.535	Continuing	Continuing	Continuing
Test Infrastructure - Ground Test Communications	MIPR	CCDC, SAIC : AL / CO	0.000	8.999	Nov 2020	4.274	Oct 2021	3.419	Oct 2022	-		3.419	Continuing	Continuing	Continuing
Test Infrastructure - Ground Test Facility Infrastructure	Various	TBD : Various	0.000	0.000		0.000		9.656	Nov 2022	-		9.656	Continuing	Continuing	Continuing
Test Infrastructure - Guam Defense Test	Various	TBD : Various	0.000	0.000		0.000		7.000	Nov 2022	-		7.000	Continuing	Continuing	Continuing
Test Infrastructure - IMTP Planning & Data Management Tools	MIPR	DOD - USA - COMBAT CAPABILITIES DEVELOPMENT COMMAND (CCDC) AVIATION AND MISSILE CENTER (AVMC) : AL	81.428	7.362	Nov 2020	6.268	Nov 2021	2.868	Nov 2022	-		2.868	Continuing	Continuing	Continuing
Test Infrastructure - Missile Defense Data Center	C/CPFF	ANALYTICAL SERVICES, INC. : AL	0.000	0.000		0.000		27.895	Dec 2022	-		27.895	Continuing	Continuing	Continuing
Test Infrastructure - Range and Communication Instrumentation	MIPR	WSMR, CCDC, : AL / FL / NM	0.000	0.551	Nov 2020	4.562	Nov 2021	5.308	Nov 2022	-		5.308	Continuing	Continuing	Continuing
Test Infrastructure - Sea Based Mobile Assets	MIPR	MARAD/NAWCAD : AL / CA / CR / MD / OR / DC	127.458	14.282	Nov 2020	14.807	Nov 2021	16.784	Nov 2022	-		16.784	Continuing	Continuing	Continuing
Test Infrastructure - Support to Test Resources	MIPR	Various : AL	146.104	7.644	Nov 2020	0.000		0.000		-		0.000	0.000	153.748	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603914C / Ballistic Missile Defense Test				Project (Number/Name) MT04 / BMDS Test Program					
Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Test Infrastructure - Tech Refresh	MIPR	Various : AL / VA / CO / MA	0.000	0.000		33.096	Nov 2021	24.415	Nov 2022	-		24.415	Continuing	Continuing	Continuing
Test Infrastructure - Test Communications	C/IDIQ	ASI/WSMR : Gray Research/NRL/NAWC/CA/MD/DC/NM/AL/MA	175.340	6.233	Nov 2020	0.000		0.000		-		0.000	0.000	181.573	0.000
Test Infrastructure - Test Communications MDA contracts	C/CPFF	ASI : AL	0.000	0.000		29.235	Nov 2021	0.000		-		0.000	0.000	29.235	0.000
Test Infrastructure - Test Infrastructure Improvements	Various	TBD : TBD	0.000	0.000		26.250	Nov 2021	0.000		-		0.000	Continuing	Continuing	Continuing
Test Infrastructure - Test Support Comms	MIPR	Various : Various	0.000	0.000		0.000		2.745	Nov 2022	-		2.745	Continuing	Continuing	Continuing
Engineering and Test Analysis - CSS Support	C/CPFF	TEAMS : AL	40.826	4.616	Nov 2020	5.657	Nov 2021	4.910	Nov 2022	-		4.910	Continuing	Continuing	Continuing
Engineering and Test Analysis - FFRDC/UARC	MIPR	MITRE : VA	3.187	0.000		0.000		0.000		-		0.000	0.000	3.187	0.000
Engineering and Test Analysis - FFRDC/UARC 2	MIPR	Aerospace : CA	0.840	0.000		0.000		0.000		-		0.000	0.000	0.840	0.000
Engineering and Test Analysis - Industry Support	C/CPAF	Boeing : AL	26.695	0.000		0.000		0.000		-		0.000	0.000	26.695	0.000
Engineering and Test Analysis - Industry Support - NME	C/CPAF	Northrop Grumman-JRDC : CO, AL	2.048	0.000		0.000		0.000		-		0.000	0.000	2.048	0.000
Engineering and Test Analysis - Industry Support 2	C/CPAF	COLSA : AL, CO	2.332	1.887	Nov 2020	2.081	Nov 2021	2.122	Nov 2022	-		2.122	Continuing	Continuing	Continuing
Engineering and Test Analysis - OGA Support	MIPR	DOD - USA - COMBAT CAPABILITIES DEVELOPMENT COMMAND (CCDC) AVIATION AND	125.037	11.727	Nov 2020	16.233	Nov 2021	13.029	Nov 2022	-		13.029	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603914C / Ballistic Missile Defense Test				Project (Number/Name) MT04 / BMDS Test Program					
Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
		MISSILE CENTER (AVMC) : AL													
Engineering and Test Analysis - OGA Support - NME	MIPR	LTPO : AL	5.114	0.000		0.000		0.000		-		0.000	0.000	5.114	0.000
Engineering and Test Analysis - OGA Support 2	MIPR	DOD - USA - COMBAT CAPABILITIES DEVELOPMENT COMMAND (CCDC) AVIATION AND MISSILE CENTER (AVMC) : AL	0.000	0.000		0.593	Nov 2021	1.053	Nov 2022	-		1.053	Continuing	Continuing	Continuing
Joint Emerging Operational Need (JEON) - JEON	SS/IDIQ	Lockheed Martin : Sunnyvale CA/ Huntsville, AL	105.085	20.933	Nov 2020	0.000		0.000		-		0.000	0.000	126.018	0.000
Subtotal			3,083.424	343.376		363.674		346.263		-		346.263	Continuing	Continuing	N/A
Remarks Recategorized and streamlined MDS Test cost category content to better align test priorities.															
Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	N/A
Remarks N/A															
			Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			3,083.424	343.376		363.674		346.263		-		346.263	Continuing	Continuing	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency							Date: April 2022			
Appropriation/Budget Activity 0400 / 4			R-1 Program Element (Number/Name) PE 0603914C / <i>Ballistic Missile Defense Test</i>			Project (Number/Name) MT04 / <i>BMDS Test Program</i>				
	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract	
Remarks Award Date reflects date of first obligation. Additional obligations may incrementally occur throughout the year.										

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Missile Defense Agency										Date: April 2022									
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0603914C / Ballistic Missile Defense Test					Project (Number/Name) MT04 / BMDS Test Program									
Significant Event Complete ▲		Milestone Decision Complete ★		Element Test Complete ◆		System Level Test Complete ●				Complete Activity ◆									
Significant Event Planned △		Milestone Decision Planned ☆		Element Test Planned ◇		System Level Test Planned ○				Planned Activity ◇									
					FY 2021		FY 2022		FY 2023		FY 2024		FY 2025		FY 2026		FY 2027		
FTM-44 (AEGIS 5.1, DT Intercept Flight Test)					▲														
TBG-1 (OTHER, DT Tracking Exercise Flight Test)					▲														
Israeli Cooperative Intercept Flight Test 1 - FY 2021					◆	◆	◆	◆											
Israeli Cooperative Intercept Flight Test 2 - FY 2021					◆	◆	◆	◆											
GTI-21 Sprint 2 (MDS Ground Test)						◆													
GTI-21 Sprint 1 (JEON) TH 4.0 (MDS Ground Test)						◆	◆	◆											
FS-21 E1 (AEGIS 5.1, DT Interceptor Only Flight Test)							▲												
FS-21 E2 (AEGIS 5.1, DT Target Only Flight Test)							▲												
FS-21 E3 (AEGIS 5.1, DT Target Only Flight Test)							▲												
FS-21 E4 (AEGIS 5.1, DT Intercept Flight Test)							▲												
FTM-31 E1 (AEGIS SBT, DT/OT Intercept Flight Test)							▲												
FS-21 E5 (AEGIS 5.1, DT/OT Intercept Flight Test)							▲												
ASD-1 (MDS Ground Test)							◆												
TH CTV-01 (LTPO, DT Interceptor Only Flight Test)								▲											
GM BVT-03 (GM, DT Interceptor Only Flight Test)								▲											
HAWC-4 (OTHER, DT Tracking Exercise Flight Test)								▲											
HAWC-5 (OTHER, DT Tracking Exercise Flight Test)								▲											
FTM-33 (AEGIS SBT, DT/OT Intercept Flight Test)								▲											
SM CTV-04 (AEGIS 5.1, DT Interceptor Only Flight Test)								▲											
ASD-2 (MDS Ground Test)								◆											
GTI-ISR (21) (MDS Ground Test)									◆										
FTP-21 E1 (P8.1.1)(LTPO, DT Intercept Flight Test)									▲										
FTX-43 (OTHER, DT Tracking Exercise Flight Test)									▲										
Israeli Cooperative Intercept Flight Test - FY 2022										◆	◆	◆	◆						

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Missile Defense Agency										Date: April 2022																			
Appropriation/Budget Activity 0400 / 4										R-1 Program Element (Number/Name) PE 0603914C / Ballistic Missile Defense Test										Project (Number/Name) MT04 / BMDS Test Program									
Significant Event Complete ▲					Milestone Decision Complete ★					Element Test Complete ◆					System Level Test Complete ●					Complete Activity ◆									
Significant Event Planned △					Milestone Decision Planned ☆					Element Test Planned ◇					System Level Test Planned ○					Planned Activity ◇									
										FY 2021		FY 2022		FY 2023		FY 2024		FY 2025		FY 2026		FY 2027							
FTT-21 (TH, DT Intercept Flight Test)														△															
TH CTV-01a (LTPO, DT Interceptor Only Flight Test)														◆															
GTI-08a (N/I) (MDS Ground Test)														◇															
FTX-42 (OTHER, DT Target Only Flight Test)														△															
TBG-2 (OTHER, DT Tracking Exercise Flight Test)														△															
FTP-18 (I8-3) (OTHER, OT Intercept Flight Test)														△															
FTP-20 (I8-5) (OTHER, OT Intercept Flight Test)														△															
FTP-19 (I8-4) (OTHER, OT Intercept Flight Test)														△															
FEM-01														△															
FTP-21 E2 (P8.1.1)(LTPO, DT Intercept Flight Test)														△															
JFC-1 (OTHER, DT Tracking Exercise Flight Test)														◇															
GCN 8B7 SICO														◇															
FTP-21 E3 (P8.1.1)(LTPO, DT Intercept Flight Test)														◇															
FTX-26 (OT) (SN, OT Target Only Flight Test)															△														
GTI-09 Sprint 1 (E/C) (MDS Ground Test)															◇														
PACIFIC DRAGON-22 E1 (AEGIS 5.0, DT/OT Intercept Flight Test)															△														
PACIFIC DRAGON-22 E2 (AEGIS 5.0, DT/OT Tracking Exercise Flight Test)															△														
PACIFIC DRAGON-22 E3 (AEGIS 5.0, DT/OT Tracking Exercise Flight Test)															△														
SICO-8a-1 (MDS Ground Test)															◇														
FTX-45															△														
FTP-25 (P8.1.5) (OTHER, OT Intercept Flight Test)															△														
FTP-23 (LTPO, DT/OT Intercept Flight Test)																△													
FTP-24 E1 (LTPO, DT Intercept Flight Test)																△													
GTD-08a (N/I) (MDS Ground Test)																◇													

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Missile Defense Agency										Date: April 2022																			
Appropriation/Budget Activity 0400 / 4										R-1 Program Element (Number/Name) PE 0603914C / Ballistic Missile Defense Test										Project (Number/Name) MT04 / BMDS Test Program									
Significant Event Complete ▲					Milestone Decision Complete ★					Element Test Complete ◆					System Level Test Complete ●					Complete Activity ◆									
Significant Event Planned △					Milestone Decision Planned ☆					Element Test Planned ◇					System Level Test Planned ○					Planned Activity ◇									
										FY 2021		FY 2022		FY 2023		FY 2024		FY 2025		FY 2026		FY 2027							
TBG-3 (OTHER, DT Tracking Exercise Flight Test)														△															
JFTM-07 E1 (JAPAN, DT Tracking Exercise Flight Test)														△															
JFTM-07 E2 (JAPAN, DT Intercept Flight Test)														△															
JFTM-07 E3 (JAPAN, DT Tracking Exercise Flight Test)														△															
JFTM-07 E4 (JAPAN, DT Intercept Flight Test)														△															
FTP-21 E4 (P8.1.1)(LTPO, DT Intercept Flight Test)														△															
SICO -09-1														◇															
SICO-09-2														◇															
GTD-07b (Aegis Ashore)														◇															
FTP-24 E2 (LTPO. P8.1 OT-2b)														△															
FTP-24 E3 (LTPO. P8.1 OT-2c)														△															
Israeli Cooperative Intercept Flight Test 2 - FY 2023														◇	◇	◇	◇												
Israeli Cooperative Intercept Flight Test 1 - FY 2023														◇	◇	◇	◇												
GTI-09 Sprint 2 (E/C) (MDS Ground Test)														◇															
FTX-40 (AEGIS 5.1, DT Tracking Exercise Flight Test)														△															
SICO-8a2 (MDS Ground Test)														◇															
FTM-31 E1a (AEGIS SBT, DT/OT Intercept Flight Test)														◇															
SICO-09-3 Ground Test														◇															
SICO-08a-02														◇															
FTT-25 (TH, DT/OT Intercept Flight Test)															△														
SICO 9-4 Ground Test															◇														
GTI-ISR (23) (MDS Ground Test)																◇													
FTX-44 (OTHER, DT Target Only Flight Test)																△													
FTG-12 (GM, DT/OT Intercept Flight Test)																△													

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Missile Defense Agency										Date: April 2022													
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0603914C / Ballistic Missile Defense Test					Project (Number/Name) MT04 / BMDS Test Program													
Significant Event Complete ▲		Significant Event Planned △		Milestone Decision Complete ★		Milestone Decision Planned ☆		Element Test Complete ◆		Element Test Planned ◇		System Level Test Complete ●				System Level Test Planned ○		Complete Activity ◆				Planned Activity ◇	
					FY 2021		FY 2022		FY 2023		FY 2024		FY 2025		FY 2026		FY 2027						
GTI-08b (N/I)											◇												
FTM-32 (AEGIS SBT, DT/OT Intercept Flight Test)											△												
GTI-08b Sprint 1 (N/I) (MDS Ground Test)											◇												
Israeli Cooperative Intercept Flight Test 1 - FY 2024											◇	◇	◇	◇									
GTI-ASI (24) (MDS Ground Test)											◇												
FTX-28 E2 (TH, DT/OT Tracking Exercise Flight Test)											△												
FTX-28 E1 (TH, DT/OT Tracking Exercise Flight Test)											△												
FTX-23 (AEGIS 5.1, DT Tracking Exercise Flight Test)											△												
FTM-43 (AEGIS 5.1, DT/OT Intercept Flight Test)											△												
FTX-28 E3 (TH, DT/OT Tracking Exercise Flight Test)											△												
GTD-08b (N/I)											◇												
FTM-37 (AEGIS 5.1, DT/OT Intercept Flight Test)												△											
PACIFIC DRAGON-24 E1 (Aegis 5.0, DT/OT Tracking Exercise Flight Test)													△										
PACIFIC DRAGON-24 E2 (Aegis 5.0, DT/OT Intercept Flight Test)													△										
PACIFIC DRAGON-24 E3 (Aegis 5.0, DT/OT Simulated Engagement)													△										
GTI-13 Sprint 1 (N/I) (MDS Ground Test)														◇									
JFTX-01 E1 (JAPAN, DT Tracking Exercise Flight Test)														△									
JFTX-01 E2 (JAPAN, DT Tracking Exercise Flight Test)														△									
Israeli Cooperative Intercept Flight Test - FY 2025														◇	◇	◇	◇						
GTI-ISR (25) (MDS Ground Test)															◇								
GTI-12 Sprint 1 (E/C) (MDS Ground Test)																◇							
GTI-13 Sprint 2 (N/I) (MDS Ground Test)																◇							
FS-25 E-1(AEGIS 5.1, DT/OT Tracking Exercise Flight Test)																◇							
FS-25 E-2(AEGIS 5.1, DT/OT Intercept Flight Test)																◇							

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Missile Defense Agency										Date: April 2022									
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0603914C / Ballistic Missile Defense Test					Project (Number/Name) MT04 / BMDs Test Program									
Significant Event Complete ▲		Milestone Decision Complete ★		Element Test Complete ◆		System Level Test Complete ●		Complete Activity ◆											
Significant Event Planned △		Milestone Decision Planned ☆		Element Test Planned ◇		System Level Test Planned ○		Planned Activity ◇											
					FY 2021		FY 2022		FY 2023		FY 2024		FY 2025		FY 2026		FY 2027		
FTM-30 (AEGIS 5.1, DT/OT Intercept Flight Test)																			
GTD-13 (N/I) (MDS Ground Test)															△				
GTI-10 (E/C) (MDS Ground Test)															◇				
GTI-12 Sprint 2 (E/C) (MDS Ground Test)															◇				
GTD-10 (E/C) (MDS Ground Test)																◇			
GTD-12 (E/C) (MDS Ground Test)																◇			
GTI-ASI (26) (MDS Ground Test)																	◇		
FTM-40 (AEGIS 5.1, DT/OT Intercept Flight Test)																	△		
TH CTV-03 (TH, DT Interceptor Only Flight Test)																	△		
PACIFIC DRAGON-26 E1 (Aegis 5.0, DT/OT Tracking Exercise Flight Test)																	△		
PACIFIC DRAGON-26 E2 (Aegis 5.0, DT/OT Intercept Flight Test)																	△		
PACIFIC DRAGON-26 E3 (Aegis 5.0, DT/OT Simulated Engagement)																	△		
GTI-14 Sprint 1 (N/I)																	◇		
FTM-41 (AEGIS 5.1, DT/OT Intercept Flight Test)																		△	
Israeli Cooperative Intercept Flight Test - FY 2027																	◇	◇	
FTG-16 (GM, DT Intercept Flight Test)																		△	
GTI-14 (N/I) Sprint 2 (MDS Ground Test)																		◇	
GTI-15 Sprint 1 (E/C) (MDS Ground Test)																		◇	
FTT-22 (TH, DT/OT Intercept Flight Test)																		△	
FTG-17 (GM, DT/OT Intercept Flight Test)																		△	
GTD-14 (N/I) (MDS Ground Test)																		◇	
GTI-ISR (27) (MDS Ground Test)																		◇	
FTM-42 (AEGIS 5.1, DT/OT Intercept Flight Test)																		△	

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Missile Defense Agency			Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603914C / <i>Ballistic Missile Defense Test</i>	Project (Number/Name) MT04 / <i>BMDs Test Program</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
FTM-44 (AEGIS 5.1, DT Intercept Flight Test)	1	2021	1	2021
TBG-1 (OTHER, DT Tracking Exercise Flight Test)	1	2021	1	2021
Israeli Cooperative Intercept Flight Test 1 - FY 2021	1	2021	4	2021
Israeli Cooperative Intercept Flight Test 2 - FY 2021	1	2021	4	2021
GTI-21 Sprint 2 (MDS Ground Test)	2	2021	2	2021
GTI-21 Sprint 1 (JEON) TH 4.0 (MDS Ground Test)	2	2021	4	2021
FS-21 E1 (AEGIS 5.1, DT Interceptor Only Flight Test)	3	2021	3	2021
FS-21 E2 (AEGIS 5.1, DT Target Only Flight Test)	3	2021	3	2021
FS-21 E3 (AEGIS 5.1, DT Target Only Flight Test)	3	2021	3	2021
FS-21 E4 (AEGIS 5.1, DT Intercept Flight Test)	3	2021	3	2021
FTM-31 E1 (AEGIS SBT, DT/OT Intercept Flight Test)	3	2021	3	2021
FS-21 E5 (AEGIS 5.1, DT/OT Intercept Flight Test)	3	2021	3	2021
ASD-1 (MDS Ground Test)	3	2021	3	2021
TH CTV-01 (LTPO, DT Interceptor Only Flight Test)	4	2021	4	2021
GM BVT-03 (GM, DT Interceptor Only Flight Test)	4	2021	4	2021
HAWC-4 (OTHER, DT Tracking Exercise Flight Test)	4	2021	4	2021
HAWC-5 (OTHER, DT Tracking Exercise Flight Test)	4	2021	4	2021
FTM-33 (AEGIS SBT, DT/OT Intercept Flight Test)	4	2021	4	2021
SM CTV-04 (AEGIS 5.1, DT Interceptor Only Flight Test)	4	2021	4	2021
ASD-2 (MDS Ground Test)	4	2021	4	2021
GTI-ISR (21) (MDS Ground Test)	1	2022	1	2022
FTP-21 E1 (P8.1.1)(LTPO, DT Intercept Flight Test)	1	2022	1	2022

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Missile Defense Agency			Date: April 2022	
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603914C / Ballistic Missile Defense Test		Project (Number/Name) MT04 / BMDS Test Program	
	Start		End	
Events	Quarter	Year	Quarter	Year
FTX-43 (OTHER, DT Tracking Exercise Flight Test)	1	2022	1	2022
Israeli Cooperative Intercept Flight Test - FY 2022	1	2022	4	2022
FTT-21 (TH, DT Intercept Flight Test)	2	2022	2	2022
TH CTV-01a (LTPO, DT Interceptor Only Flight Test)	2	2022	2	2022
GTI-08a (N/I) (MDS Ground Test)	3	2022	3	2022
FTX-42 (OTHER, DT Target Only Flight Test)	3	2022	3	2022
TBG-2 (OTHER, DT Tracking Exercise Flight Test)	3	2022	3	2022
FTP-18 (I8-3) (OTHER, OT Intercept Flight Test)	3	2022	3	2022
FTP-20 (I8-5) (OTHER, OT Intercept Flight Test)	3	2022	3	2022
FTP-19 (I8-4) (OTHER, OT Intercept Flight Test)	3	2022	3	2022
FEM-01	3	2022	3	2022
FTP-21 E2 (P8.1.1)(LTPO, DT Intercept Flight Test)	3	2022	3	2022
JFC-1 (OTHER, DT Tracking Exercise Flight Test)	3	2022	3	2022
GCN 8B7 SICO	3	2022	3	2022
FTP-21 E3 (P8.1.1)(LTPO, DT Intercept Flight Test)	3	2022	3	2022
FTX-26 (OT) (SN, OT Target Only Flight Test)	4	2022	4	2022
GTI-09 Sprint 1 (E/C) (MDS Ground Test)	4	2022	4	2022
PACIFIC DRAGON-22 E1 (AEGIS 5.0, DT/OT Intercept Flight Test)	4	2022	4	2022
PACIFIC DRAGON-22 E2 (AEGIS 5.0, DT/OT Tracking Exercise Flight Test)	4	2022	4	2022
PACIFIC DRAGON-22 E3 (AEGIS 5.0, DT/OT Tracking Exercise Flight Test)	4	2022	4	2022
SICO-8a-1 (MDS Ground Test)	4	2022	4	2022
FTX-45	4	2022	4	2022
FTP-25 (P8.1.5) (OTHER, OT Intercept Flight Test)	4	2022	4	2022
FTP-23 (LTPO, DT/OT Intercept Flight Test)	1	2023	1	2023
FTP-24 E1 (LTPO, DT Intercept Flight Test)	1	2023	1	2023

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Missile Defense Agency			Date: April 2022	
Appropriation/Budget Activity	R-1 Program Element (Number/Name)		Project (Number/Name)	
0400 / 4	PE 0603914C / Ballistic Missile Defense Test		MT04 / BMDS Test Program	
Events	Start		End	
	Quarter	Year	Quarter	Year
GTD-08a (N/I) (MDS Ground Test)	1	2023	1	2023
TBG-3 (OTHER, DT Tracking Exercise Flight Test)	1	2023	1	2023
JFTM-07 E1 (JAPAN, DT Tracking Exercise Flight Test)	1	2023	1	2023
JFTM-07 E2 (JAPAN, DT Intercept Flight Test)	1	2023	1	2023
JFTM-07 E3 (JAPAN, DT Tracking Exercise Flight Test)	1	2023	1	2023
JFTM-07 E4 (JAPAN, DT Intercept Flight Test)	1	2023	1	2023
FTP-21 E4 (P8.1.1)(LTPO, DT Intercept Flight Test)	1	2023	1	2023
SICO -09-1	1	2023	1	2023
SICO-09-2	1	2023	1	2023
GTD-07b (Aegis Ashore)	1	2023	1	2023
FTP-24 E2 (LTPO. P8.1 OT-2b)	1	2023	1	2023
FTP-24 E3 (LTPO. P8.1 OT-2c)	1	2023	1	2023
Israeli Cooperative Intercept Flight Test 2 - FY 2023	1	2023	4	2023
Israeli Cooperative Intercept Flight Test 1 - FY 2023	1	2023	4	2023
GTI-09 Sprint 2 (E/C) (MDS Ground Test)	2	2023	2	2023
FTX-40 (AEGIS 5.1, DT Tracking Exercise Flight Test)	2	2023	2	2023
SICO-8a2 (MDS Ground Test)	2	2023	2	2023
FTM-31 E1a (AEGIS SBT, DT/OT Intercept Flight Test)	2	2023	2	2023
SICO-09-3 Ground Test	2	2023	2	2023
SICO-08a-02	2	2023	2	2023
FTT-25 (TH, DT/OT Intercept Flight Test)	3	2023	3	2023
SICO 9-4 Ground Test	3	2023	3	2023
GTI-ISR (23) (MDS Ground Test)	4	2023	4	2023
FTX-44 (OTHER, DT Target Only Flight Test)	4	2023	4	2023
FTG-12 (GM, DT/OT Intercept Flight Test)	4	2023	4	2023

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Missile Defense Agency			Date: April 2022	
Appropriation/Budget Activity	R-1 Program Element (Number/Name)		Project (Number/Name)	
0400 / 4	PE 0603914C / Ballistic Missile Defense Test		MT04 / BMDS Test Program	
Events	Start		End	
	Quarter	Year	Quarter	Year
GTI-08b (N/I)	4	2023	4	2023
FTM-32 (AEGIS SBT, DT/OT Intercept Flight Test)	1	2024	1	2024
GTI-08b Sprint 1 (N/I) (MDS Ground Test)	1	2024	1	2024
Israeli Cooperative Intercept Flight Test 1 - FY 2024	1	2024	4	2024
GTI-ASI (24) (MDS Ground Test)	2	2024	2	2024
FTX-28 E2 (TH, DT/OT Tracking Exercise Flight Test)	2	2024	2	2024
FTX-28 E1 (TH, DT/OT Tracking Exercise Flight Test)	2	2024	2	2024
FTX-23 (AEGIS 5.1, DT Tracking Exercise Flight Test)	2	2024	2	2024
FTM-43 (AEGIS 5.1, DT/OT Intercept Flight Test)	2	2024	2	2024
FTX-28 E3 (TH, DT/OT Tracking Exercise Flight Test)	2	2024	2	2024
GTD-08b (N/I)	2	2024	2	2024
FTM-37 (AEGIS 5.1, DT/OT Intercept Flight Test)	3	2024	3	2024
PACIFIC DRAGON-24 E1 (Aegis 5.0, DT/OT Tracking Exercise Flight Test)	4	2024	4	2024
PACIFIC DRAGON-24 E2 (Aegis 5.0, DT/OT Intercept Flight Test)	4	2024	4	2024
PACIFIC DRAGON-24 E3 (Aegis 5.0, DT/OT Simulated Engagement)	4	2024	4	2024
GTI-13 Sprint 1 (N/I) (MDS Ground Test)	1	2025	1	2025
JFTX-01 E1 (JAPAN, DT Tracking Exercise Flight Test)	1	2025	1	2025
JFTX-01 E2 (JAPAN, DT Tracking Exercise Flight Test)	1	2025	1	2025
Israeli Cooperative Intercept Flight Test - FY 2025	1	2025	4	2025
GTI-ISR (25) (MDS Ground Test)	2	2025	2	2025
GTI-12 Sprint 1 (E/C) (MDS Ground Test)	3	2025	3	2025
GTI-13 Sprint 2 (N/I) (MDS Ground Test)	3	2025	3	2025
FS-25 E-1(AEGIS 5.1, DT/OT Tracking Exercise Flight Test)	3	2025	3	2025
FS-25 E-2(AEGIS 5.1, DT/OT Intercept Flight Test)	3	2025	3	2025
FTM-30 (AEGIS 5.1, DT/OT Intercept Flight Test)	4	2025	4	2025

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Missile Defense Agency				Date: April 2022	
Appropriation/Budget Activity 0400 / 4		R-1 Program Element (Number/Name) PE 0603914C / <i>Ballistic Missile Defense Test</i>		Project (Number/Name) MT04 / <i>BMDs Test Program</i>	
		Start		End	
Events	Quarter	Year	Quarter	Year	
GTD-13 (N/I) (MDS Ground Test)	4	2025	4	2025	
GTI-10 (E/C) (MDS Ground Test)	1	2026	1	2026	
GTI-12 Sprint 2 (E/C) (MDS Ground Test)	1	2026	1	2026	
GTD-10 (E/C) (MDS Ground Test)	2	2026	2	2026	
GTD-12 (E/C) (MDS Ground Test)	2	2026	2	2026	
GTI-ASI (26) (MDS Ground Test)	3	2026	3	2026	
FTM-40 (AEGIS 5.1, DT/OT Intercept Flight Test)	3	2026	3	2026	
TH CTV-03 (TH, DT Interceptor Only Flight Test)	4	2026	4	2026	
PACIFIC DRAGON-26 E1 (Aegis 5.0, DT/OT Tracking Exercise Flight Test)	4	2026	4	2026	
PACIFIC DRAGON-26 E2 (Aegis 5.0, DT/OT Intercept Flight Test)	4	2026	4	2026	
PACIFIC DRAGON-26 E3 (Aegis 5.0, DT/OT Simulated Engagement)	4	2026	4	2026	
GTI-14 Sprint 1 (N/I)	4	2026	4	2026	
FTM-41 (AEGIS 5.1, DT/OT Intercept Flight Test)	1	2027	1	2027	
Israeli Cooperative Intercept Flight Test - FY 2027	1	2027	4	2027	
FTG-16 (GM, DT Intercept Flight Test)	2	2027	2	2027	
GTI-14 (N/I) Sprint 2 (MDS Ground Test)	2	2027	2	2027	
GTI-15 Sprint 1 (E/C) (MDS Ground Test)	3	2027	3	2027	
FTT-22 (TH, DT/OT Intercept Flight Test)	3	2027	3	2027	
FTG-17 (GM, DT/OT Intercept Flight Test)	4	2027	4	2027	
GTD-14 (N/I) (MDS Ground Test)	4	2027	4	2027	
GTI-ISR (27) (MDS Ground Test)	4	2027	4	2027	
FTM-42 (AEGIS 5.1, DT/OT Intercept Flight Test)	4	2027	4	2027	

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency										Date: April 2022		
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0603914C / Ballistic Missile Defense Test				Project (Number/Name) MC04 / Cyber Operations			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
MC04: Cyber Operations	63.572	6.591	8.254	8.205	-	8.205	8.498	8.720	8.891	9.068	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
Note N/A												
A. Mission Description and Budget Item Justification Ballistic Missile Defense (BMD) Test Cyber Operations sustain Missile Defense Agency (MDA) Risk Management Framework (RMF) Standards, Computer Network Defense Service Provider and Controls Validation Testing activities: validation results; risk assessments; and reviews of proposed Program Manager/Information Systems Security Manager (PM/ISSM) Plans of Action and Milestones (POA&Ms) for MDA Ballistic Missile Defense Test program. It maintains the Certification and Accreditation (C&A) data repository, capturing the RMF documentation (artifacts, validation results, and Cyber Risk Assessment results, and Authorizing Official (AO) accreditation decisions) and POA&Ms on all MDA information systems. This project supports the monitoring and tracking of cyber mitigations detailed in Information Technology security POA&Ms. Activities include preparation of C&A documentation and accreditation recommendations to the MDA Senior Information Systems Security Officer/Security Controls Assessor (SCA) and AO. Independent Verification and Validation (IV&V) team actions ensure the availability, integrity, authentication, confidentiality and non-repudiation of the MDA mission, test and administrative systems. Activities in the Project are necessary to comply with the Federal Information Systems Modernization Act (FISMA) of 2014. The MDA Information Technology Networks and Systems and Cross Domain Solution (CDS) provide oversight and guidance for implementing standard CDS security policies across the MDS. The MDA Test Directorate Network Operations Security Center (DNOSC) is the Local Control Center (LCC) (Tier 3) that protects, detects, characterizes, reports, and mitigates cyber threats through real-time continuous monitoring for flight and ground test assets.												
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)									FY 2021	FY 2022	FY 2023	
Title: Network / System Certification and Accreditation (C&A) Articles:									6.591	8.254	8.205	
									-	-	-	
Description: The MDS Test Network/System Certification and Accreditation program will: - Provide cyber program oversight of all MDA Test Directorate (DT) information systems, networks, sponsored remote sites, ground and flight test infrastructure, and exercise/war game infrastructures. This includes management of: cyber compliance and authorization; cyber training and awareness; information system secure configuration; assessment and incident management; and computer network defense. - Fund Ballistic Missile Defense Test Program Information Systems Security Manager (ISSM) civilian salaries. - Conduct cyber/information assurance engineering and architecture planning for the MDS Test Program information technology systems. - Plan and test the Cyber controls for MDS.												

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency		Date: April 2022	
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603914C / <i>Ballistic Missile Defense Test</i>	Project (Number/Name) MC04 / <i>Cyber Operations</i>	
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2021	FY 2022
<ul style="list-style-type: none"> - Develop DT National Institute of Standards and Technology (NIST) certification and accreditation packages. - Leverage Cross Domain Solution (CDS) as single authority implementing standard security policies for test and across the MDS. - Maintain and extend the DT Support System (DTSS) classified Computer Network Defense Service Provider (CNDSP) to support network cyber defense for ground test network systems. - Continue to define cyber investments, risks and benefits used to reduce vulnerabilities and protect critical administrative and test data. <p>Specific and/or unique accomplishments to each FY are as follows:</p> <p>FY 2022 Plans: - SEE ABOVE.</p> <p>FY 2023 Plans: - SEE ABOVE</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: N/A</p>			
Accomplishments/Planned Programs Subtotals		6.591	8.254
C. Other Program Funding Summary (\$ in Millions)			
N/A			
Remarks			
D. Acquisition Strategy			
N/A			

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603914C / Ballistic Missile Defense Test						Project (Number/Name) MC04 / Cyber Operations			
Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Network / System Certification and Accreditation (C&A) - Cybersecurity Civ	Allot	MDA : Various	2.645	0.185	Oct 2020	0.156	Nov 2021	0.161	Nov 2022	-		0.161	Continuing	Continuing	Continuing
Network / System Certification and Accreditation (C&A) - MC Contractor Support	C/CPFF	Various : AL, COS, Belvior, CA, HAFB, KAFB, DAHL, RSA, VAFB	36.995	3.807	Nov 2020	3.043	Nov 2021	3.753	Nov 2022	-		3.753	Continuing	Continuing	Continuing
Network / System Certification and Accreditation (C&A) - Test Support CSSP	MIPR	CCDC-AvMC, Colsa, GSA, SAIC : AL	23.932	2.599	Nov 2020	5.055	Nov 2021	4.291	Nov 2022	-		4.291	Continuing	Continuing	Continuing
Subtotal			63.572	6.591		8.254		8.205		-		8.205	Continuing	Continuing	N/A
Remarks N/A															
			Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			63.572	6.591		8.254		8.205		-		8.205	Continuing	Continuing	N/A
Remarks Award Date reflects date of first obligation. Additional obligations may incrementally occur throughout the year.															

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Missile Defense Agency														Date: April 2022																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Missile Defense Agency			Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603914C / Ballistic Missile Defense Test	Project (Number/Name) MC04 / Cyber Operations	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
MC04 Cyber Operations Planned	1	2021	4	2027

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency										Date: April 2022		
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0603914C / Ballistic Missile Defense Test				Project (Number/Name) MD40 / Program Wide Support			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
MD40: Program Wide Support	133.233	15.027	17.228	13.356	-	13.356	12.809	14.400	17.917	18.532	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Program Wide Support (PWS) is allocated on a pro-rata basis across multiple Agency Program Element (PEs) each Fiscal Year (FY) based on the total Agency budget, and therefore fluctuates per PE by FY.

A. Mission Description and Budget Item Justification

PWS contains non-headquarters management costs in support of MDA functions and activities across the entire MDS. These functions include Government Civilians and Contract Support Services. This effort provides integrity and oversight of the MDS as well as supports MDA in the development and evaluation of technologies that will respond to the changing threat. Additionally, PWS includes personnel to support global deployments performing deployment site preparation and activation, and provides facility capabilities for MDA Executing Agent locations worldwide. Other MDA wide costs include: physical and technical security; civilian drug testing; audit readiness; the Science, Technology, Engineering, and Mathematics (STEM) program; legal services and settlements; travel and agency training; office, equipment, vehicle, and warehouse leases; utilities and base operations across multiple geographic locations; commercial and ancillary facility services; management of all facility aspects regardless of lifecycle stage; supplies and maintenance; compliance with statutory environmental requirements; data and unified communications support; materiel and readiness and central property management of equipment; Facilities Sustainment, Restoration and Modernization (FSRM) program, (formerly Real Property Maintenance) to keep the Department's inventory of facilities in good working order; and similar operating expenses. PWS is allocated on a pro-rata basis across most Agency PEs and therefore fluctuates per PE by fiscal year based on the total Agency budget in that fiscal year.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2021	FY 2022	FY 2023
Title: Program Wide Support	15.027	17.228	13.356
Articles:	-	-	-
Description: PWS contains non-headquarters management costs in support of MDA functions and activities across the entire MDS. These functions include Government Civilians and Contract Support Services. This effort provides integrity and oversight of the MDS as well as supports MDA in the development and evaluation of technologies that will respond to the changing threat. Additionally, PWS includes personnel to support global deployments performing deployment site preparation and activation, and provides facility capabilities for MDA Executing Agent locations worldwide. Other MDA wide costs include: physical and technical security; civilian drug testing; audit readiness; the Science, Technology, Engineering, and Mathematics (STEM) program; legal services and settlements; travel and agency training; office, equipment, vehicle, and warehouse leases; utilities and base operations across multiple geographic locations; commercial and ancillary facility services; management of all facility aspects regardless of lifecycle stage; supplies and maintenance; compliance with statutory environmental requirements; data and unified communications support; materiel and readiness and central property management of equipment; Facilities Sustainment,			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency		Date: April 2022	
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603914C / <i>Ballistic Missile Defense Test</i>	Project (Number/Name) MD40 / <i>Program Wide Support</i>	
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2021	FY 2022
<p>Restoration and Modernization (FSRM) program, (formerly Real Property Maintenance) to keep the Department's inventory of facilities in good working order; and similar operating expenses. PWS is allocated on a pro-rata basis across most Agency PEs and therefore fluctuates per PE by fiscal year based on the total Agency budget in that fiscal year.</p> <p><i>FY 2022 Plans:</i> - SEE ABOVE.</p> <p><i>FY 2023 Plans:</i> - SEE ABOVE.</p> <p><i>FY 2022 to FY 2023 Increase/Decrease Statement:</i> Decrease from FY 2022 to FY 2023 reflects the PWS allocation on a pro-rata basis across multiple Agency PE's each fiscal year based on the total Agency budget, and therefore fluctuates per PE by fiscal year.</p>			
Accomplishments/Planned Programs Subtotals		15.027	17.228
C. Other Program Funding Summary (\$ in Millions)			
N/A			
Remarks			
D. Acquisition Strategy			
N/A			

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603914C / Ballistic Missile Defense Test				Project (Number/Name) MD40 / Program Wide Support					
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Wide Support - Agency Operations Management	Various	Various : Multi: AL, CA, CO, VA	5.576	0.883	Jul 2021	0.000		0.000		-		0.000	0.000	6.459	0.000
Program Wide Support - Agency Operations and Support	C/CPFF	NETWORK MANAGEMENT RESOURCES, INC. : AL	0.000	0.000		0.000		1.150	Nov 2022	-		1.150	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations and Support Other Agency Services	MIPR	DOD - DEFENSE FINANCE AND ACCOUNTING SERVICES (DFAS) : IN	0.245	5.786	Nov 2020	5.905	Nov 2021	2.561	Nov 2022	-		2.561	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations and Support Services	C/CPFF	Veterans Technology, LLC : Multi: AL, CA, CO, VA	115.571	8.358	May 2021	11.323	Jun 2022	9.645	Dec 2022	-		9.645	Continuing	Continuing	Continuing
Program Wide Support - Facilities and Maintenance - SRM	MIPR	Various : Multi: AK,AL,CA,VA	11.841	0.000		0.000		0.000		-		0.000	0.000	11.841	0.000
Subtotal			133.233	15.027		17.228		13.356		-		13.356	Continuing	Continuing	N/A
Remarks N/A															
			Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			133.233	15.027		17.228		13.356		-		13.356	Continuing	Continuing	N/A
Remarks Award Date reflects date of first obligation. Additional obligations may incrementally occur throughout the year.															

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Missile Defense Agency														Date: April 2022																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
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Significant Event Complete ▲				Significant Event Planned △				Milestone Decision Complete ★				Milestone Decision Planned ☆				Element Test Complete ◆				Element Test Planned ◇				System Level Test Complete ●				System Level Test Planned ○				Complete Activity ◆				Planned Activity ◇																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Missile Defense Agency			Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603914C / <i>Ballistic Missile Defense Test</i>	Project (Number/Name) MD40 / <i>Program Wide Support</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
MD40 Program-Wide Support	1	2021	4	2027

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Missile Defense Agency	Date: April 2022
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Appropriation/Budget Activity	R-1 Program Element (Number/Name)											
0400: <i>Research, Development, Test & Evaluation, Defense-Wide / BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	PE 0603915C / <i>Ballistic Missile Defense Targets</i>											
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
Total Program Element	3,975.532	534.348	560.478	559.513	-	559.513	555.341	623.995	628.146	632.072	Continuing	Continuing
MC05: <i>Cyber Operations</i>	7.879	1.677	1.484	1.512	-	1.512	1.548	1.585	1.616	1.648	Continuing	Continuing
MT05: <i>BMDs Targets Program</i>	3,816.807	511.375	539.834	537.368	-	537.368	534.486	601.080	602.935	606.528	Continuing	Continuing
MD40: <i>Program Wide Support</i>	150.846	21.296	19.160	20.633	-	20.633	19.307	21.330	23.595	23.896	Continuing	Continuing

Program MDAP/MAIS Code: 362

Note

N/A

A. Mission Description and Budget Item Justification

The Ballistic Missile Defense System (BMDS) Targets Program provides centrally managed targets and countermeasures development and procurement for a cost effective, integrated system-level approach to MDS testing. Based on engineering assessments of threat intelligence data, the BMDS Targets Program develops, builds, and supports the launch of Short Range Ballistic Missile (SRBM: Less than 1000 Kilometer range) targets, Medium Range Ballistic Missile (MRBM: 1000-3000 Kilometer Range) targets, Intermediate Range Ballistic Missile (IRBM: 3000-5500 Kilometer Range) targets, Intercontinental Ballistic Missile (ICBM: Greater than 5500 Kilometer range) targets, and Multi-Class Components to test, verify, and validate the performance of the MDS against threats. The BMDS Targets Program provides an economical and reliable inventory of targets, which are representative of feasible future threats and supports demonstration of the capability of the evolving layered missile defense system in a simultaneous test and operations threat environment.

<u>B. Program Change Summary (\$ in Millions)</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023 Base</u>	<u>FY 2023 OCO</u>	<u>FY 2023 Total</u>
Previous President's Budget	536.133	553.334	0.000	-	0.000
Current President's Budget	534.348	560.478	559.513	-	559.513
Total Adjustments	-1.785	7.144	559.513	-	559.513
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	-17.856			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	25.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	-0.040	0.000			
• Missile Defeat and Defense Enhancement	0.000	0.000	0.000	-	0.000
• Other Adjustment	-1.745	0.000	559.513	-	559.513

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Missile Defense Agency		Date: April 2022
Appropriation/Budget Activity 0400: Research, Development, Test & Evaluation, Defense-Wide / BA 4: Advanced Component Development & Prototypes (ACD&P)	R-1 Program Element (Number/Name) PE 0603915C / Ballistic Missile Defense Targets	
<p>Change Summary Explanation</p> <p>Increase of \$25 million in FY 2022 provides the Congressional plus-ups for:</p> <ul style="list-style-type: none">+ \$20.000 million for Architecture Reactive Target Simulation (RTS) development+ \$5.000 million for missile defense system architecture integration and analysis center prototype <p>Decrease of \$17.8 million in FY 2022 reflects the Congressional reductions for:</p> <ul style="list-style-type: none">-\$9.127 million for unjustified growth for LHD lack of validated requirement and acquisition strategy-\$5.841 million for FTT-25 delay-\$2.624 million for FTM-30 delay-\$0.264 million for FTM-42 delay <p>FY 2023 funding increase reflects the fact that the FY 2022 President's Budget request did not include out-year funding.</p>		

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency										Date: April 2022		
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0603915C / Ballistic Missile Defense Targets				Project (Number/Name) MC05 / Cyber Operations			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
MC05: Cyber Operations	7.879	1.677	1.484	1.512	-	1.512	1.548	1.585	1.616	1.648	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

N/A

A. Mission Description and Budget Item Justification

Defense Cyber Operations sustains Missile Defense Agency (MDA) Department of Defense (DoD) Information Assurance Certification and Accreditation Program (DIACAP), Risk Management Framework Standards, Computer Network Defense Service Provider and Controls Validation Testing (CVT) activities; analysis of validation results; risk assessments and reviews of proposed Program Manager/Information Assurance Manager (PM/IAM) Plans of Action and Milestones (POA&Ms) for MDA Ballistic Missile Defense (BMD) Targets program. It maintains the Certification and Accreditation (C&A) data repository, capturing the DIACAP documentation (artifacts, validation results, and Information Assurance Risk Assessment results, and Designated Approving Authority (DAA) accreditation decisions) and POA&M on all MDA information systems. This project supports the monitoring and tracking of Cybersecurity mitigations detailed in Information Technology security POA&Ms. Activities include preparation of C&A documentation and accreditation recommendations to the MDA Senior Information Assurance Officer/Certification Authority (CA) and DAA. Independent Verification and Validation (IV&V) team actions ensure the availability, integrity, authentication, confidentiality and non-repudiation of the MDA mission, test and administrative systems. Activities in the Project are necessary to comply with the Federal Information Security Management Act (FISMA).

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2021	FY 2022	FY 2023
Title: Network / System Certification and Accreditation (C&A)	1.677	1.484	1.512
Articles:	-	-	-
<p>Description: The Network/Systems C&A project sustains the MDA DIACAP and CVT activities, analysis of validation results, risk assessments and reviews of proposed PM/IAM POA&Ms for MDA BMD Test program mission systems. It maintains the C&A data repository, capturing the DIACAP documentation (artifacts, validation results, and Information Assurance (IA) Risk Assessment results, and DAA accreditation decisions) and POA&M on all MDA information systems.</p> <p>Specific and/or unique accomplishments to each FY are as follows:</p> <p>FY 2022 Plans: - SEE ABOVE.</p> <p>FY 2023 Plans: - SEE ABOVE.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement:</p>			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency		Date: April 2022	
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603915C / <i>Ballistic Missile Defense Targets</i>	Project (Number/Name) MC05 / <i>Cyber Operations</i>	
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2021	FY 2022
N/A			
Accomplishments/Planned Programs Subtotals		1.677	1.484
C. Other Program Funding Summary (\$ in Millions)			
N/A			
Remarks			
D. Acquisition Strategy			
N/A			

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603915C / Ballistic Missile Defense Targets				Project (Number/Name) MC05 / Cyber Operations					
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Network / System Certification and Accreditation (C&A) - Windows 10 Upgrade	C/CPAF	Northrop Grumman Space Systems (NGSS) : Chandler, AZ	5.000	0.000		0.000		0.000		-		0.000	0.000	5.000	0.000
Subtotal			5.000	0.000		0.000		0.000		-		0.000	0.000	5.000	N/A
Remarks N/A															
Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Network / System Certification and Accreditation (C&A) - Civilian Pay	Allot	Missile Defense Agency : Huntsville, AL	0.485	0.182	Nov 2020	0.156	Nov 2021	0.161	Nov 2022	-		0.161	Continuing	Continuing	Continuing
Subtotal			0.485	0.182		0.156		0.161		-		0.161	Continuing	Continuing	N/A
Remarks N/A															
Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Network / System Certification and Accreditation (C&A) - TEAMS Support	C/IDIQ	MiDAESS/TEAMS : Huntsville, AL	2.394	1.495	Nov 2020	1.328	Nov 2021	1.351	Nov 2022	-		1.351	Continuing	Continuing	Continuing
Subtotal			2.394	1.495		1.328		1.351		-		1.351	Continuing	Continuing	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603915C / Ballistic Missile Defense Targets				Project (Number/Name) MC05 / Cyber Operations					
Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Remarks N/A															
			Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			7.879	1.677		1.484		1.512		-		1.512	Continuing	Continuing	N/A
Remarks Award Date reflects date of first obligation. Additional obligations may occur incrementally throughout the year. Previous references to Orbital Sciences Corporation and Northrop Grumman Innovation Systems have been updated to Northrop Grumman Space Systems to reflect current corporate structure.															

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Missile Defense Agency												Date: April 2022																													
Appropriation/Budget Activity 0400 / 4												R-1 Program Element (Number/Name) PE 0603915C / Ballistic Missile Defense Targets												Project (Number/Name) MC05 / Cyber Operations																	
Significant Event Complete ▲				Significant Event Planned △				Milestone Decision Complete ★				Milestone Decision Planned ☆				Element Test Complete ◆				Element Test Planned ◇				System Level Test Complete ●				System Level Test Planned ○				Complete Activity ◆				Planned Activity ◇					
												FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027					
MC05 Cyber Activities (FY 2021)												◆	◆	◆	◆																										
MC05 Cyber Activities (FY 2022)																◇	◇	◇	◇																						
MC05 Cyber Activities (FY 2023)																				◇	◇	◇	◇																		
MC05 Cyber Activities (FY 2024)																								◇	◇	◇	◇														
MC05 Cyber Activities (FY 2025)																												◇	◇	◇	◇										
MC05 Cyber Activities (FY 2026)																																◇	◇	◇	◇						
MC05 Cyber Activities (FY 2027)																																					◇	◇	◇	◇	

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Missile Defense Agency			Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603915C / <i>Ballistic Missile Defense Targets</i>	Project (Number/Name) MC05 / <i>Cyber Operations</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
MC05 Cyber Activities (FY 2021)	1	2021	4	2021
MC05 Cyber Activities (FY 2022)	1	2022	4	2022
MC05 Cyber Activities (FY 2023)	1	2023	4	2023
MC05 Cyber Activities (FY 2024)	1	2024	4	2024
MC05 Cyber Activities (FY 2025)	1	2025	4	2025
MC05 Cyber Activities (FY 2026)	1	2026	4	2026
MC05 Cyber Activities (FY 2027)	1	2027	4	2027

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Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0603915C / Ballistic Missile Defense Ta rgets				Project (Number/Name) MT05 / BMDS Targets Program			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
MT05: BMDS Targets Program	3,816.807	511.375	539.834	537.368	-	537.368	534.486	601.080	602.935	606.528	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
Note N/A												
A. Mission Description and Budget Item Justification												
The mission of the BMDS Targets Program is to provide an economical and reliable inventory of targets that are representative of feasible future threats. These targets enable demonstration of MDS capabilities in operationally realistic scenarios. The BMDS Targets Program develops and acquires five target types across four target classes. The classes include: Short Range Ballistic Missiles (SRBM), Medium Range Ballistic Missiles (MRBM), Intermediate Range Ballistic Missiles (IRBM), and Intercontinental Ballistic Missiles (ICBM). The target types (Type 1-5) designate the complexity of the target within its class. Type-1 (T1) targets are simple baseline configurations. Type-2 (T2) targets have increased capability or complexity. Type-3 (T3) targets have unique configurations. Type-4 (T4) targets are subscale targets. Type-5 (T5) targets are advanced targets.												
The BMDS Targets Program develops and provides Modified Ballistic Re-Entry Vehicles (MBRV) and Countermeasures that can be used across the spectrum of target types and classes. The BMDS Targets Program provides target digital models that enable the MDA weapon system program offices to simulate end to end sensor and interceptor performance during pre-mission analysis. The BMDS Targets Program also provides maintenance, aging surveillance, refurbishment, and routine testing of government furnished equipment boosters and target components.												
The BMDS Targets Program carefully plans the year of execution to assure the best use of appropriated funds. However, the BMDS Targets Program must be flexible in its execution of the program in order to respond to emerging real world threats or changes in the intelligence community estimates of when a threat will be deployed. The BMDS Targets Program must also work with MDS systems engineers on a continuing basis to align the targets program to the MDS need to demonstrate capabilities as reflected in the MDS IMTP. The BMDS Targets Program makes every effort to reduce instability in contracts, production base and budget while managing in this dynamic work environment.												
The BMDS Targets Program develops and builds targets and countermeasures at multiple locations including: Orlando, FL; Huntsville, AL; and Chandler, AZ. Storage and maintenance facilities are also located throughout the country including: Huntsville, AL; White Sands, NM; Ogden, UT; Tooele, UT; and Cape Canaveral Air Force Station, FL.												
The BMDS Targets Program consists of four major areas: Consumables, Program Planning and Operations, Resources, and Flight Test Execution.												
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)									FY 2021	FY 2022	FY 2023	
Title: Consumables - Short Range Ballistic Missiles (SRBM)									47.135	87.729	56.143	

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)			FY 2021	FY 2022	FY 2023
<p align="right">Articles:</p> <p>Description: Consumables include SRBM target hardware development and manufacturing.</p> <p>Target development includes non-recurring engineering, MBRVs, Countermeasures, and launch support equipment for MDS flight testing as required by the MDS IMTP. Target development provides air and ground launch capabilities to maximize flexibility in MDA test design. Development activities include requirements decomposition, design, modeling and simulation, qualification testing, characterization, missionization, and mission analysis. The BMDS Targets Program Office manages target configuration, component interface specifications, range integration, reliability, mission assurance, and costs. The BMDS Targets Program ensures target designs are producible, reliable, and affordable.</p> <p>Target manufacturing includes the build of targets and target components that are required to execute the MDS IMTP. Manufacturing includes government furnished equipment and new component acquisition, assembly, and integration. Also included are target characterization, quality and mission assurance, transportation, and logistics support. The BMDS Targets Program delivers fully assembled and integrated targets to the BMDS Test Program. Future revisions to the IMTP will likely affect target types and quantities noted in the Planned Accomplishments.</p> <p>Beginning in FY 2022, the BMDS Targets Program began sequentially numbering SRBM T4 and MRBM T4 ship sets separately.</p> <p>Specific and/or unique planned accomplishments to each FY are as follows:</p> <p>FY 2022 Plans:</p> <ul style="list-style-type: none"> -SRBM T4 - continue development efforts, continue manufacture of SRBM T4 Ship Sets 1, 2, and 3 to support pre-ship readiness reviews and flight tests in FY 2024; initiate manufacture of SRBM T4 Ship Set 4 to support pre-ship readiness review in FY 2026 and flight test in FY 2026 -SRBM Pathfinder Zombie - initiate manufacturing of Ship Set 2 to support pre-ship readiness review and flight test in FY 2023 -Initiate SRBM T4 kit development and manufacturing efforts to support future target performance requirements for flight tests beginning in FY 2024 <p>FY 2023 Plans:</p> <ul style="list-style-type: none"> -SRBM T4 - continue development efforts, complete manufacture of SRBM T4 Ship Sets 1-3 to support pre-ship readiness reviews and flight tests in FY 2024 (Ship Sets 1-3); continue manufacture of SRBM T4 Ship Set 4 to support pre-ship readiness review in FY 2026 and flight test in FY 2027 (Ship Set 4) -SRBM Black Dagger - initiate manufacturing of Ship Set 2 to support pre-ship readiness review and flight test in FY 2025 			-	-	-

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2021	FY 2022
-Continue SRBM T4 kit development and manufacturing efforts to support future target performance requirements for flight tests beginning in FY 2024 FY 2022 to FY 2023 Increase/Decrease Statement: Decrease from FY 2022 to FY 2023 reflects completion of SRBM T4 ship sets to support future flight tests in accordance with current IMTP requirements			
Title: Consumables - Medium Range Ballistic Missiles (MRBM) Description: MRBM target hardware development and manufacturing is consistent with the Description found in the Consumables-SRBM section. Specific and/or unique planned accomplishments to each FY are as follows: FY 2022 Plans: -MRBM Type 3 Configuration 2 (MRBM T3C2) - continue manufacturing of Ship Sets 6 and 7 to support pre-ship readiness reviews in FY 2023 and flight tests in FY 2023 (Ship Set 6) and FY 2024 (Ship Set 7) -MBRV-7 - continue recurring engineering efforts and manufacturing of MBRV-7 front sections to support MRBM flight tests -MRBM T1/T2 - continue manufacturing and qualification of Ship Sets 3-6 to support pre-ship readiness reviews and flight tests in FY 2023 (Ship Sets 3 and 4) and FY 2024 (Ship Sets 5 and 6); initiate manufacturing and qualification of Ship Set 7 to support pre-ship readiness review and flight test in FY 2025 -MRBM T4 - continue manufacturing of Ship Sets 1-3 to support pre-ship readiness reviews in FY 2026 (Ship Set 1) and FY 2027 (Ship Sets 2 and 3) and flight tests in FY 2027; initiate manufacturing of Ship Sets 4 and 5 to support pre-ship readiness reviews and flight tests in FY 2027 -MRBM T5 Advanced Target - continue development and manufacturing of Ship Sets 1 and 2 to support a pre-ship readiness reviews and flight tests in FY 2023 (Ship Set 1) and FY 2024 (Ship Set 2) -Alternate Glide Body (AGB) - continue development efforts and pursue an alternate provider for advanced target re-entry vehicles to support the Glide Phase Interceptor flight test requirements -Award contract option to initiate production of 6 additional MRBM T1/T2 targets to support future flight test requirements -Continue development efforts for MRBM Countermeasures FY 2023 Plans: -MRBM Type 3 Configuration 2 (MRBM T3C2) - complete manufacturing of Ship Sets 6 and 7 to support pre-ship readiness reviews in FY 2023 and flight tests in FY 2023 (Ship Set 6) and FY 2024 (Ship Set 7) -MBRV-7 - continue recurring engineering efforts and manufacturing of MBRV-7 front sections to support MRBM flight tests		224.149	242.423
Articles:		-	-
			236.100

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency		Date: April 2022	
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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2021	FY 2022
<p>-MRBM T1/T2 - continue manufacturing and qualification of Ship Sets 3-7 to support pre-ship readiness reviews and flight tests in FY 2023 (Ship Sets 3 and 4), FY 2024 (Ship Sets 5 and 6) and FY 2025 (Ship Set 7); initiate manufacturing and qualification of Ship Sets 8 and 9 to support pre-ship readiness review and flight test in FY 2027 (Ship Set 8) and FY 2028 (Ship Set 9)</p> <p>-MRBM T4 - complete manufacturing of Ship Sets 1-3 to support pre-ship readiness reviews in FY 2026 (Ship Set 1) and FY 2027 (Ship Sets 2 and 3) and flight tests in FY 2027; continue manufacturing of Ship Sets 4 and 5 to support pre-ship readiness reviews and flight tests in FY 2027 (Ship Set 4) and beyond the Future Years Defense Program (Ship Set 5)</p> <p>-MRBM T5 Advanced Target - complete development and manufacturing of Ship Sets 1 and 2 to support pre-ship readiness reviews and flight tests in FY 2023 (Ship Set 1) and FY 2024 (Ship Set 2)</p> <p>-Continue development efforts for an alternate advanced target re-entry vehicle to address emerging threats</p> <p>-Continue production of additional MRBM T1/T2 targets to support future flight test requirements</p> <p>-Continue development efforts for MRBM Countermeasures</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: Decrease from FY 2022 to FY 2023 reflects completion of MRBM T3C2 and MRBM T5 target integration/delivery/missionization to support future flight tests in accordance with current IMTP requirements</p>			
<p>Title: Consumables - Intermediate Range Ballistic Missiles (IRBM)</p> <p align="right">Articles:</p> <p>Description: IRBM target hardware development and manufacturing is consistent with the Description found in the Consumables-SRBM section.</p> <p>Specific and/or unique planned accomplishments to each FY are as follows:</p> <p>FY 2022 Plans:</p> <p>-IRBM T1/T2 - deliver Ship Set 10 to support pre-ship readiness review and flight test in FY 2022; continue manufacturing and integration of Ship Sets 11-14 to support pre-ship readiness reviews in FY 2026 (Ship Set 11) and FY 2028 (Ship Sets 12, 13, and 14)</p> <p>-MBRV-8 - perform additional characterization on the MBRV-8 and continue recurring engineering efforts and manufacturing of MBRV-8 front sections to support IRBM flight tests</p> <p>-Continue development efforts for IRBM Countermeasures</p> <p>FY 2023 Plans:</p> <p>-IRBM T1/T2 - complete Ship Set 11 to support pre-ship readiness review and flight test in FY 2027; continue manufacturing and integration of Ship Sets 12-15 to support pre-ship readiness reviews in FY 2028 (Ship Set 12-14) and FY 2029 (Ship Set 15)</p> <p>-MBRV-8 - continue recurring engineering efforts and manufacturing of MBRV-8 front sections to support IRBM flight tests</p>		62.438	26.762
		-	-
		31.728	-

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2021	FY 2022
-Initiate development of new re-entry vehicles to meet the evolving IRBM threat, including designs to support future NGI IRBM testing -Continue development and production efforts for IRBM Countermeasures and kits FY 2022 to FY 2023 Increase/Decrease Statement: Increase from FY 2022 to FY 2023 provides initiation of new re-entry vehicles to meet the evolving IRBM threat, including designs to support future NGI IRBM testing			
Title: Consumables - Intercontinental Ballistic Missiles (ICBM) Description: ICBM target hardware development and manufacturing is consistent with the Description found in the Consumables-SRBM section. Specific and/or unique planned accomplishments to each FY are as follows: FY 2022 Plans: -ICBM T1/T2 - continue manufacturing Ship Sets 5-6 to support pre-ship readiness reviews in FY 2024 (Ship Set 5) and FY 2027 (Ship Set 6) -MBRV-8 - perform additional characterization on the MBRV-8 and continue recurring engineering efforts and manufacturing of MBRV-8 front sections to support ICBM flight tests -Initiate lot buy of 6 ICBM conversion kits to support future ICBM flight requirements -Initiate SR-119 motor stack development efforts to replace aging C4 motors on ICBM targets -Continue additional development efforts for ICBM Countermeasures FY 2023 Plans: -ICBM T1/T2 - continue manufacturing Ship Sets 5-6 to support pre-ship readiness reviews and flight tests in FY 2028 (Ship Set 5) and FY 2029 (Ship Set 6); initiate manufacturing Ship Set 7-8 to support pre-ship readiness reviews and flight tests -MBRV-8 - continue recurring engineering efforts and manufacturing of MBRV-8 front sections to support ICBM flight tests -Continue SR-119 motor stack development efforts to replace aging C4 motors on ICBM targets, including future NGI testing -Continue additional development efforts for ICBM Countermeasures, including designs to support future NGI testing -Initiate development of new re-entry vehicles to meet the evolving ICBM threat, including designs to support future NGI testing -Initiate manufacturing of ICBM kits that provide the connection between the SR-119 stage zero motor and the Orion 50 S XLT stage 1 motor required for future ICBM targets, including future NGI testing FY 2022 to FY 2023 Increase/Decrease Statement:		42.475	24.820
Articles:		-	-
			60.384

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency			Date: April 2022		
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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)			FY 2021	FY 2022	FY 2023
Increase from FY 2022 to FY 2023 provides initiation of ICBM kits and new re-entry vehicles; increased manufacturing and design requirements for ICBM countermeasures; and SR-119 motors required for the mix of flight tests in accordance with current IMTP requirements.					
Title: Consumables - Joint Emergent Operational Need Statement (JEON) Articles: Description: Target development and build to support near term capability improvements and Priority 1, 2 and 3 efforts for JEON. The 3 priorities include: 1) Phased Array Tracking Intercept of Target (PATRIOT) launch on remote from Terminal High Altitude Area Defense (THAAD) battery data; 2) THAAD / Missile Segment Enhancement (MSE) Integration Part 1; 3) THAAD remote launcher Part 1. Specific and/or unique planned accomplishments to each FY are as follows: FY 2022 Plans: N/A FY 2023 Plans: N/A FY 2022 to FY 2023 Increase/Decrease Statement: N/A			1.027 -	0.000 -	0.000 -
Title: Program Planning & Operations Articles: Description: Program Planning and Operations provides for government management of the BMDS Targets Program. Included in this effort is program and business management, program administration, technical and testing oversight, verification of hardware and software development, and government manpower and infrastructure to develop, test and sustain the BMDS Targets Program Office system and components. Other Government Agency (OGA) and Federally Funded Research and Development Research Centers (FFRDC) are used for highly specialized skill sets not available internally to Targets for specific time periods. Recurring yearly planned accomplishments include the following: -Provide technical and business management support activities, financial management, cost and schedule performance analysis cost estimation and analysis, and integration activities			54.948 -	50.998 -	58.471 -

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2021	FY 2022
<p>-Provide program oversight, subcontract management, quality assurance, verification of hardware and software development, and technical and testing oversight</p> <p>-Ensure BMDS Targets Program compliance with internal and external direction, policies, and regulations</p> <p>-Conduct Internal Program Plans that align with the MDA approved IMTP</p> <p>-Provide program and technical management of target launch operations activities to include oversight of mission planning, range coordination, and mission requirements</p> <p>Specific and/or unique planned accomplishments to each FY are as follows:</p> <p>FY 2022 Plans: - SEE ABOVE.</p> <p>FY 2023 Plans: - SEE ABOVE.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: Increase from FY 2022 to FY 2023 provides a reallocation in FY 2023 of contractor support funding from the Resources and Flight Test Execution Accomplishments due to TEAMS Next contract consolidation. See cost category Targets Resources TEAMS Support and Targets Flight Test Execution TEAMS Support in the R-3 for corresponding decreases from FY 2022 to FY 2023.</p>			
<p>Title: Resources</p> <p align="right">Articles:</p> <p>Description: BMDS Targets Program Resources consist of two sub-elements: Systems Engineering/Program Management and Logistics.</p> <p>Systems Engineering/Program Management provides technical direction to meet Target Program requirements while balancing cost, schedule, performance, and risk. It conducts functional requirements allocation to product lines, defines product line specifications/interfaces, performs configuration and data management, and follows guidelines for design reviews. It performs target system analysis to verify system performance, defines target program baselines, controls flight test configurations, and conducts pre and post-flight analysis. It identifies treaty and environmental issues and develops plans for issue resolution. It provides Quality, Safety, and Mission Assurance operations to ensure compliance with MDA requirements for design, test, manufacturing, quality, safety and reliability to ensure high quality products are delivered for test events. It also includes Single Stimulation Framework (SSF)/Objective Simulation Framework (OSF) compatible Modeling and Simulation (M&S) execution and improvements to evolve M&S capability; trajectory analyses; signature analyses and characterization; studies to assess</p>		54.784 -	74.609 -
			48.649 -

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2021	FY 2022
<p>alternative target and platform solutions; assessments of risk management; and design approval of government furnished equipment. Specific Systems Engineering Planned Accomplishments include:</p> <ul style="list-style-type: none"> -Continue Program Management and Business Operations for target components to provide a framework for overall management of the BMDS Targets Program -Continue providing classified network connections to OGAs so their subject matter experts can be used to support Target requirements -Continue analyses of future target Launch Vehicles, Re-Entry Vehicles, and launch platforms to ensure they are threat representative and that the Agency is making use of available technology in our future designs -Continue performing Pedigree Reviews to ensure high probability of mission success -Continue information technology and classified network support to ensure sensitive target information is not compromised -Continue Software IV&V to provide risk reduction of flight missions for target systems under development <p>BMDS Targets Program Logistics support provides target storage, aging surveillance, and transportation of target hardware in support of MDS testing. Also included are integrated logistics support for facilities, inventory maintenance, spare parts, aging surveillance, disposal, special testing for rocket motor propellants, and other hazardous material handling. This task manages and oversees accountability of all government furnished equipment and contractor acquired property. Logistics also provides common support equipment for launch vehicles, MBRVs, countermeasures, and all up integrated target rounds. It also supports launch site activations through the transportation of support equipment to various test sites. Specific Targets Logistics Planned Accomplishments include:</p> <ul style="list-style-type: none"> -Continue Multi-Class Inventory storage, aging surveillance, maintenance of existing assets, and transportation support that ensured availability of MBRV and ground support equipment -Conduct disposal actions of inert assets <p>Specific and/or unique planned accomplishments to each FY are as follows:</p> <p>FY 2022 Plans:</p> <ul style="list-style-type: none"> - Initiate Architecture Reactive Target Simulation (RTS), a suite to rapidly develop low-to medium-fidelity ballistic, hypersonic and cruise missile target sets to support the overall target design capability and representative design reference mission scenarios to define MDA's Target roadmap and technology prioritization. - Initiate infrastructure for advanced High Performance Computing (HPC), i.e., supercomputers, to equip the Targets Program with hardware and target simulation tools that enable early issue discovery, proof of concepts and rapid technology design and assessments, thereby supporting a robust design capability for developing sophisticated future threats. <p>FY 2023 Plans:</p>			

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2021	FY 2022
- SEE ABOVE.			
FY 2022 to FY 2023 Increase/Decrease Statement: Decrease from FY 2022 to FY 2023 reflects Congressional Plus Up funding in FY 2022 for Architecture RTS Development and missile defense system architecture integration and analysis center prototype.			
Title: Flight Test Execution		24.419	32.493
Articles:		-	-
Description: Flight Test Execution is performed by the Target Launch Operations group. This group conducts target mission planning, coordinates target range and mission requirements, and provides target technical information to the MDA's General Counsel to support treaty approvals. The Target Launch Operations Group is the primary link between the target developer and the MDS test community, incorporating target system constraints into the MDS mission countdown and launch constraints.			45.893
Specific and/or unique planned accomplishments to each FY are as follows:			
FY 2022 Plans: -Conduct final target integration with the test range and Forward Staging Area to accomplish launch operations of an IRBM target with countermeasures in support of Aegis BMD SM-3 IIA Full Rate Production Decision -Conduct final target integration with the test range and Forward Staging Area to accomplish launch operations of an MRBM (separating) target in support of the Long Range Discrimination Radar (LRDR) using 1.0 software performing a target scene data collection -Conduct final target integration with the test range and Forward Staging Area to accomplish launch operations of an IRBM target in support of United States Northern Command (USNORTHCOM) Operational Acceptance of the LRDR			
FY 2023 Plans: -Conduct final target integration with the test range and Forward Staging Area to accomplish launch operations of an MRBM target in support of Aegis SBT using BL 9.2.x SW demonstrating a simulated engagement firing an SM-6 SDM against a Hypersonic Glide Vehicle -Conduct final target integration with the test range and Forward Staging Area to accomplish launch operations of an MRBM target in support of Aegis SBT using BL 9.C2 SW demonstrating a salvo engagement firing two SM-6 Dual II guided missiles -Conduct final target integration with the test range and Forward Staging Area to accomplish launch operations of a two (2) MRBM targets in support of THAAD using TH 4.1 SW demonstrating concurrent control of a THAAD interceptor and two MSEs (Interoperability - PATRIOT) -Conduct final target integration with the test range and Forward Staging Area to accomplish launch operations of an IRBM target with countermeasures in support of GMD using GS 9 SW demonstrating an engagement firing a CE-II Block 1 EKV			

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2021	FY 2022
-Conduct final target integration with the test range and Forward Staging Area to accomplish launch operations of an MRBM target in support of Aegis SBT using BL 9.2.4 SW demonstrating a salvo engagement firing two SM-6 Blk IAU guided missiles			
<i>FY 2022 to FY 2023 Increase/Decrease Statement:</i> Increase from FY 2022 to FY 2023 provides the number and types of targets required for the mix of flight tests in the MDS IMTP, including an increase of flight test missions from three in FY 2022 to five in FY 2023			
Accomplishments/Planned Programs Subtotals		511.375	539.834
C. Other Program Funding Summary (\$ in Millions) N/A			
Remarks			
D. Acquisition Strategy The BMDs Targets Program delivers targets and countermeasures for MDS flight-testing to counter evolving threats. Program requirements are derived from the MDS IMTP and from multiple Target System Performance Specifications (TSPS). The BMDs Targets Program is currently in various acquisition and contracting stages to deliver targets and countermeasures per multiple TSPS by target class: SRBM, MRBM, IRBM, and ICBM. Each target class may be independently solicited, evaluated, and competitively awarded based on the IMTP 'need date' priority order. The Targets Program also delivers countermeasures based on requirements and TSPS. The BMDs Targets Program competitively awarded a prime contract in 2011 to Orbital Sciences Corporation (OSC) (wholly-owned subsidiary of Northrop Grumman Space Systems (NGSS)) with a Period of Performance (PoP) of March 2011 through September 2025 for air-launched IRBM targets. This award included two (2) follow-on options, one (1) for eight (8) IRBM targets exercised in 2014 and another for six (6) IRBM targets exercised in 2017. Two (2) IRBM targets were added on the contract in 2018 to support the MDS Acceleration efforts. This contract also included the development and delivery of ICBM targets. The contract scope included two ICBM Stage Zero Retrofit Kits to be installed in existing air-launched IRBM targets. Four ICBM Stage Zero Kits were added in 2018. The BMDs Targets Program competitively awarded a prime contract in 2016 to OSC (wholly-owned subsidiary of NGSS) with a PoP of July 2016 to December 2020 for three MRBM T3c2 targets. This award included options for up to four MRBM T3c2 targets. In August 2020 a modification was awarded to extend the base contract through March 2024 to account for two flight tests scheduled for FY 2023 and FY 2024. The BMDs Targets Program competitively awarded a prime contract in 2013 to L-3 Communications/Coleman Aerospace Corporation (now owned by Aerojet Rocketdyne since 2017) with a PoP of October 2013 through December 2027 to provide six MRBM targets. Six additional targets were added to the contract in 2019 to incorporate additional IMTP requirements. The option for the third lot of six (6) additional targets will be on contract by 3Q FY 2022. The first target from this contract			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency		Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603915C / <i>Ballistic Missile Defense Targets</i>	Project (Number/Name) MT05 / <i>BMDS Targets Program</i>
<p>was successfully launched in 4th Quarter, FY 2019. Additionally, a quantity of two (2) each enhanced Solid Rocket-19 (eSR-19) motor sets and Roll Control Systems were awarded in 2019.</p> <p>The BMDS Targets Program competitively awarded a prime contract in 2019 to OSC (wholly-owned subsidiary of NGSS) with a PoP of September 2019 through September 2024 to deliver T4 Subscale Targets. This T4 Subscale contract has a base quantity of four SRBMs, five MRBMs, with options for up to 17 SRBMs and 7 MRBMs.</p> <p>The T4-G Target and other legacy Aegis Readiness Assessment Vehicles (ARAV) targets are acquired through the Naval Surface Warfare Center Port Hueneme Division White Sands (NSWC PHD WS) via Military Interdepartmental Purchase Requests (MIPRs) funding transactions. NSWC PHD WS has unique sounding rocket expertise and access to existing contracts that makes this a beneficial relationship for both parties.</p> <p>The BMDS Targets Program also acquires SRBM subscale targets (Black Dagger and Zombie) with special/unique guidance requirements through MIPRs from the US Army Space and Missile Defense Command (USASMDC).</p> <p>The BMDS Targets Program has one active Delivery Order-29 (DO 29) under its Targets and Countermeasures Program (TCP) Contract. The Targets Program awarded to Lockheed Martin for the delivery of hardware and associated equipment. This effort currently requires the delivery of five (5) MBRVs. The current PoP end date is June 2022.</p> <p>The BMDS Targets Program competitively awarded a prime contract in 2017 to Lockheed Martin with a base PoP of November 2017 through December 2022. There is currently a contract action in works to extend the period of performance to January 2027. This action will also move from delivery of in-line missionization hardware to delivery of hardware that has been configured to a generic configuration. Based on this concept, missionization will occur once a mission has been identified in IMTP. This effort currently requires the delivery of three (3) MBRV-7 Configuration 2 (C2) and five (5) MBRV-8 C2 targets with options for two (2) MBRV-7 C2 and five (5) MBRV-8 C2 targets, as set forth in the IMTP.</p> <p>The BMDS Targets Program awarded a sole source contract in 2013 to Lockheed Martin with a base PoP of January 2014 through September 2016. The Program Office awarded a contract modification to the Targets and Countermeasures Highly Specialized Services (TCHSS) contract that extended the PoP through September 2027. This effort provides missionization requirements-preparation and flight readiness of target assets, ordnance handling, and execution of mission reviews to support specific flight-test objectives for MBRVs.</p> <p>The Targets Program initiated development efforts with Johns Hopkins University Applied Physics Lab (JHU APL) for the Alternate Glide Body utilizing an existing contract through MDA's Directorate of Engineering team. The Program Office plans to continue non-recurring engineering with UARC and FFRDC partners, to include Sandia National Laboratories, for an alternate advance target re-entry vehicles materiel solution.</p>		

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<p>The BMDS Targets Program future acquisition planning and solicitations will go through MDA Acquisition Strategy Panel(s)/Board(s) for decision-making. Future acquisition strategies are based on two premises: a) utilize existing capabilities/infrastructure and sustain an industrial base to deliver targets; and b) initiate acquisitions that delivers low cost/affordable targets that emulate evolving threats.</p>		

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603915C / Ballistic Missile Defense Targets				Project (Number/Name) MT05 / BMDS Targets Program					
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Consumables - Short Range Ballistic Missiles (SRBM) - Countermeasures (GTRI)	FFRDC	Georgia Tech Research Institute : Huntsville, AL	0.000	0.000		2.569	Dec 2021	2.118	Dec 2022	-		2.118	Continuing	Continuing	Continuing
Consumables - Short Range Ballistic Missiles (SRBM) - Countermeasures (SNL)	IA	Sandia National Lab : Albuquerque, NM	8.472	4.287	Dec 2020	7.023	Dec 2021	3.051	Dec 2022	-		3.051	Continuing	Continuing	Continuing
Consumables - Short Range Ballistic Missiles (SRBM) - Pathfinder Zombie / Black Dagger	MIPR	Space and Missile Defense Command : Huntsville, AL	0.072	1.504	Nov 2020	8.503	Nov 2021	0.835	Nov 2022	-		0.835	Continuing	Continuing	Continuing
Consumables - Short Range Ballistic Missiles (SRBM) - SRBM T4	C/CPIF	Northrop Grumman Space Systems : Chandler, AZ	63.679	32.299	Nov 2020	68.865	Nov 2021	50.139	Nov 2022	-		50.139	Continuing	Continuing	Continuing
Consumables - Short Range Ballistic Missiles (SRBM) - SRBM Target Design Support (MIT LL)	FFRDC	MIT Lincoln Laboratory : Hanscom AFB, Lexington, MA	0.000	3.500	Dec 2020	0.000		0.000		-		0.000	0.000	3.500	0.000
Consumables - Short Range Ballistic Missiles (SRBM) - SRBM Target Support	MIPR	WSMR (White Sands Missile Range) : NM	0.000	0.075	Dec 2020	0.000		0.000		-		0.000	0.000	0.075	0.000
Consumables - Short Range Ballistic Missiles (SRBM) - Target Design Support and Countermeasures (JHU APL)	FFRDC	Johns Hopkins University Applied Physics Laboratory : Laurel, MD	12.863	2.560	Dec 2020	0.000		0.000		-		0.000	0.000	15.423	0.000
Consumables - Short Range Ballistic Missiles (SRBM) - Target Integration	MIPR	Naval Surface Warfare Center, Port Hueneme : Port Hueneme, CA	91.695	2.910	Nov 2020	0.769	Nov 2021	0.000		-		0.000	0.000	95.374	0.000

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Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Consumables - Short Range Ballistic Missiles (SRBM) - Transportation	MIPR	Defense Finance and Accounting Service : Indianapolis, IN	7.407	0.000		0.000		0.000		-		0.000	0.000	7.407	0.000
Consumables - Short Range Ballistic Missiles (SRBM) - Various (Prior Year Funding Only, No Funding in the FYDP)	Various	Various : Various	21.134	0.000		0.000		0.000		-		0.000	0.000	21.134	0.000
Consumables - Medium Range Ballistic Missiles (MRBM) - Advanced Target Support	MIPR	30th Space Wing : Vandenberg AFB, CA	0.242	0.025	Dec 2020	0.000		0.000		-		0.000	0.000	0.267	0.000
Consumables - Medium Range Ballistic Missiles (MRBM) - Air Launch Target Support	MIPR	Yuma Proving Grounds : Yuma, AZ	0.316	0.000		0.240	Nov 2021	0.294	Nov 2022	-		0.294	Continuing	Continuing	Continuing
Consumables - Medium Range Ballistic Missiles (MRBM) - Aviation Fueling	MIPR	DOD - DEFENSE LOGISTICS AGENCY (DLA) : VA	0.000	0.000		0.000		0.021	Dec 2022	-		0.021	Continuing	Continuing	Continuing
Consumables - Medium Range Ballistic Missiles (MRBM) - Countermeasures (GTRI)	FFRDC	Georgia Tech Research Institute : Huntsville, AL	4.946	6.681	Dec 2020	5.440	Dec 2021	2.258	Dec 2022	-		2.258	Continuing	Continuing	Continuing
Consumables - Medium Range Ballistic Missiles (MRBM) - Countermeasures (MIT LL)	FFRDC	MIT Lincoln Laboratory : Hanscom AFB, Lexington, MA	0.000	10.447	Dec 2020	9.530	Dec 2021	4.009	Dec 2022	-		4.009	Continuing	Continuing	Continuing
Consumables - Medium Range Ballistic Missiles (MRBM) - Countermeasures (SNL)	IA	Sandia National Laboratories : Albuquerque, NM	108.162	26.325	Dec 2020	23.700	Dec 2021	25.695	Dec 2022	-		25.695	Continuing	Continuing	Continuing
Consumables - Medium Range Ballistic Missiles (MRBM) - MBRVs	C/CPAF	Lockheed Martin Space Systems Company : Huntsville, AL	482.045	14.178	Nov 2020	7.443	Nov 2021	15.546	Nov 2022	-		15.546	Continuing	Continuing	Continuing

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Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603915C / Ballistic Missile Defense Targets				Project (Number/Name) MT05 / BMDS Targets Program					
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Consumables - Medium Range Ballistic Missiles (MRBM) - MRBM T1/T2	C/CPAF	L3 Communications/ Coleman Aerospace : Orlando, FL	433.561	79.297	Nov 2020	118.824	Nov 2021	114.168	Nov 2022	-		114.168	Continuing	Continuing	Continuing
Consumables - Medium Range Ballistic Missiles (MRBM) - MRBM T1/T2 Target Support	MIPR	Cape Canaveral 45th Space Wing : Cape Canaveral, FL	0.742	0.125	Nov 2020	0.770	Nov 2021	0.324	Nov 2022	-		0.324	Continuing	Continuing	Continuing
Consumables - Medium Range Ballistic Missiles (MRBM) - MRBM T3c2	C/CPAF	Northrop Grumman Space Systems : Chandler, AZ	203.601	16.208	Nov 2020	21.767	Nov 2021	9.944	Nov 2022	-		9.944	Continuing	Continuing	Continuing
Consumables - Medium Range Ballistic Missiles (MRBM) - MRBM T4	C/CPAF	Northrop Grumman Space Systems : Chandler, AZ	7.906	38.980	Nov 2020	28.831	Nov 2021	40.441	Nov 2022	-		40.441	Continuing	Continuing	Continuing
Consumables - Medium Range Ballistic Missiles (MRBM) - MRBM T4 Design Support	MIPR	Space and Missile Defense Command : Huntsville, AL	6.113	0.112	Dec 2020	0.000		0.000		-		0.000	0.000	6.225	0.000
Consumables - Medium Range Ballistic Missiles (MRBM) - MRBM T4 Support	MIPR	Naval Surface Warfare Center : Port Hueneme, CA	2.966	7.992	Dec 2020	0.000		0.000		-		0.000	0.000	10.958	0.000
Consumables - Medium Range Ballistic Missiles (MRBM) - MRBM Target Support	MIPR	Space and Missile Systems Center : Albuquerque, NM	9.767	2.206	Dec 2020	0.000		0.000		-		0.000	0.000	11.973	0.000
Consumables - Medium Range Ballistic Missiles (MRBM) - Motor Test Support	MIPR	Air Force Research Laboratory : Wright Patterson AFB, OH	0.187	0.216	Dec 2020	0.000		0.000		-		0.000	0.000	0.403	0.000
Consumables - Medium Range Ballistic Missiles (MRBM) - Network Services	MIPR	Defense Information Systems Agency : Fort Meade, MD	0.288	0.077	Dec 2020	0.059	Nov 2021	0.066	Nov 2022	-		0.066	Continuing	Continuing	Continuing

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Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603915C / Ballistic Missile Defense Targets				Project (Number/Name) MT05 / BMDS Targets Program					
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Consumables - Medium Range Ballistic Missiles (MRBM) - Range Safety	MIPR	Reagan Test Site : Kwajalein Atoll	0.000	0.000		0.116	Dec 2021	0.332	Dec 2022	-		0.332	Continuing	Continuing	Continuing
Consumables - Medium Range Ballistic Missiles (MRBM) - Re-entry Vehicles	FFRDC	Applied Physics Lab/Johns Hopkins University : Laurel, MD	20.019	18.060	Dec 2020	24.253	Dec 2021	21.293	Dec 2022	-		21.293	Continuing	Continuing	Continuing
Consumables - Medium Range Ballistic Missiles (MRBM) - TPS Support	MIPR	Aviation and Missile Research, Development, and Engineering Center (AMRDEC) : Huntsville, AL	29.449	3.000	Dec 2020	1.450	Dec 2021	1.709	Dec 2022	-		1.709	Continuing	Continuing	Continuing
Consumables - Medium Range Ballistic Missiles (MRBM) - Target Component Testing	MIPR	Naval Surface Warfare Center : Crane, IN	0.011	0.120	Dec 2020	0.000		0.000		-		0.000	0.000	0.131	0.000
Consumables - Medium Range Ballistic Missiles (MRBM) - Transportation	MIPR	Defense Finance and Accounting Service : Indianapolis, IN	0.830	0.100	Dec 2020	0.000		0.000		-		0.000	0.000	0.930	0.000
Consumables - Medium Range Ballistic Missiles (MRBM) - Various (Prior Year Funding Only, No Funding in the FYDP)	Various	Various : Various	1.476	0.000		0.000		0.000		-		0.000	0.000	1.476	0.000
Consumables - Intermediate Range Ballistic Missiles (IRBM) - Countermeasures (SNL)	IA	Sandia National Laboratories : Albuquerque, NM	12.486	5.100	Dec 2020	5.466	Dec 2021	1.952	Dec 2022	-		1.952	Continuing	Continuing	Continuing
Consumables - Intermediate Range Ballistic Missiles (IRBM) - IRBM Re-entry Vehicles	C/CPAF	NORTHROP GRUMMAN : AZ	0.000	0.000		0.000		17.062	Dec 2022	-		17.062	Continuing	Continuing	Continuing

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Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603915C / Ballistic Missile Defense Ta rgets				Project (Number/Name) MT05 / BMDS Targets Program					
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Consumables - Intermediate Range Ballistic Missiles (IRBM) - IRBM T1/T2	C/CPAF	Northrop Grumman Space Systems : Chandler, AZ	659.052	47.963	Nov 2020	18.078	Nov 2021	11.452	Nov 2022	-		11.452	Continuing	Continuing	Continuing
Consumables - Intermediate Range Ballistic Missiles (IRBM) - Re-entry Vehicles	C/CPAF	Lockheed Martin Space Systems Company : Huntsville, AL	73.595	9.375	Nov 2020	3.218	Nov 2021	1.262	Nov 2022	-		1.262	Continuing	Continuing	Continuing
Consumables - Intermediate Range Ballistic Missiles (IRBM) - Various (Prior Year Funding Only, No Funding in the FYDP)	Various	Various : Various	10.455	0.000		0.000		0.000		-		0.000	0.000	10.455	0.000
Consumables - Intercontinental Ballistic Missiles (ICBM) - Countermeasures (MIT LL)	FFRDC	MIT Lincoln Laboratory : Hanscom AFB, Lexington, MA	20.483	0.000		0.000		11.393	Dec 2022	-		11.393	Continuing	Continuing	Continuing
Consumables - Intercontinental Ballistic Missiles (ICBM) - Countermeasures (SNL)	IA	Sandia National Lab : Albuquerque, NM	18.402	0.000		0.000		6.635	Dec 2022	-		6.635	Continuing	Continuing	Continuing
Consumables - Intercontinental Ballistic Missiles (ICBM) - ICBM Motor Services	C/CPAF	Northrop Grumman Space Systems : Magna, UT	4.978	4.949	Nov 2020	5.307	Nov 2021	5.183	Nov 2022	-		5.183	Continuing	Continuing	Continuing
Consumables - Intercontinental Ballistic Missiles (ICBM) - ICBM Re-entry Vehicles	C/CPAF	NORTHROP GRUMMAN : AZ	0.000	0.000		0.000		0.617	Dec 2022	-		0.617	Continuing	Continuing	Continuing
Consumables - Intercontinental Ballistic Missiles (ICBM) - ICBM T1/T2	C/CPAF	Northrop Grumman Space Systems : Chandler, AZ	313.370	36.320	Nov 2020	11.539	Nov 2021	28.629	Nov 2022	-		28.629	Continuing	Continuing	Continuing

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Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603915C / Ballistic Missile Defense Targets				Project (Number/Name) MT05 / BMDS Targets Program					
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Consumables - Intercontinental Ballistic Missiles (ICBM) - ICBM Target Support	C/CPFF	JACOBS TECHNOLOGY INC. : AL	0.000	0.140	Dec 2020	0.000		0.000		-		0.000	0.000	0.140	0.000
Consumables - Intercontinental Ballistic Missiles (ICBM) - MBRVs	C/CPAF	Lockheed Martin Space Systems Company : Huntsville, AL	35.521	0.000		7.583	Nov 2021	7.533	Nov 2022	-		7.533	Continuing	Continuing	Continuing
Consumables - Intercontinental Ballistic Missiles (ICBM) - Missile Assembly Support	MIPR	DOD - USA - ARMY GARRISON REDSTONE ARSENAL (USAG RSA) : AL	0.000	1.066	Dec 2020	0.000		0.000		-		0.000	0.000	1.066	0.000
Consumables - Intercontinental Ballistic Missiles (ICBM) - Static Fire Support	MIPR	Naval Air Weapons Station : China Lake, CA	0.701	0.000		0.391	Nov 2021	0.394	Dec 2022	-		0.394	Continuing	Continuing	Continuing
Consumables - Intercontinental Ballistic Missiles (ICBM) - Various (Prior Year Funding Only, No Funding in the FYDP)	Various	Various : Various	10.995	0.000		0.000		0.000		-		0.000	0.000	10.995	0.000
Consumables - Joint Emergent Operational Need Statement (JEON) - Launch Support	MIPR	Space and Missile Defense Command : Huntsville, AL	4.500	1.027	Nov 2020	0.000		0.000		-		0.000	0.000	5.527	0.000
Consumables - Joint Emergent Operational Need Statement (JEON) - Target Hardware	C/CPAF	L3 Communications/ Coleman Aerospace : Orlando, FL	44.500	0.000		0.000		0.000		-		0.000	0.000	44.500	0.000
Program Planning & Operations - Civilian Pay, Travel, IT Support	Allot	Missile Defense Agency : Huntsville, AL	223.717	32.620	Nov 2020	28.232	Nov 2021	29.993	Nov 2022	-		29.993	Continuing	Continuing	Continuing

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Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Planning & Operations - FFRDC Support (JHU APL)	FFRDC	Johns Hopkins University, Applied Physics Lab : Baltimore, MD	8.173	1.728	Dec 2020	2.134	Dec 2021	2.003	Dec 2022	-		2.003	Continuing	Continuing	Continuing
Program Planning & Operations - Network Services	C/FFP	Network Management Resources : Chantilly, VA	3.316	0.203	Nov 2020	0.150	Nov 2021	0.140	Nov 2022	-		0.140	Continuing	Continuing	Continuing
Program Planning & Operations - Safety and Logistics Support	MIPR	DOD - USA - AVIATION AND MISSILE COMMAND (AMCOM) : Huntsville, AL	6.032	0.192	Nov 2020	0.402	Nov 2021	0.377	Nov 2022	-		0.377	Continuing	Continuing	Continuing
Program Planning & Operations - TEAMS Support	C/CPAF	Targets TEAMS Support : Huntsville, AL	307.862	20.205	Oct 2020	20.080	Nov 2021	25.958	Nov 2022	-		25.958	Continuing	Continuing	Continuing
Program Planning & Operations - Various (Prior Year Funding Only, No Funding in the FYDP)	Various	Various : Various	1.098	0.000		0.000		0.000		-		0.000	0.000	1.098	0.000
Resources - FFRDC Support / Trade Studies (JHU APL)	FFRDC	Johns Hopkins University, Applied Physics Lab : Baltimore, MD	9.099	0.481	Nov 2020	0.844	Nov 2021	0.964	Nov 2022	-		0.964	Continuing	Continuing	Continuing
Resources - ACU Maintenance	MIPR	DOD - USAF - AIR FORCE TEST CENTER (AFTC) : CA	0.000	0.215	Dec 2020	0.000		0.403	Dec 2022	-		0.403	Continuing	Continuing	Continuing
Resources - Disposal	MIPR	Aviation and Missile Research, Development, and Engineering Center (AMRDEC) : Huntsville, AL	9.834	0.293	Nov 2020	0.250	Nov 2021	0.314	Nov 2022	-		0.314	Continuing	Continuing	Continuing

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Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Resources - Engineering Services	C/CPFF	Special Aerospace Services : Boulder, CO	0.295	1.509	Dec 2020	0.783	Dec 2021	0.523	Dec 2022	-		0.523	Continuing	Continuing	Continuing
Resources - Engineering Support (SMDC)	MIPR	Space and Missile Defense Command : Huntsville, AL	0.720	0.242	Dec 2020	0.000		0.000		-		0.000	0.000	0.962	0.000
Resources - FFRDC Support / Trade Studies (Aerospace)	FFRDC	Aerospace Corporation : El Segundo, CA	31.231	4.313	Dec 2020	4.486	Dec 2021	2.560	Dec 2022	-		2.560	Continuing	Continuing	Continuing
Resources - FFRDC Support / Trade Studies (SNL)	IA	Sandia National Lab : Albuquerque, NM	10.678	4.564	Dec 2020	4.993	Dec 2021	5.065	Dec 2022	-		5.065	Continuing	Continuing	Continuing
Resources - Future ILS Support	TBD	Future ILS/Systems Engineering Support : TBD	0.000	0.000		1.340	Dec 2021	0.000		-		0.000	0.000	1.340	0.000
Resources - Garrison Support	MIPR	Redstone Arsenal Garrison : Huntsville, AL	3.424	0.000		0.893	Nov 2021	0.000		-		0.000	0.000	4.317	0.000
Resources - Garrison Support (Jacobs)	C/CPAF	Jacobs Engineering Group : Huntsville, AL	0.000	0.944	Nov 2020	0.083	Nov 2021	0.118	Nov 2022	-		0.118	Continuing	Continuing	Continuing
Resources - Hazard Material Analysis	MIPR	DOD - USA - AVIATION AND MISSILE COMMAND (AMCOM) : AL	0.000	0.000		0.000		0.055	Dec 2022	-		0.055	Continuing	Continuing	Continuing
Resources - Independent Verification and Validation	MIPR	Aviation and Missile Research, Development, and Engineering Center (AMRDEC) : Huntsville, AL	87.896	6.381	Nov 2020	6.471	Nov 2021	6.318	Nov 2022	-		6.318	Continuing	Continuing	Continuing
Resources - Integration and Analysis Center	C/IDIQ	PARSONS GOVERNMENT SERVICES INC. : AL	0.000	0.000		5.000	Jun 2022	0.000		-		0.000	0.000	5.000	0.000

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Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Resources - Intermodal Logistics Support	MIPR	Army Intermodal and Distribution Platform Management Office (AIDPMO) : IL	0.000	0.000		0.000		0.845	Dec 2022	-		0.845	Continuing	Continuing	Continuing
Resources - Logistics Support	MIPR	Dugway Proving Ground : Dugway, UT	0.051	0.031	Dec 2020	0.026	Dec 2021	0.044	Dec 2022	-		0.044	Continuing	Continuing	Continuing
Resources - MRBM T3c2 Engineering Services Support	C/CPAF	NORTHROP GRUMMAN : AZ	0.000	0.000		0.000		1.350	Dec 2022	-		1.350	Continuing	Continuing	Continuing
Resources - Maintenance Support	MIPR	Army Information Management Command : San Antonio, TX	0.081	0.037	Dec 2020	0.118	Nov 2021	0.166	Nov 2022	-		0.166	Continuing	Continuing	Continuing
Resources - Motor Activities	MIPR	Space and Missile Systems Center : Albuquerque, NM	0.100	0.340	Dec 2020	5.388	Nov 2021	6.235	Nov 2022	-		6.235	Continuing	Continuing	Continuing
Resources - Motor Static Fire Testing	MIPR	Redstone Test Center : Huntsville, AL	0.000	1.816	Nov 2020	0.000		0.904	Nov 2022	-		0.904	Continuing	Continuing	Continuing
Resources - Motor Storage	MIPR	Tooele Army Depot : Tooele, UT	2.255	0.179	Dec 2020	0.063	Dec 2021	0.184	Dec 2022	-		0.184	Continuing	Continuing	Continuing
Resources - Quality / Pedigree Reviews	FFRDC	Aerospace Corporation : El Segundo, CA	8.793	3.600	Nov 2020	4.300	Nov 2021	4.501	Nov 2022	-		4.501	Continuing	Continuing	Continuing
Resources - RCS Testing	MIPR	Naval Air Warfare Center : Point Mugu, CA	7.648	1.597	Nov 2020	0.606	Nov 2021	0.698	Nov 2022	-		0.698	Continuing	Continuing	Continuing
Resources - Reactive Target Simulation	C/IDIQ	PARSONS GOVERNMENT SERVICES INC. : AL	0.000	0.000		20.000	Jun 2022	0.000		-		0.000	0.000	20.000	0.000
Resources - Sustaining Support and Maintenance	C/CPFF	Venturi Aerospace : Huntsville, AL	0.910	1.972	Jan 2021	1.154	Jan 2022	2.356	Jan 2023	-		2.356	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603915C / Ballistic Missile Defense Targets				Project (Number/Name) MT05 / BMDS Targets Program					
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Resources - TEAMS Support	C/CPAF	Targets Resources TEAMS Support : Huntsville, AL	9.281	20.126	Oct 2020	13.160	Nov 2021	10.590	Nov 2022	-		10.590	Continuing	Continuing	Continuing
Resources - Target Material Testing Support	MIPR	DEPARTMENT OF ENERGY - OAK RIDGE OPERATION OFFICE : TN	0.000	0.300	Dec 2020	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Resources - Technical Data Lab	Various	Missile Defense Agency : Huntsville, AL	0.000	0.830	Dec 2020	0.500	Nov 2021	0.486	Nov 2022	-		0.486	Continuing	Continuing	Continuing
Resources - Transportation	MIPR	Defense Finance and Accounting Services (DFAS) : Indianapolis, IN	3.509	1.298	Nov 2020	0.543	Nov 2021	0.170	Nov 2022	-		0.170	Continuing	Continuing	Continuing
Resources - Various (Prior Year Funding Only, No Funding in the FYDP)	Various	Various : Various	204.938	0.000		0.000		0.000		-		0.000	0.000	204.938	0.000
Resources - Wind Tunnel Support	MIPR	Arnold Engineering Development Complex : Arnold AFB, TN	0.000	3.716	Dec 2020	3.608	Dec 2021	3.800	Dec 2022	-		3.800	Continuing	Continuing	Continuing
Flight Test Execution - Air Force Test Center Support	MIPR	Edwards Air Force Base : Lancaster, CA	19.389	1.000	Nov 2020	7.094	Nov 2021	5.067	Nov 2022	-		5.067	Continuing	Continuing	Continuing
Flight Test Execution - Air Launch Target Support	MIPR	Air Mobility Command : WA	0.000	0.000		2.023	Dec 2021	3.714	Dec 2022	-		3.714	Continuing	Continuing	Continuing
Flight Test Execution - COMSEC Utility Program and Encryptors	MIPR	National Security Agency : Fort Meade, MD	0.249	0.033	Dec 2020	0.245	Dec 2021	0.147	Dec 2022	-		0.147	Continuing	Continuing	Continuing
Flight Test Execution - Captive Carry Support	MIPR	Eglin Air Force Base : Eglin AFB, FL	0.894	0.015	Nov 2020	0.173	Nov 2021	0.216	Nov 2022	-		0.216	Continuing	Continuing	Continuing
Flight Test Execution - Communications Support	MIPR	Defense Logistics Agency : Fort Belvoir, VA	0.143	0.000		0.262	Nov 2021	0.190	Nov 2022	-		0.190	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603915C / <i>Ballistic Missile Defense Targets</i>				Project (Number/Name) MT05 / <i>BMDS Targets Program</i>					
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Flight Test Execution - Electromagnetic Interference and Electromagnetic Compatibility Analysis	MIPR	Air Force Research Laboratory : Wright Patterson AFB, OH	2.101	0.000		0.594	Dec 2021	0.868	Dec 2022	-		0.868	Continuing	Continuing	Continuing
Flight Test Execution - Flight Gear Certification	MIPR	Redstone Test Center : Huntsville, AL	0.313	0.000		0.020	Nov 2021	0.014	Nov 2022	-		0.014	Continuing	Continuing	Continuing
Flight Test Execution - Flight Gear Equipment	MIPR	Charleston Air Force Base : Joint Base Charleston, SC	0.000	0.000		0.013	Dec 2021	0.010	Dec 2022	-		0.010	Continuing	Continuing	Continuing
Flight Test Execution - Flight Test Execution Support (MDA)	Various	Missile Defense Agency : Huntsville, AL	9.004	2.162	Nov 2020	2.225	Dec 2021	0.000		-		0.000	0.000	13.391	0.000
Flight Test Execution - Flight Test Execution Support (NSWC)	MIPR	Naval Surface Warfare Center : Port Hueneme, CA	3.915	4.037	Dec 2020	0.000		0.000		-		0.000	0.000	7.952	0.000
Flight Test Execution - Flight Test Execution Support (SNL)	IA	Sandia National Lab : Albuquerque, NM	0.605	1.498	Dec 2020	0.000		0.000		-		0.000	0.000	2.103	0.000
Flight Test Execution - Flight Test Transportation	MIPR	Defense Finance and Accounting Services : Indianapolis, IN	30.864	1.765	Nov 2020	4.339	Nov 2021	6.874	Nov 2022	-		6.874	Continuing	Continuing	Continuing
Flight Test Execution - Forward Staging Support	MIPR	Hickam Field : Pearl Harbor, HI	0.462	0.000		0.026	Dec 2021	0.029	Dec 2022	-		0.029	Continuing	Continuing	Continuing
Flight Test Execution - Launch Execution (Coleman Aerospace)	C/CPAF	L3 Communications/ Coleman Aerospace : Orlando, FL	9.741	0.000		2.080	Nov 2021	5.942	Nov 2022	-		5.942	Continuing	Continuing	Continuing
Flight Test Execution - Launch Execution (NGSS)	C/CPAF	Northrop Grumman Space Systems : Chandler, AZ	17.398	1.637	Nov 2020	5.054	Nov 2021	11.686	Nov 2022	-		11.686	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603915C / Ballistic Missile Defense Ta rgets				Project (Number/Name) MT05 / BMDS Targets Program					
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Flight Test Execution - Range Support (KTF)	MIPR	Kauai Test Facility : Kauai, HI	2.845	2.940	Dec 2020	0.000		3.514	Dec 2022	-		3.514	Continuing	Continuing	Continuing
Flight Test Execution - Range Support (PMRF)	MIPR	Pacific Missile Range Facility : Barking Sands, HI	20.776	1.751	Dec 2020	0.000		2.031	Nov 2022	-		2.031	Continuing	Continuing	Continuing
Flight Test Execution - Range Support (RTS)	MIPR	Reagan Test Site : Kwajalein Atoll	12.601	0.719	Dec 2020	0.000		0.000		-		0.000	0.000	13.320	0.000
Flight Test Execution - Spectrum Analysis	MIPR	Aviation and Missile Research Dev and Eng Center : Huntsville, AL	0.055	0.000		0.046	Nov 2021	0.033	Nov 2022	-		0.033	Continuing	Continuing	Continuing
Flight Test Execution - Spectrum Support	MIPR	Naval Surface Warfare Center : Dahlgren, VA	0.529	0.000		0.315	Nov 2021	0.228	Nov 2022	-		0.228	Continuing	Continuing	Continuing
Flight Test Execution - TEAMS Support	C/CPAF	Targets Flight Test Execution TEAMS Support : Huntsville, AL	5.670	6.720	Oct 2020	5.776	Nov 2021	3.855	Nov 2022	-		3.855	Continuing	Continuing	Continuing
Flight Test Execution - Target Transportation	MIPR	Redstone Army Airfield : Redstone Arsenal, AL	0.137	0.000		0.418	Dec 2021	0.051	Dec 2022	-		0.051	Continuing	Continuing	Continuing
Flight Test Execution - Test Verification Instruments	MIPR	US Army Yuma Proving Ground : Yuma, AZ	3.295	0.142	Nov 2020	1.790	Nov 2021	1.424	Nov 2022	-		1.424	Continuing	Continuing	Continuing
Flight Test Execution - Various (Prior Year Funding Only, No Funding in the FYDP)	Various	Various : Various	7.893	0.000		0.000		0.000		-		0.000	0.000	7.893	0.000
Subtotal			3,816.807	511.375		539.834		537.368		-		537.368	Continuing	Continuing	N/A
Remarks N/A															

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency													Date: April 2022		
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603915C / <i>Ballistic Missile Defense Targets</i>						Project (Number/Name) MT05 / <i>BMDs Targets Program</i>			
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	N/A
Remarks N/A															
Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	N/A
Remarks N/A															
Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	N/A
Remarks N/A															
			Prior Years	FY 2021	FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract	
Project Cost Totals			3,816.807	511.375		539.834		537.368		-		537.368	Continuing	Continuing	N/A
Remarks Award Date reflects date of first obligation. Additional obligations may occur incrementally throughout the year. Previous references to Orbital Sciences Corporation and Northrop Grumman Innovation Systems have been updated to Northrop Grumman Space Systems to reflect current corporate structure.															

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Missile Defense Agency														Date: April 2022						
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603915C / Ballistic Missile Defense Targets						Project (Number/Name) MT05 / BMDS Targets Program								
Significant Event Complete ▲		Milestone Decision Complete ★		Element Test Complete ◆		System Level Test Complete ●				Complete Activity ◆										
Significant Event Planned △		Milestone Decision Planned ☆		Element Test Planned ◇		System Level Test Planned ○				Planned Activity ◇										
						FY 2021		FY 2022		FY 2023		FY 2024		FY 2025		FY 2026		FY 2027		
MRBM Type 4 Pre-Ship Readiness Review (Ship Set 1)																		△		
IRBM Type 1/Type 2 Pre-Ship Readiness Review (Ship Set 9)																		△		
MRBM Type 1/Type 2 Pre-Ship Readiness Review (Ship Set 8)																			△	
IRBM Type 1/Type 2 Pre-Ship Readiness Review (Ship Set 11)																			△	
MRBM Type 4 Pre-Ship Readiness Review (Ship Set 2)																			△	
MRBM Type 4 Pre-Ship Readiness Review (Ship Set 3)																			△	
MRBM Type 4 Pre-Ship Readiness Review (Ship Set 4)																			△	

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Missile Defense Agency			Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603915C / <i>Ballistic Missile Defense Targets</i>	Project (Number/Name) MT05 / <i>BMDs Targets Program</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
MRBM Type 3/Configuration 2 Pre-Ship Readiness Review (Ship Set 5)	1	2021	1	2021
MRBM T4-B Pre-Ship Readiness Review (Ship Set 24)	2	2021	2	2021
MRBM T4-B Pre-Ship Readiness Review (Ship Set 25)	2	2021	2	2021
SRBM Black Dagger Pre-Ship Readiness Review (Ship Set 1)	2	2021	2	2021
SRBM T4-G Pre-Ship Readiness Review (Ship Set 1)	3	2021	3	2021
SRBM T4-G Pre-Ship Readiness Review (Ship Set 2)	3	2021	3	2021
SRBM PF Zombie Pre-Ship Readiness Review (Ship Set 1)	3	2021	3	2021
MRBM Type 1/Type2 Pre-Ship Readiness Review (Ship Set 2)	2	2022	2	2022
IRBM Type 1/Type 2 Pre-Ship Readiness Review (Ship Set 10)	3	2022	3	2022
MRBM Type 3/Configuration 2 Pre-Ship Readiness Review (Ship Set 6)	1	2023	1	2023
MRBM Type 5 (Advanced Target) Pre-Ship Readiness Review (Ship Set 1)	1	2023	1	2023
MRBM Type 1/Type 2 Pre-Ship Readiness Review (Ship Set 3)	2	2023	2	2023
MRBM Type 1/Type 2 Pre-Ship Readiness Review (Ship Set 4)	2	2023	2	2023
MRBM Type 3/Configuration 2 Pre-Ship Readiness Review (Ship Set 7)	4	2023	4	2023
SRBM Type 4 Pre-Ship Readiness Review (Ship Set 1)	1	2024	1	2024
SRBM Type 4 Pre-Ship Readiness Review (Ship Set 2)	1	2024	1	2024
SRBM Type 4 Pre-Ship Readiness Review (Ship Set 3)	1	2024	1	2024
MRBM Type 1/Type 2 Pre-Ship Readiness Review (Ship Set 5)	1	2024	1	2024
MRBM Type 5 (Advanced Target) Pre-Ship Readiness Review (Ship Set 2)	1	2024	1	2024
MRBM Type 1/Type 2 Pre-Ship Readiness Review (Ship Set 6)	2	2024	2	2024
SRBM Black Dagger Pre-Ship Readiness Review (Ship Set 2)	2	2025	2	2025
MRBM Type 1/Type 2 Pre-Ship Readiness Review (Ship Set 7)	3	2025	3	2025

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Missile Defense Agency			Date: April 2022	
Appropriation/Budget Activity 0400 / 4		R-1 Program Element (Number/Name) PE 0603915C / <i>Ballistic Missile Defense Targets</i>		Project (Number/Name) MT05 / <i>BMDS Targets Program</i>
		Start		End
Events	Quarter	Year	Quarter	Year
IRBM Type 1/Type 2 Pre-Ship Readiness Review (Ship Set 8)	2	2026	2	2026
SRBM Type 4 Pre-Ship Readiness Review (Ship Set 4)	4	2026	4	2026
MRBM Type 4 Pre-Ship Readiness Review (Ship Set 1)	4	2026	4	2026
IRBM Type 1/Type 2 Pre-Ship Readiness Review (Ship Set 9)	1	2027	1	2027
MRBM Type 1/Type 2 Pre-Ship Readiness Review (Ship Set 8)	2	2027	2	2027
IRBM Type 1/Type 2 Pre-Ship Readiness Review (Ship Set 11)	3	2027	3	2027
MRBM Type 4 Pre-Ship Readiness Review (Ship Set 2)	3	2027	3	2027
MRBM Type 4 Pre-Ship Readiness Review (Ship Set 3)	3	2027	3	2027
MRBM Type 4 Pre-Ship Readiness Review (Ship Set 4)	3	2027	3	2027

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency										Date: April 2022		
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0603915C / Ballistic Missile Defense Targets				Project (Number/Name) MD40 / Program Wide Support			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
MD40: Program Wide Support	150.846	21.296	19.160	20.633	-	20.633	19.307	21.330	23.595	23.896	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Program Wide Support (PWS) is allocated on a pro-rata basis across multiple Agency PEs each fiscal year based on the total Agency budget, and therefore fluctuates per PE by fiscal year.

A. Mission Description and Budget Item Justification

PWS contains non-headquarters management costs in support of MDA functions and activities across the entire MDS. These functions include Government Civilians and Contract Support Services. This effort provides integrity and oversight of the MDS as well as supports MDA in the development and evaluation of technologies that will respond to the changing threat. Additionally, PWS includes personnel to support global deployments performing deployment site preparation and activation, and provides facility capabilities for MDA Executing Agent locations worldwide. Other MDA wide costs include: physical and technical security; civilian drug testing; audit readiness; the Science, Technology, Engineering, and Mathematics (STEM) program; legal services and settlements; travel and agency training; office, equipment, vehicle, and warehouse leases; utilities and base operations across multiple geographic locations; commercial and ancillary facility services; management of all facility aspects regardless of lifecycle stage; supplies and maintenance; compliance with statutory environmental requirements; data and unified communications support; materiel and readiness and central property management of equipment; Facilities Sustainment, Restoration and Modernization (FSRM) program, (formerly Real Property Maintenance) to keep the Department's inventory of facilities in good working order; and similar operating expenses. PWS is allocated on a pro-rata basis across most Agency PEs and therefore fluctuates per PE by fiscal year based on the total Agency budget in that fiscal year.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2021	FY 2022	FY 2023
Title: Program Wide Support	21.296	19.160	20.633
Articles:	-	-	-
Description: PWS contains non-headquarters management costs in support of MDA functions and activities across the entire MDS. These functions include Government Civilians and Contract Support Services. This effort provides integrity and oversight of the MDS as well as supports MDA in the development and evaluation of technologies that will respond to the changing threat. Additionally, PWS includes personnel to support global deployments performing deployment site preparation and activation, and provides facility capabilities for MDA Executing Agent locations worldwide. Other MDA wide costs include: physical and technical security; civilian drug testing; audit readiness; the Science, Technology, Engineering, and Mathematics (STEM) program; legal services and settlements; travel and agency training; office, equipment, vehicle, and warehouse leases; utilities and base operations across multiple geographic locations; commercial and ancillary facility services; management of all facility aspects regardless of lifecycle stage; supplies and maintenance; compliance with statutory environmental requirements; data and unified communications support; materiel and readiness and central property management of equipment; Facilities Sustainment,			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency		Date: April 2022	
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603915C / <i>Ballistic Missile Defense Targets</i>	Project (Number/Name) MD40 / <i>Program Wide Support</i>	
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2021	FY 2022
<p>Restoration and Modernization (FSRM) program, (formerly Real Property Maintenance) to keep the Department's inventory of facilities in good working order; and similar operating expenses. PWS is allocated on a pro-rata basis across most Agency PEs and therefore fluctuates per PE by fiscal year based on the total Agency budget in that fiscal year.</p> <p><i>FY 2022 Plans:</i> - SEE ABOVE.</p> <p><i>FY 2023 Plans:</i> - SEE ABOVE.</p> <p><i>FY 2022 to FY 2023 Increase/Decrease Statement:</i> - N/A</p>			
Accomplishments/Planned Programs Subtotals		21.296	19.160
C. Other Program Funding Summary (\$ in Millions)			
N/A			
Remarks			
D. Acquisition Strategy			
N/A			

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603915C / Ballistic Missile Defense Targets				Project (Number/Name) MD40 / Program Wide Support					
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Wide Support - Agency Operations Management	Various	Various; Multi : AL, CA, CO, VA	7.308	0.000		0.000		0.000		-		0.000	0.000	7.308	0.000
Program Wide Support - Agency Operations and Support Acq	C/CPFF	SYSTEM HIGH CORPORATION : AL	0.000	0.000		0.000		3.427	Nov 2022	-		3.427	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations and Support Civilian Salaries, Travel, Training	Various	MDA : Multi: AK, AL, CA, CO, VA	0.000	0.434	Nov 2020	0.264	Nov 2021	0.225	Nov 2022	-		0.225	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations and Support Other Agency Services (FFP)	C/FFP	CHENEGA : AL	5.390	6.906	Oct 2020	6.026	Dec 2021	3.337	Dec 2022	-		3.337	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations and Support Services	C/CPFF	STRATEGIC ALLIANCE BUSINESS GROUP LLC : AL	45.850	12.985	May 2021	11.579	Nov 2021	12.447	Nov 2022	-		12.447	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations and Support, International, and Materiel and Readiness	MIPR	Various Multi: : AK, AL, CA, CO, HI, VA	1.133	0.545	Oct 2020	0.708	Jan 2022	0.700	Jan 2023	-		0.700	Continuing	Continuing	Continuing
Program Wide Support - FFRDC	FFRDC	Various : Multi: AL, VA	0.000	0.426	Aug 2021	0.583	Nov 2021	0.497	Nov 2022	-		0.497	Continuing	Continuing	Continuing
Program Wide Support - Facilities and Maintenance SRM	MIPR	Various : Multi: AK, AL, CA, VA	27.517	0.000		0.000		0.000		-		0.000	0.000	27.517	0.000
Program Wide Support - Prior year no longer funded in the FYDP	Various	Various : Various	63.648	0.000		0.000		0.000		-		0.000	0.000	63.648	0.000
Subtotal			150.846	21.296		19.160		20.633		-		20.633	Continuing	Continuing	N/A
Remarks N/A															

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency											Date: April 2022				
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0603915C / Ballistic Missile Defense Targets					Project (Number/Name) MD40 / Program Wide Support					
			Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			150.846	21.296		19.160		20.633		-		20.633	Continuing	Continuing	N/A

Remarks

Award Date reflects date of first obligation. Additional obligations may incrementally occur throughout the year.

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Missile Defense Agency															Date: April 2022																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Missile Defense Agency			Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603915C / Ballistic Missile Defense Targets	Project (Number/Name) MD40 / Program Wide Support	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
MD40 Program-Wide Support	1	2021	4	2027

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Missile Defense Agency	Date: April 2022
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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 0604102C / <i>Guam Defense Development</i>
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COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
Total Program Element	-	0.000	112.400	397.936	-	397.936	343.875	329.780	215.729	146.089	Continuing	Continuing
MD65: <i>Defense of Guam Development</i>	-	0.000	112.400	383.486	-	383.486	331.773	318.507	207.626	140.566	Continuing	Continuing
MD40: <i>Program Wide Support</i>	-	0.000	0.000	14.450	-	14.450	12.102	11.273	8.103	5.523	Continuing	Continuing

Program MDAP/MAIS Code: 362

Note

The increase from FY 2022 to FY 2023 provides for the Department of Defense (DoD) - Defense of Guam Architecture solution to include Architecture Development and Engineering; Environmental, Site Activation, and Advanced Planning; Radar Development and Integration; Aegis Command, Control, Communications, Computers, and Intelligence (C4I); and Aegis Land-Based System Engineering.

A. Mission Description and Budget Item Justification

This program develops a Missile Defense System (MDS) for the defense of Guam against ballistic, hypersonic and cruise missile threats as a high priority mission for the DoD. The MDS will form a key part of strategic deterrence and supports the Pacific Deterrence Initiative.

The architecture design includes integration efforts between Missile Defense Agency (MDA), U.S. Army, and U.S. Navy systems. MDA requested funding in FY 2022 to begin studies and analysis, architecture development and siting analysis. The program leverages the results of the studies and analysis to begin developing and fielding four land-based radars, distributed sensors, and integrated communications across strategic assets on Guam. The architecture acquisition process also provides environmental, engineering, and interoperability activities to balance costs and associated risks. The inter-Department partnership will conduct the appropriate flight tests to validate MDS capabilities on Guam.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Missile Defense Agency	Date: April 2022
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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 0604102C / <i>Guam Defense Development</i>
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B. Program Change Summary (\$ in Millions)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Previous President's Budget	0.000	78.300	0.000	-	0.000
Current President's Budget	0.000	112.400	397.936	-	397.936
Total Adjustments	0.000	34.100	397.936	-	397.936
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	-5.900			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	40.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Missile Defeat and Defense Enhancement	0.000	0.000	0.000	-	0.000
• Other Adjustment	0.000	0.000	397.936	-	397.936

Change Summary Explanation

Net increase of \$34 million in FY 2022 provides the Congressional Plus-up for Guam Defense System acceleration and reflects Congressional reduction for delayed architecture submission.

FY 2023 funding increase reflects the fact that the FY 2022 President's Budget request did not include out-year funding.

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency										Date: April 2022		
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0604102C / Guam Defense Development				Project (Number/Name) MD65 / Defense of Guam Development			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
MD65: Defense of Guam Development	-	0.000	112.400	383.486	-	383.486	331.773	318.507	207.626	140.566	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

The increase from FY 2022 to FY 2023 provides for the Department of Defense (DoD) - Defense of Guam Architecture solution.

A. Mission Description and Budget Item Justification

The Missile Defense Agency (MDA) is developing a Missile Defense System (MDS) for Guam defense against a range of missile threats. The DoD has undertaken studies on a range of missile defense architecture options, emphasizing effectiveness, survivability, and flexibility against an evolving threat. The architecture design includes integration efforts between MDA, U.S. Army, and U.S. Navy systems. This Program Element supports Pacific Deterrence Initiative (PDI).

MDA requested funding in FY 2022 to begin studies and analysis, architecture development and siting analysis. The FY 2023 program leverages the results of studies and analysis to begin developing and fielding four land-based radars, distributed sensors, and integrated communications across strategic assets on Guam. The architecture acquisition process also provides environmental, engineering, and interoperability activities to balance costs and associated risks. The inter-Department partnership will conduct the appropriate flight tests to validate MDS capabilities on Guam.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2021	FY 2022	FY 2023
Title: Guam Defense System (GDS)	0.000	112.400	0.000
Articles:	-	-	-
Description: This program develops an integrated air and missile defense system on Guam against air-breathing, ballistic, and hypersonic missile threats, however, architecture designs are still being finalized. This funding initiates development of multiple architecture options by investing in key enabling capabilities common to all proposed architecture solutions.			
FY 2022 Plans:			
- Begin Aegis design and engineering to accelerate sea-based terminal capability aligned to Guam			
- Start Command and Control center design and engineering to include Concept of Operations and battle management analysis, tailored to Guam			
- Modify C2BMC to improve tracking architecture to support advanced threats			
- Develop support facilities design and engineering to identify areas of consideration for the Defense of Guam site to include requirements definition, identify geographic locations that optimize operations, apply exclusionary and evaluative criteria, and location ranking			
- Commence environmental impact assessments, site survey and advanced MILCON planning activities			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency		Date: April 2022		
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604102C / Guam Defense Development	Project (Number/Name) MD65 / Defense of Guam Development		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2021	FY 2022	FY 2023
<div>- Conduct systems engineering and threat model engineering to incorporate geographic specific threats and scenarios, defined test requirements, and applicable specifications</div> <div>- Conduct architecture and systems engineering planning to assess requirements analysis, configuration management functional flow down, specifications update, risk management, and trade studies</div> <div>- Initiate Guam sensor development</div> <div>- Develop and integrate Aegis Weapon System with mobile launcher</div> <div>FY 2023 Plans: N/A</div> <div>FY 2022 to FY 2023 Increase/Decrease Statement: Decrease from FY 2022 to FY 2023 reflects the DoD Defense of Guam architecture solution. Funding has been realigned to other Accomplishments for increased transparency.</div>				
<div>Title: Architecture Development & Engineering</div> <div>Articles:</div> <div>Description: This accomplishment provides the architecture and systems Engineering and technical integration efforts to provide a capability to defend Guam against ballistic, hypersonic and cruise missile attack. This includes threat engineering, specifications development, architecture level analysis and trades, modeling and simulations, risk management, test requirements, test and performance analysis, baseline management and control, and system verification.</div> <div>FY 2022 Plans: N/A</div> <div>FY 2023 Plans: - Continue architecture and requirements development to map integration activities across the island of Guam - Continue modeling and simulation to develop threat engineering assessment - Continue system methodology development to evaluate integration activities within the system architecture</div> <div>FY 2022 to FY 2023 Increase/Decrease Statement: Increase from FY 2022 to FY 2023 provides additional resources to provide architecture and engineering requirements specific to the DoD architecture solution.</div>		0.000 -	0.000 -	9.904 -
<div>Title: Environmental, Site Activation, and Advanced Planning</div> <div>Articles:</div> <div>Description: The Environmental, Site Activation, and Advanced Planning accomplishment leads all efforts for Guam defense to complete the environmental impacts and assessments as required by federal Laws. Performs geotechnical, topographical,</div>		0.000 -	0.000 -	24.600 -

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency		Date: April 2022	
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604102C / <i>Guam Defense Development</i>	Project (Number/Name) MD65 / <i>Defense of Guam Development</i>	
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2021	FY 2022
environmental, and unexploded ordnance efforts to support siting of Guam defense assets. Performs advance planning and site preparation for required military construction on Guam. This element provides the Sprung structures required for two joint fire operations control centers. Performs site activation and facilities sustainment.			
FY 2022 Plans: N/A			
FY 2023 Plans: - Continues advance planning activities for site activation and construction on Guam - Continues environmental impact studies and assessments as required by federal Law - Continues site activation activities on Guam			
FY 2022 to FY 2023 Increase/Decrease Statement: Increase from FY 2022 to FY 2023 provides additional resources to provide Environmental, Site Activation, and Advanced Planning requirements specific to the DoD architecture solution.			
Title: Radar Development and Integration		0.000	0.000
Articles:		-	-
Description: This accomplishment develops, procures, delivers, and integrates multiple land-based radars for use in acquiring, tracking, identifying, and discriminating threats to Guam, including the necessary on-island support equipment for power, data communications (not SATCOM) to C2BMC Element/User Node, cooling, and environmental protection. Provides for transportation, delivery, integration, testing, operations, and limited spares.			241.000
FY 2022 Plans: N/A			
FY 2023 Plans: - Initiate design and development of multiple land-based radar systems - Initiate radar system component acquisition; including Active Electronically Scanned Array antenna subsystems, power conversion and storage subsystems, mission processing subsystems, and radar signal processing subsystems for multiple distributed operating locations - Continues design and acquisition of radar equipment shelter			
FY 2022 to FY 2023 Increase/Decrease Statement:			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency		Date: April 2022		
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604102C / Guam Defense Development	Project (Number/Name) MD65 / Defense of Guam Development		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2021	FY 2022	FY 2023
Increase from FY 2022 to FY 2023 provides additional resources to provide Radar Development and Integration requirements specific to the DoD architecture solution.				
<p>Title: Aegis C4I Development and Integration</p> <p>Articles:</p> <p>Description: This program develops Guam Defense System Command, Control, Communications, Computers, and Intelligence (C4I) architecture and technical data publication activities, and acquires system components necessary to provide an integrated air and missile defense system on Guam against air-breathing, ballistic, and hypersonic missile threats.</p> <p>FY 2022 Plans: N/A</p> <p>FY 2023 Plans:</p> <p>- Begins development for C4I-Link16, SATCOM, Fiber connections, Very High Frequency/Ultra High Frequency (VHF/UHF) radios, Crypto, and other system components required for final architecture design on the island of Guam</p> <p>- Begin C4I systems engineering to further develop Aegis Ballistic Missile Defense (BMD) requirements and to improve Ballistic Missile Defense System (BMDS) interoperability capability</p> <p>- Begin assessment and implementation of C4I capabilities in U.S. Navy C4I programs of record to meet Aegis BMD requirements</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: Increase from FY 2022 to FY 2023 initiates Aegis C4I Development and Integration.</p>		0.000 -	0.000 -	39.000 -
<p>Title: Aegis Land-Based System Engineering</p> <p>Articles:</p> <p>Description: This program develops Aegis land-based system architecture and technical data publication activities necessary to provide an integrated air and missile defense system on Guam against air-breathing, ballistic, and hypersonic missile threats.</p> <p>FY 2022 Plans: N/A</p> <p>FY 2023 Plans:</p> <p>- Begins systems engineering and program management activities for Defense of Guam (DoG) Program</p> <p>- Begins DoG Aegis Weapons System (AWS) technology design for integration, assembly, test and check out</p> <p>- Conduct feasibility analysis, draft AWS requirements, develop design intent models and government reference models to support a System Requirements Review (SRR)</p>		0.000 -	0.000 -	68.982 -

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency										Date: April 2022		
Appropriation/Budget Activity 0400 / 4				R-1 Program Element (Number/Name) PE 0604102C / Guam Defense Development				Project (Number/Name) MD65 / Defense of Guam Development				
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)										FY 2021	FY 2022	FY 2023
<div>- Conduct MDS system level requirements allocation and Aegis BMD system requirements development, trace, validation and verification, and establish configuration management for coordination with all participating external agencies and organizations</div> <div>- Develop Systems Modeling Language (SysML) model to support DoG Aegis Combat System (ACS) development and technical reviews</div> <div>- Develop initial design for DoG ACS enclosures and transportation plans</div> <div>- Develop initial design concepts for C4I enclosure, towers and integration plans</div> <div>- Establish Integrated Product Teams and liaison MDA and Army Rapid Capabilities and Critical Technologies Office (RCCTO) for integration of Solid State Radars and transportable launchers</div> <div>- Begin Concept of Operations development for DoG ACS, including electro-magnetic interference mitigation, and commercial air traffic de-confliction</div> <div>- Begin development of training and logistics support plans for DoG ACS</div> <div>FY 2022 to FY 2023 Increase/Decrease Statement:</div> <div>Increase from FY 2022 to FY 2023 provides initiation of Aegis Land-Based System Engineering requirements specific to the DoD architecture solution.</div>												
Accomplishments/Planned Programs Subtotals										0.000	112.400	383.486
C. Other Program Funding Summary (\$ in Millions)												
Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost	
• 0208902C: MD65: Defense of Guam Procurement	0.000	80.000	26.514	-	26.514	43.227	35.493	35.374	80.434	Continuing	Continuing	
• 0603890C: BMD Enabling Programs	607.167	623.644	591.847	-	591.847	613.589	625.761	635.633	640.374	Continuing	Continuing	
• 0603892C: AEGIS BMD	861.809	639.549	600.072	-	600.072	658.798	574.014	570.018	580.496	Continuing	Continuing	
• 0603896C: Ballistic Missile Defense Command and Control, Battle Management & Communication	639.027	564.946	589.374	-	589.374	575.883	588.824	612.853	605.801	Continuing	Continuing	
• 0603914C: Ballistic Missile Defense Test	364.994	389.156	367.824	-	367.824	363.963	421.261	476.991	490.176	Continuing	Continuing	
• 0603915C: Ballistic Missile Defense Targets	534.348	560.478	559.513	-	559.513	555.341	623.995	628.146	632.072	Continuing	Continuing	

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency			Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604102C / Guam Defense Development	Project (Number/Name) MD65 / Defense of Guam Development	

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

<u>Line Item</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u> <u>Base</u>	<u>FY 2023</u> <u>OCO</u>	<u>FY 2023</u> <u>Total</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
Remarks											

D. Acquisition Strategy

Acquisition strategy for Guam Defense consists of contract actions to industry, and agreements with DoD organizations and Federally Funded Research and Development Centers (FFRDC) to develop, demonstrate, and field a MDS on Guam.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0604102C / Guam Defense Development				Project (Number/Name) MD65 / Defense of Guam Development					
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Guam Defense System (GDS) - Environmental and other Site Survey & Advanced MILCON Planning	MIPR	DOD - USN - NAVAL FACILITIES ENGINEERING COMMAND (NAVFAC) HAWAII : HI	0.000	0.000		14.900	May 2022	0.000		-		0.000	0.000	14.900	0.000
Guam Defense System (GDS) - Aegis Design and Engineering tailored to Guam	C/CPIF	Various : Various	0.000	0.000		23.100	Jul 2022	0.000		-		0.000	0.000	23.100	0.000
Guam Defense System (GDS) - Architecture Engineering	FFRDC	Various : Various	0.000	0.000		7.800	May 2022	0.000		-		0.000	0.000	7.800	0.000
Guam Defense System (GDS) - C2BMC Modifications	C/Various	Various : Various	0.000	0.000		8.800	May 2022	0.000		-		0.000	0.000	8.800	0.000
Guam Defense System (GDS) - Command and Control Center Design and Engineering, tailored to Guam	FFRDC	TBD : TBD	0.000	0.000		5.800	May 2022	0.000		-		0.000	0.000	5.800	0.000
Guam Defense System (GDS) - MDS Systems Engineering and Threat Engineering	C/CPIF	Various : Various	0.000	0.000		12.100	May 2022	0.000		-		0.000	0.000	12.100	0.000
Guam Defense System (GDS) - Mobile Launcher	C/CPIF	LOCKHEED MARTIN CORPORATION : NJ	0.000	0.000		18.000	Jul 2022	0.000		-		0.000	0.000	18.000	0.000
Guam Defense System (GDS) - Sensor Development	C/CPIF	LOCKHEED MARTIN CORPORATION : NJ	0.000	0.000		12.300	Jul 2022	0.000		-		0.000	0.000	12.300	0.000
Guam Defense System (GDS) - Special Programs	Various	Various : Various	0.000	0.000		8.200	Jul 2022	0.000		-		0.000	0.000	8.200	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0604102C / Guam Defense Developme nt				Project (Number/Name) MD65 / Defense of Guam Development					
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Guam Defense System (GDS) - Support Facilities Design and Engineering	MIPR	DOD - USN - NAVAL FACILITIES ENGINEERING COMMAND (NAVFAC) HAWAII : HI	0.000	0.000		1.400	Jun 2022	0.000		-		0.000	0.000	1.400	0.000
Architecture Development & Engineering - Architecture Development - TEAMS	C/CPIF	TBD : AL	0.000	0.000		0.000		4.204	Nov 2022	-		4.204	Continuing	Continuing	Continuing
Architecture Development & Engineering - Modeling and Simulation - TEAMS	C/CPIF	TBD : AL	0.000	0.000		0.000		2.900	Nov 2022	-		2.900	Continuing	Continuing	Continuing
Architecture Development & Engineering - System Assessment - TEAMS	C/CPIF	TBD : AL	0.000	0.000		0.000		2.800	Jan 2023	-		2.800	Continuing	Continuing	Continuing
Environmental, Site Activation, and Advanced Planning - Advance Planning - USN	MIPR	DOD - USN - NAVAL FACILITIES ENGINEERING COMMAND (NAVFAC) HAWAII : HI	0.000	0.000		0.000		8.000	Nov 2022	-		8.000	Continuing	Continuing	Continuing
Environmental, Site Activation, and Advanced Planning - Sites Activation - USN	MIPR	DOD - USN - NAVAL FACILITIES ENGINEERING COMMAND (NAVFAC) HAWAII : HI	0.000	0.000		0.000		16.600	Dec 2022	-		16.600	Continuing	Continuing	Continuing
Radar Development and Integration - Equipment Shelter	C/IDIQ	TBD : AL	0.000	0.000		0.000		6.000	Nov 2022	-		6.000	Continuing	Continuing	Continuing
Radar Development and Integration - Land-Based Radar Development - Type 1	C/IDIQ	TBD : AL	0.000	0.000		0.000		140.500	Dec 2022	-		140.500	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0604102C / Guam Defense Development				Project (Number/Name) MD65 / Defense of Guam Development					
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Radar Development and Integration - Land-Based Radar Development - Type 2	C/IDIQ	TBD : AL	0.000	0.000		0.000		94.500	Dec 2022	-		94.500	Continuing	Continuing	Continuing
Aegis C4I Development and Integration - Aegis C4I Development and Integration	TBD	Naval Information Warfare Center (NIWC) : TBD	0.000	0.000		0.000		39.000	Nov 2022	-		39.000	Continuing	Continuing	Continuing
Aegis Land-Based System Engineering - Aegis Tech Rep	MIPR	DOD - USN - NAVAL SEA SYSTEMS COMMAND (NAVSEA) : DC	0.000	0.000		0.000		1.200	Nov 2022	-		1.200	Continuing	Continuing	Continuing
Aegis Land-Based System Engineering - Systems Engineering	C/CPIF	TBD : AL	0.000	0.000		0.000		15.462	Nov 2022	-		15.462	Continuing	Continuing	Continuing
Aegis Land-Based System Engineering - Systems Engineering Lockheed	C/CPIF	LOCKHEED MARTIN CORPORATION : AL	0.000	0.000		0.000		37.620	Jan 2023	-		37.620	Continuing	Continuing	Continuing
Aegis Land-Based System Engineering - Systems Engineering NSW (Crane)	MIPR	DOD - USN - NAVAL SURFACE WARFARE CENTER (NSWC) CRANE DIVISION : IN	0.000	0.000		0.000		3.000	Nov 2022	-		3.000	Continuing	Continuing	Continuing
Aegis Land-Based System Engineering - Systems Engineering NSW (Dalhgren)	MIPR	DOD - USN - NAVAL SURFACE WARFARE CENTER (NSWC) DAHLGREN DIVISION (NSWCDD) : VA	0.000	0.000		0.000		7.200	Nov 2022	-		7.200	Continuing	Continuing	Continuing
Aegis Land-Based System Engineering - Systems Engineering NSW (PHD)	MIPR	DOD - USN - NAVAL SURFACE WARFARE CENTER (NSWC) PORT HUENEME	0.000	0.000		0.000		1.500	Nov 2022	-		1.500	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0604102C / Guam Defense Development				Project (Number/Name) MD65 / Defense of Guam Development					
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
		DIVISION (PHD) : CA													
Aegis Land-Based System Engineering - Systems Engineering PEO C4I	MIPR	Program Executive Office (PEO) Command, Control, Communications, Computers & Intelligence (C4I) : DC	0.000	0.000		0.000		3.000	Nov 2022	-		3.000	Continuing	Continuing	Continuing
Subtotal			0.000	0.000		112.400		383.486		-		383.486	Continuing	Continuing	N/A
Remarks															
Award Date reflects date of first obligation. Additional obligations may incrementally occur throughout the year.															
			Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			0.000	0.000		112.400		383.486		-		383.486	Continuing	Continuing	N/A
Remarks															
N/A															

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Missile Defense Agency															Date: April 2022														
Appropriation/Budget Activity 0400 / 4										R-1 Program Element (Number/Name) PE 0604102C / Guam Defense Developme nt										Project (Number/Name) MD65 / Defense of Guam Development									
Significant Event Complete ▲ Significant Event Planned △					Milestone Decision Complete ★ Milestone Decision Planned ☆					Element Test Complete ◆ Element Test Planned ◇					System Level Test Complete ● System Level Test Planned ○					Complete Activity ◆ Planned Activity ◇									
										FY 2021		FY 2022		FY 2023		FY 2024		FY 2025		FY 2026		FY 2027							
Environmental - Impact Assessment															◇	◇	◇	◇	◇										
Environmental - Advance Planning and Evaluation															◇	◇	◇	◇	◇	◇	◇	◇	◇						
Radar Development - Type 1 Design and Acquisition															◇	◇	◇	◇	◇	◇	◇	◇	◇	◇					
Radar Development - Type 2 Design and Acquisition															◇	◇	◇	◇	◇	◇	◇	◇	◇	◇					
Radar Development - Equipment Shelter															◇	◇	◇	◇	◇	◇	◇	◇	◇	◇					
Architecture and Engineering - Architecture Development and Assessment															◇	◇	◇	◇	◇	◇	◇	◇	◇	◇					
Environmental - Sites Activation Activities																◇	◇	◇	◇	◇	◇	◇	◇						
C4I Development - Signal and Radio Communications																	◇	◇	◇	◇	◇	◇							
Aegis Land-Based - System Engineering																	◇	◇	◇	◇	◇	◇							
Aegis Land-Based Technology Design for Integration, Assembly, Test and Verification																	◇	◇	◇	◇	◇	◇	◇						

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Missile Defense Agency			Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604102C / <i>Guam Defense Development</i>	Project (Number/Name) MD65 / <i>Defense of Guam Development</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Environmental - Impact Assessment	3	2022	3	2023
Environmental - Advance Planning and Evaluation	3	2022	4	2026
Radar Development - Type 1 Design and Acquisition	3	2022	4	2027
Radar Development - Type 2 Design and Acquisition	3	2022	4	2027
Radar Development - Equipment Shelter	3	2022	4	2027
Architecture and Engineering - Architecture Development and Assessment	3	2022	4	2027
Environmental - Sites Activation Activities	4	2022	4	2026
C4I Development - Signal and Radio Communications	1	2023	4	2024
Aegis Land-Based - System Engineering	1	2023	4	2026
Aegis Land-Based Technology Design for Integration, Assembly, Test and Verification	1	2023	4	2027

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency										Date: April 2022		
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0604102C / Guam Defense Developme nt				Project (Number/Name) MD40 / Program Wide Support			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
MD40: Program Wide Support	-	0.000	0.000	14.450	-	14.450	12.102	11.273	8.103	5.523	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Program Wide Support (PWS) is allocated on a pro-rata basis across multiple Agency PE's each fiscal year based on the total Agency budget, and therefore fluctuates per PE by fiscal year.

A. Mission Description and Budget Item Justification

PWS contains non-headquarters management costs in support of MDA functions and activities across the entire MDS. These functions include Government Civilians and Contract Support Services. This effort provides integrity and oversight of the MDS as well as supports MDA in the development and evaluation of technologies that will respond to the changing threat. Additionally, PWS includes personnel to support global deployments performing deployment site preparation and activation, and provides facility capabilities for MDA Executing Agent locations worldwide. Other MDA wide costs include: physical and technical security; civilian drug testing; audit readiness; the Science, Technology, Engineering, and Mathematics (STEM) program; legal services and settlements; travel and agency training; office, equipment, vehicle, and warehouse leases; utilities and base operations across multiple geographic locations; commercial and ancillary facility services; management of all facility aspects regardless of lifecycle stage; supplies and maintenance; compliance with statutory environmental requirements; data and unified communications support; materiel and readiness and central property management of equipment; Facilities Sustainment, Restoration and Modernization (FSRM) program, (formerly Real Property Maintenance) to keep the Department's inventory of facilities in good working order; and similar operating expenses. PWS is allocated on a pro-rata basis across most Agency PEs and therefore fluctuates per PE by fiscal year based on the total Agency budget in that fiscal year.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2021	FY 2022	FY 2023
Title: Program Wide Support	0.000	0.000	14.450
Articles:	-	-	-
Description: PWS contains non-headquarters management costs in support of MDA functions and activities across the entire MDS. These functions include Government Civilians and Contract Support Services. This effort provides integrity and oversight of the MDS as well as supports MDA in the development and evaluation of technologies that will respond to the changing threat. Additionally, PWS includes personnel to support global deployments performing deployment site preparation and activation, and provides facility capabilities for MDA Executing Agent locations worldwide. Other MDA wide costs include: physical and technical security; civilian drug testing; audit readiness; the Science, Technology, Engineering, and Mathematics (STEM) program; legal services and settlements; travel and agency training; office, equipment, vehicle, and warehouse leases; utilities and base operations across multiple geographic locations; commercial and ancillary facility services; management of all facility aspects regardless of lifecycle stage; supplies and maintenance; compliance with statutory environmental requirements; data and unified communications support; materiel and readiness and central property management of equipment; Facilities Sustainment,			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency		Date: April 2022	
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604102C / <i>Guam Defense Development</i>	Project (Number/Name) MD40 / <i>Program Wide Support</i>	
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2021	FY 2022
<p>Restoration and Modernization (FSRM) program, (formerly Real Property Maintenance) to keep the Department's inventory of facilities in good working order; and similar operating expenses. PWS is allocated on a pro-rata basis across most Agency PEs and therefore fluctuates per PE by fiscal year based on the total Agency budget in that fiscal year.</p> <p>FY 2022 Plans: N/A</p> <p>FY 2023 Plans: - SEE ABOVE.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: Increase from FY 2022 to FY 2023 provides the PWS allocation on a pro-rata basis across multiple Agency PEs each fiscal year based on the total Agency budget, and therefore fluctuates per PE by fiscal year.</p>			
Accomplishments/Planned Programs Subtotals		0.000	0.000
C. Other Program Funding Summary (\$ in Millions)			
N/A			
Remarks			
D. Acquisition Strategy			
N/A			

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0604102C / Guam Defense Development						Project (Number/Name) MD40 / Program Wide Support			
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Wide Support - Agency Operations and Support Services	C/CPFF	Kepler Research, Incorporated : AL	0.000	0.000		0.000		5.000	Dec 2022	-		5.000	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations Support	C/CPFF	LSINC : AL	0.000	0.000		0.000		1.700	Nov 2022	-		1.700	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations and Support Financial	C/CPFF	Veterans Technology, LLC : AL	0.000	0.000		0.000		2.000	Dec 2022	-		2.000	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations and Support Other Agency Services	MIPR	DOD - DEFENSE FINANCE AND ACCOUNTING SERVICES (DFAS) : IN	0.000	0.000		0.000		2.250	Nov 2022	-		2.250	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations and Support Security	C/CPFF	INTREPID TV LTD : AL	0.000	0.000		0.000		3.500	Nov 2022	-		3.500	Continuing	Continuing	Continuing
Subtotal			0.000	0.000		0.000		14.450		-		14.450	Continuing	Continuing	N/A
Remarks N/A															
			Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			0.000	0.000		0.000		14.450		-		14.450	Continuing	Continuing	N/A
Remarks N/A															

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Missile Defense Agency										Date: April 2022									
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0604102C / Guam Defense Developme nt					Project (Number/Name) MD40 / Program Wide Support									
Significant Event Complete ▲		Milestone Decision Complete ★		Element Test Complete ◆		System Level Test Complete ●				Complete Activity ◆									
Significant Event Planned △		Milestone Decision Planned ☆		Element Test Planned ◇		System Level Test Planned ○				Planned Activity ◇									
					FY 2021		FY 2022		FY 2023		FY 2024		FY 2025		FY 2026		FY 2027		
MD40 Program-Wide Support										◇	◇	◇	◇	◇	◇	◇	◇	◇	

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Missile Defense Agency			Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604102C / Guam Defense Developme nt	Project (Number/Name) MD40 / Program Wide Support	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
MD40 Program-Wide Support	1	2023	4	2027

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Missile Defense Agency										Date: April 2022		
Appropriation/Budget Activity					R-1 Program Element (Number/Name)							
0400: Research, Development, Test & Evaluation, Defense-Wide I BA 4: Advanced Component Development & Prototypes (ACD&P)					PE 0604115C I Technology Maturation Initiatives							
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
Total Program Element	782.109	105.895	39.200	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	927.204
MD98: Directed Energy Demonstrator Development	425.030	42.300	39.200	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	506.530
MD99: Discrimination Sensor Demonstrator Development	319.436	60.750	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	380.186
MC98: Cyber Operations	6.526	0.168	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	6.694
MD40: Program Wide Support	31.117	2.677	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	33.794
Program MDAP/MAIS Code: 362												
Note												
Decrease from FY 2022 to FY 2023 reflects the FY 2022 Congressional add for continued Diode Pumped Alkali Laser Demonstrator (DPAL) Development and Directed Energy efforts. No funding is requested in FY2023 for this program.												
A. Mission Description and Budget Item Justification												
Technology Maturation Initiatives (TMI) demonstrates the utility of directed energy for missile defense. The Missile Defense Agency's (MDA) directed energy plan incrementally demonstrates and improves the constituent components required to execute a directed energy kill chain; acquisition, tracking, and lethality. The efforts shaped future Missile Defense System (MDS) acquisition choices by advancing the technology readiness levels of emerging and developing technologies, while simultaneously assessing the performance and contributions to the MDS architecture. TMI included analysis, development, demonstration, systems engineering and test efforts to examine, develop, and improve directed energy systems, disruptive directed energy concepts, sensors, and future missile defense technologies.												
Directed Energy Demonstrator Development (DEDD) addressed technology risk reduction and maturation for high powered strategic lasers, beam control, lethality, and related technologies. The efforts remain tightly coupled with OUSD(R&E) High Energy Laser Development Road Map, and are essential to mature strategic laser technology.												
Discrimination Sensor Demonstrator Development (DSDD) included the development of an advanced sensor to discriminate lethal objects and integration of resulting technologies onto other MDS platforms in the future. The advanced sensor incorporated incrementally developed, integrated, and tested next-generation sensors and electronics to demonstrate Launch-on-Remote, Engage-on-Remote, discrimination and handover improvements for missile defense. These advanced sensors improved the probability of engagement success for stressing threats, expanded the MDS battle space and increased the ability to negate larger raid sizes. The sensor technologies also helped develop the associated concept of operations and provided the basis for a quick reaction precision tracking capability to augment radar. MDA may use the sensor technology to address emerging advanced threats.												

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Missile Defense Agency	Date: April 2022
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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 0604115C / <i>Technology Maturation Initiatives</i>
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MDA collaborates with the Combatant Commands, Defense Advanced Research Projects Agency, Department of Energy, Joint Directed Energy Transition Office, Military Departments, National Laboratories and OUSD(R&E) in a systems engineering based strategy to research, analyze, develop and test directed energy weapons technology.

MDA requests no funding in this program element in FY 2022 and the out years.

B. Program Change Summary (\$ in Millions)	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023 Base</u>	<u>FY 2023 OCO</u>	<u>FY 2023 Total</u>
Previous President's Budget	107.389	0.000	0.000	-	0.000
Current President's Budget	105.895	39.200	0.000	-	0.000
Total Adjustments	-1.494	39.200	0.000	-	0.000
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	39.200			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	-1.494	0.000			
• Missile Defeat and Defense Enhancement	0.000	0.000	0.000	-	0.000
• Other Adjustment	0.000	0.000	0.000	-	0.000

Change Summary Explanation

Increase of \$39.2 million in FY 2022 provides the Congressional Plus-up for Directed Energy and Diode Pumped Alkali Laser Demonstrator (DPAL) Development.

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency										Date: April 2022		
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0604115C / Technology Maturation Initiatives				Project (Number/Name) MD98 / Directed Energy Demonstrator Development			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
MD98: Directed Energy Demonstrator Development	425.030	42.300	39.200	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	506.530
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
Note												
Decrease from FY 2022 to FY 2023 reflects the FY 2022 Congressional add for continued Diode Pumped Alkali Laser Demonstrator (DPAL) Development and directed energy. No funding is requested in FY 2023 and the out years for this program.												
A. Mission Description and Budget Item Justification												
The Directed Energy Demonstrator Development (DEDD) project develops, integrates, and tests the component technologies required to scale electric lasers to hundreds of kilowatts. Laser scaling focused on maturing laser capability to levels sufficient to enter into the OUSD(R&E) High Energy Laser Road Map efforts. The DEDD project provided the necessary technology, test data, and operations familiarity to successfully transition to a higher power directed energy weapon.												
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)									FY 2021	FY 2022	FY 2023	
Title: Directed Energy Demonstrator Development									42.300	39.200	0.000	
									Articles: -	-	-	
Description: Laser scaling develops, integrates, and tests the component technologies required for scaling electric lasers while maintaining excellent size, weight, and power metrics and near diffraction limited beam quality.												
FY 2022 Plans:												
-Develop detailed design of ground-based laser for terminal phase defense. -Develop machine learning based algorithms for phase control, deformable mirror control, and turbulence characterization. -Research non-kinetic energy weapon system effectiveness and drive requirements for future system and technology development. -Initiate advanced microwave technology improvements, mature components and conduct threat representative assessments. -Develop and demonstrate a prototype, coherent beam combining scalable direct diode laser to prove that the direct diode concepts are practicable and achievable. -Develop a safe, domestic, battery-based power supply that can support all ground and ship directed energy systems.												
FY 2023 Plans:												
- No funding is requested in FY 2023 for this effort												
FY 2022 to FY 2023 Increase/Decrease Statement:												

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency										Date: April 2022		
Appropriation/Budget Activity 0400 / 4				R-1 Program Element (Number/Name) PE 0604115C / <i>Technology Maturation Initiatives</i>				Project (Number/Name) MD98 / <i>Directed Energy Demonstrator Development</i>				
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)										FY 2021	FY 2022	FY 2023
Decrease from FY 2022 to FY 2023 reflects the Congressional add for Directed Energy and continued Diode Pumped Alkali Laser Demonstrator (DPAL) Development. No funding is requested in FY 2023 for this program.												
Accomplishments/Planned Programs Subtotals										42.300	39.200	0.000
C. Other Program Funding Summary (\$ in Millions)												
Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost	
• 0604181C: <i>Hypersonic Defense</i>	267.589	287.796	225.477	-	225.477	108.540	110.220	287.535	449.590	Continuing	Continuing	
Remarks												
D. Acquisition Strategy												
Employ various contracting strategies in a flexible manner to maximize the contribution to MDA. Execute through utilization of small businesses, leverage the Nation's engineering centers of excellence (FFRDCs and UARCs); generate cooperatives with other Government Agencies to provide concept modeling and assessment capability. This strategy uses agency and partner SMEs and government model-based assessments to inform Better Buying Power acquisition decisions.												

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0604115C / <i>Technology Maturation Initiatives</i>				Project (Number/Name) MD98 / <i>Directed Energy Demonstrator Development</i>					
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Directed Energy Demonstrator Development - Adaptive Optics Effectiveness Demonstration	C/CPFF	Various : Various	0.000	0.000		9.000	Aug 2022	0.000		-		0.000	0.000	9.000	0.000
Directed Energy Demonstrator Development - Beam Control and Lethality Demonstration	C/CPFF	Multi : Multi	27.561	0.000		0.000		0.000		-		0.000	0.000	27.561	0.000
Directed Energy Demonstrator Development - Industry Laser Scaling and Technology Transfer	C/CPFF	Boeing : CA	18.412	0.000		0.000		0.000		-		0.000	0.000	18.412	0.000
Directed Energy Demonstrator Development - LPLD Preliminary Design A	C/CPFF	Lockheed Martin : CA	40.494	0.000		0.000		0.000		-		0.000	0.000	40.494	0.000
Directed Energy Demonstrator Development - LPLD Preliminary Design B	C/CPFF	General Atomics : CA	36.841	0.000		0.000		0.000		-		0.000	0.000	36.841	0.000
Directed Energy Demonstrator Development - LPLD Preliminary Design C	C/CPFF	Boeing : CA	36.361	0.000		0.000		0.000		-		0.000	0.000	36.361	0.000
Directed Energy Demonstrator Development - LPLD System Critical Design A (CPU)	C/CPFF	Lockheed Martin : CA	26.000	0.000		0.000		0.000		-		0.000	0.000	26.000	0.000
Directed Energy Demonstrator Development - LPLD	C/CPFF	General Atomics : CA	26.000	0.000		0.000		0.000		-		0.000	0.000	26.000	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0604115C / <i>Technology Maturation Initiatives</i>						Project (Number/Name) MD98 / <i>Directed Energy Demonstrator Development</i>			
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
System Critical Design B (CPU)															
Directed Energy Demonstrator Development - LPLD System Critical Design C (CPU)	C/CPFF	Boeing : CA	26.000	0.000		0.000		0.000		-		0.000	0.000	26.000	0.000
Directed Energy Demonstrator Development - Laser Lethality Demonstration	C/CPFF	General Atomics, AFRL, Redstone Testing Center, White Sands Missile Range : CA, AL, NM	4.178	0.000		7.200	Jun 2022	0.000		-		0.000	0.000	11.378	0.000
Directed Energy Demonstrator Development - Laser Scaling	C/Various	MIT LL, LLNL : MA, CA	136.658	0.000		0.000		0.000		-		0.000	0.000	136.658	0.000
Directed Energy Demonstrator Development - Laser Scaling - Diode Pumped Alkali Laser (CPU)	Various	Multi, LLNL : Multi, CA	0.000	41.400	Feb 2021	6.000	Jun 2022	0.000		-		0.000	0.000	47.400	0.000
Directed Energy Demonstrator Development - Machine Learning Adaptive Optics	C/Various	Various : Various	0.000	0.000		2.500	Jul 2022	0.000		-		0.000	0.000	2.500	0.000
Directed Energy Demonstrator Development - Microwave Technology Assessment	C/CPFF	RAYTHEON : AZ	0.000	0.000		5.500	Jun 2022	0.000		-		0.000	0.000	5.500	0.000
Directed Energy Demonstrator Development - Performance Analysis	Various	MIT LL, Aviation and Missile Research Development and Engineering Center (AMRDEC), Combat Capabilities Development	12.469	0.000		0.000		0.000		-		0.000	0.000	12.469	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0604115C / <i>Technology Maturation Initiatives</i>				Project (Number/Name) MD98 / <i>Directed Energy Demonstrator Development</i>					
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
		Command - Aviation and Missile Center (CCDC-AMC), AFRL, USAFA, Semquest : MA, AL, NM, CO													
Directed Energy Demonstrator Development - Short Pulsed Laser Lethality Assessment	MIPR	UNIVERSITY OF ROCHESTER : NY	0.000	0.000		9.000	Jul 2022	0.000		-		0.000	0.000	9.000	9.000
Directed Energy Demonstrator Development - Technology Transfer/Component Development	C/CPIF	Boeing : CA	16.209	0.000		0.000		0.000		-		0.000	0.000	16.209	0.000
Subtotal			407.183	41.400		39.200		0.000		-		0.000	0.000	487.783	N/A
Remarks N/A															
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Directed Energy Demonstrator Development - Advisory and Assistance Services	C/CPFF	MDA Multi : AL, NM	7.413	0.600	Jul 2021	0.000		0.000		-		0.000	0.000	8.013	0.000
Directed Energy Demonstrator Development - Engineering and Technical Services	MIPR	Aviation and Missile Research Development and Engineering Center (AMRDEC), Combat Capabilities Development	2.221	0.000		0.000		0.000		-		0.000	0.000	2.221	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0604115C / <i>Technology Maturation Initiatives</i>						Project (Number/Name) MD98 / <i>Directed Energy Demonstrator Development</i>			
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
		Command - Aviation and Missile Center (CCDC-AMC) : AL													
Directed Energy Demonstrator Development - FFRDC	MIPR	Aerospace : AL, NM	3.317	0.000		0.000		0.000		-		0.000	0.000	3.317	0.000
Directed Energy Demonstrator Development - Facility Support	Various	377th ABW, Phoenix : NM	0.483	0.000		0.000		0.000		-		0.000	0.000	0.483	0.000
Directed Energy Demonstrator Development - Facility Sustainment	C/CPFF	Multi : AL, NM	1.281	0.000		0.000		0.000		-		0.000	0.000	1.281	0.000
Directed Energy Demonstrator Development - Information Technology	C/CPFF	Northrop Grumman, Jacobs Technology : CO	2.982	0.300	Aug 2021	0.000		0.000		-		0.000	0.000	3.282	0.000
Directed Energy Demonstrator Development - Travel	Allot	MDA Multi : AL, NM	0.150	0.000		0.000		0.000		-		0.000	0.000	0.150	0.000
Subtotal			17.847	0.900		0.000		0.000		-		0.000	0.000	18.747	N/A
Remarks N/A															
			Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			425.030	42.300		39.200		0.000		-		0.000	0.000	506.530	N/A
Remarks N/A															

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Missile Defense Agency										Date: April 2022									
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0604115C / Technology Maturation Initiatives					Project (Number/Name) MD98 / Directed Energy Demonstrator Development									
Significant Event Complete ▲		Milestone Decision Complete ★		Element Test Complete ◆		System Level Test Complete ●		Complete Activity ◆											
Significant Event Planned △		Milestone Decision Planned ☆		Element Test Planned ◇		System Level Test Planned ○		Planned Activity ◇											
					FY 2021		FY 2022		FY 2023		FY 2024		FY 2025		FY 2026		FY 2027		
Industry Laser Scaling Technology Design Review - Phase II (LM)					▲														
Laser Scaling Development - Fiber Combined Laser (FCL)					◆														
Laser Scaling Development - Diode Pumped Alkali Laser (DPAL)					◆														
Laser Scaling Development - FCL						◆	◆	◆											
Laser Scaling Development - DPAL						◇	◇	◇	◇	◇	◇								
Laser Scaling FCL Beam Quality and Power Demonstration								▲											
Laser Scaling Development – DPAL 60 kW-Class Lab Demo								◇	◇	◇	◇	◇							
Laser Scaling Development – DPAL 60 kW-Class Lab Demo with Beam Quality measurement									◇	◇	◇								

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Missile Defense Agency			Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604115C / <i>Technology Maturation Initiatives</i>	Project (Number/Name) MD98 / <i>Directed Energy Demonstrator Development</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Industry Laser Scaling Technology Design Review - Phase II (LM)	1	2021	1	2021
Laser Scaling Development - Fiber Combined Laser (FCL)	1	2021	1	2021
Laser Scaling Development - Diode Pumped Alkali Laser (DPAL)	1	2021	1	2021
Laser Scaling Development - FCL	2	2021	4	2021
Laser Scaling Development - DPAL	2	2021	3	2022
Laser Scaling FCL Beam Quality and Power Demonstration	4	2021	4	2021
Laser Scaling Development DPAL 60 kW-Class Lab Demo	4	2021	4	2022
Laser Scaling Development DPAL 60 kW-Class Lab Demo with Beam Quality measurement	2	2022	4	2022

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency										Date: April 2022		
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0604115C / Technology Maturation Initiatives				Project (Number/Name) MD99 / Discrimination Sensor Demonstrator Development			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
MD99: Discrimination Sensor Demonstrator Development	319.436	60.750	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	380.186
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Due to a shift in Department of Defense priorities, the development of the Technology Maturation Initiatives Program has been cancelled beginning in FY 2022. No funding is requested in FY 2022 and the out years.

A. Mission Description and Budget Item Justification

Areas of concentration include tracking lasers, advanced detectors, infrared sensors, and precision tracking and discrimination algorithms. Discrimination Sensor Demonstrator Development (DSDD) demonstrates precision track of advanced threats at extended ranges, simple scene discrimination through ground demonstrations, and complex scene discrimination through flight and space demonstrations.

Develops and tests high-precision advanced sensors that improve incoming threat identification, acquisition, tracking, and discrimination. DSDD activities and software maturation enhances the MDS capability to discriminate lethal objects in a threat cluster, and track and hand over the threat object with Aegis Launch on Remote and Engage on Remote precision. The increased kinematics envelope of the SM-3 Block IIA, when combined with Engage on Remote capability, will expand battlespace and increase the number of threats engaged.

This effort includes the development of next-generation General Atomics' advanced sensor systems to include tracking lasers, specialized detectors, unique processors and the corollary ground, airborne and space subsystems. These advanced sensors operate at strategic ranges required to augment the MDS radar, improve the MDS discrimination capability and provide precision track of large raids. Potential development includes tracking multiple targets simultaneously, substantially reducing the number of sensor assets required for large raids.

The program leverages technology demonstrated from the ground and air to develop Massachusetts Institute of Technology/Lincoln Laboratory's (MIT/LL) compact ruggedized advanced sensor technology. This effort includes cost-effective focal plane arrays and advanced sensor components to inform future MDS layer decisions for persistent tracking and discrimination. MIT/LL develops and tests sensors to advance technology and assesses system performance from the ground.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2021	FY 2022	FY 2023
Title: Discrimination Sensor Demonstrator Development	45.753	0.000	0.000
Articles:	-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency									Date: April 2022		
Appropriation/Budget Activity 0400 / 4				R-1 Program Element (Number/Name) PE 0604115C / Technology Maturation Initiatives				Project (Number/Name) MD99 / Discrimination Sensor Demonstrator Development			
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)									FY 2021	FY 2022	FY 2023
Description: Discrimination Sensor Demonstrator Development (DSDD) project developed an advanced sensor technology demonstration system (tracking laser, advanced detector, infrared sensor, and precision tracking and discrimination algorithms) for data collection and characterization relevant conditions and relevant ranges. FY 2022 Plans: - No funding is requested in FY 2022 for this effort FY 2023 Plans: - No funding is requested in FY 2023 for this effort FY 2022 to FY 2023 Increase/Decrease Statement: N/A											
Title: Program Operations <div>Articles:</div> Description: Program Operations provides strategic planning, program integration, acquisition, contracting, engineering, financial management, internal reviews and audits, and program assessments for the Technology Maturation Initiatives Program. FY 2022 Plans: - No funding is requested in FY 2022 for this effort FY 2023 Plans: - No funding is requested in FY 2023 for this effort FY 2022 to FY 2023 Increase/Decrease Statement: N/A									14.997 -	0.000 -	0.000 -
Accomplishments/Planned Programs Subtotals									60.750	0.000	0.000
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• 0603176C: Advanced Concepts and Performance Assessment	49.069	40.000	16.737	-	16.737	17.265	17.693	18.109	18.477	Continuing	Continuing
• 0603180C: Advanced Research	29.621	47.966	22.023	-	22.023	22.758	23.296	23.851	24.335	Continuing	Continuing
• 0603884C: Ballistic Missile Defense Sensors	259.605	254.962	231.134	-	231.134	250.028	274.705	276.254	257.575	Continuing	Continuing

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency								Date: April 2022			
Appropriation/Budget Activity 0400 / 4				R-1 Program Element (Number/Name) PE 0604115C / <i>Technology Maturation Initiatives</i>				Project (Number/Name) MD99 / <i>Discrimination Sensor Demonstrator Development</i>			

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

Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• 0603890C: <i>BMD Enabling Programs</i>	607.167	623.644	591.847	-	591.847	613.589	625.761	635.633	640.374	Continuing	Continuing
• 0603896C: <i>Ballistic Missile Defense Command and Control, Battle Management & Communication</i>	639.027	564.946	589.374	-	589.374	575.883	588.824	612.853	605.801	Continuing	Continuing
• 1206895C: <i>Ballistic Missile Defense System Space Programs</i>	161.267	292.811	129.957	-	129.957	120.392	124.652	48.055	49.029	Continuing	Continuing

Remarks

D. Acquisition Strategy

The acquisition strategy for DSDD consists of a contract(s) to industry via the Advanced Technology Innovation Broad Agency Announcement and competitive procurements and agreements with Federally Funded Research and Development Centers to develop and demonstrate an advanced sensor system in realistic test environments. MDA will leverage agency partner subject matter experts and use government model based assessments for better acquisition decisions.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0604115C / Technology Maturation Initiatives				Project (Number/Name) MD99 / Discrimination Sensor Demonstrator Development					
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Discrimination Sensor Demonstrator Development - Advanced Sensor - FFRDC	MIPR	Aerospace : CA	0.000	2.000	Nov 2020	0.000		0.000		-		0.000	0.000	2.000	0.000
Discrimination Sensor Demonstrator Development - Advanced Sensor Flight Demonstrator	Various	Various : CA, MA, TBD	109.037	22.671	Nov 2020	0.000		0.000		-		0.000	0.000	131.708	0.000
Discrimination Sensor Demonstrator Development - Advanced Sensor Ground Test	MIPR	Navy China Lake : CA	33.622	0.000		0.000		0.000		-		0.000	0.000	33.622	0.000
Discrimination Sensor Demonstrator Development - Advanced Sensor Performance Analysis Aegis Engage on Remote Hardware in the Loop (HWIL), and Analysis	MIPR	MIT LL, Aviation and Missile Research, Development, Engineering Center (AMRDEC), and Combat Capabilities Development Command - Aviation and Missile Center (CCDC-AMC), USAF : MA, AL, VA	23.970	4.980	Dec 2020	0.000		0.000		-		0.000	0.000	28.950	0.000
Discrimination Sensor Demonstrator Development - Compact Ruggedized Advanced Sensor	Various	MIT LL, L3 : MA, NM	44.532	16.102	Nov 2020	0.000		0.000		-		0.000	0.000	60.634	0.000
Discrimination Sensor Demonstrator Development - EO/IR Flight Tests	C/CPFF	General Atomics : CA	48.503	0.000		0.000		0.000		-		0.000	0.000	48.503	0.000
Subtotal			259.664	45.753		0.000		0.000		-		0.000	0.000	305.417	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0604115C / <i>Technology Maturation Initiatives</i>						Project (Number/Name) MD99 / <i>Discrimination Sensor Demonstrator Development</i>			
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Remarks N/A															
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Discrimination Sensor Demonstrator Development - Advisory and Assistance Services	C/CPFF	Various : NM, AL	13.620	0.000		0.000		0.000		-		0.000	0.000	13.620	0.000
Discrimination Sensor Demonstrator Development - Civilian Salaries and Travel	Allot	MDA Multi : AL, NM	26.618	0.000		0.000		0.000		-		0.000	0.000	26.618	0.000
Discrimination Sensor Demonstrator Development - Engineering and Technical Services	MIPR	Aviation and Missile Research, Development, and Engineering Center (AMRDEC), Combat Capabilities Development Command - Aviation and Missile Center (CCDC-AMC), Aerospace : AL, CA	4.304	0.000		0.000		0.000		-		0.000	0.000	4.304	0.000
Discrimination Sensor Demonstrator Development - Facility Support	MIPR	377th ABW : NM	0.311	0.000		0.000		0.000		-		0.000	0.000	0.311	0.000
Discrimination Sensor Demonstrator Development - Facility Sustainment	MIPR	377th ABW : NM	0.665	0.000		0.000		0.000		-		0.000	0.000	0.665	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0604115C / <i>Technology Maturation Initiatives</i>				Project (Number/Name) MD99 / <i>Discrimination Sensor Demonstrator Development</i>					
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Discrimination Sensor Demonstrator Development - Information Management and Technology	C/CPAF	Northrop Grumman, Jacobs Technology : CO	14.254	0.000		0.000		0.000		-		0.000	0.000	14.254	0.000
Program Operations - Advisory and Assistance Services	C/CPFF	Various : NM, AL	0.000	4.920	Nov 2020	0.000		0.000		-		0.000	0.000	4.920	0.000
Program Operations - Civilian Salaries and Travel	Allot	MDA Multi : NM, AL	0.000	5.582	Nov 2020	0.000		0.000		-		0.000	0.000	5.582	0.000
Program Operations - Communications	MIPR	Various : NM, AL	0.000	0.626	Nov 2020	0.000		0.000		-		0.000	0.000	0.626	0.000
Program Operations - Facility Support	MIPR	377th ABW : NM	0.000	0.157	Nov 2020	0.000		0.000		-		0.000	0.000	0.157	0.000
Program Operations - Facility Sustainment (FSRM)	MIPR	377th ABW : NM	0.000	0.310	Oct 2020	0.000		0.000		-		0.000	0.000	0.310	0.000
Program Operations - Information Management and Technology	C/CPAF	Northrop Grumman, Jacobs Technology : CO	0.000	3.402	Oct 2020	0.000		0.000		-		0.000	0.000	3.402	0.000
Subtotal			59.772	14.997		0.000		0.000		-		0.000	0.000	74.769	N/A
Remarks N/A															
			Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			319.436	60.750		0.000		0.000		-		0.000	0.000	380.186	N/A
Remarks N/A															

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Missile Defense Agency														Date: April 2022																											
Appropriation/Budget Activity 0400 / 4														R-1 Program Element (Number/Name) PE 0604115C / Technology Maturation Initiatives														Project (Number/Name) MD99 / Discrimination Sensor Demonstrator Development													
Significant Event Complete ▲				Milestone Decision Complete ★				Element Test Complete ◆				System Level Test Complete ●				Complete Activity ◆																									
Significant Event Planned △				Milestone Decision Planned ☆				Element Test Planned ◇				System Level Test Planned ○				Planned Activity ◇																									
														FY 2021		FY 2022		FY 2023		FY 2024		FY 2025		FY 2026		FY 2027															
Advanced Sensor Development														◆																											
Planned Advanced Sensor Development															◆	◆	◆	◆	◆																						
Compact Ruggedized Advanced Sensor Development														◆																											
Planned Compact Ruggedized Advanced Sensor Development															◆	◆	◆	◆	◆																						

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Missile Defense Agency			Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604115C / <i>Technology Maturation Initiatives</i>	Project (Number/Name) MD99 / <i>Discrimination Sensor Demonstrator Development</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Advanced Sensor Development	1	2021	1	2021
Planned Advanced Sensor Development	2	2021	2	2022
Compact Ruggedized Advanced Sensor Development	1	2021	1	2021
Planned Compact Ruggedized Advanced Sensor Development	2	2021	2	2022

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency										Date: April 2022		
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0604115C / <i>Technology Maturation Initiatives</i>				Project (Number/Name) MC98 / <i>Cyber Operations</i>			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
MC98: <i>Cyber Operations</i>	6.526	0.168	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	6.694
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Due to a shift in Department of Defense priorities, the development of the Technology Maturation Initiatives Program has been cancelled beginning in FY 2022. No funding is requested in FY 2022 and the out years.

A. Mission Description and Budget Item Justification

Cyber Operations sustains the Missile Defense Agency DoD Risk Management Framework (RMF) and Controls Validation Testing activities, analysis of validation results, risk assessments and reviews of proposed Program Manager/Information Assurance Manager Plans of Action and Milestones (POAM) for all Technology Maturation Initiative (TMI) mission systems. It maintains Certification and Accreditation data repository, capturing DoD Information Assurance Certification and Accreditation Program documentation (artifacts, validation results, and Information Assurance Risk Assessment results, and Designated Approving Authority accreditation decisions) and Plans of Action and Milestones on all MDA information systems.

This project monitors and tracks cybersecurity mitigations detailed in information technology security POAM. Activities include preparation of Certification and Accreditation documentation and accreditation recommendations to MDA Senior Information Assurance Officer /Certification Authority and Designated Approving Authority. Independent Verification and Validation team actions ensure the availability, integrity, authentication, confidentiality and non-repudiation of MDA mission, test and administrative systems. Activities in the project are necessary to comply with the Federal Information Security Management Act.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2021	FY 2022	FY 2023
Title: Network / System Certification and Accreditation (C&A)	0.168	0.000	0.000
Articles:	-	-	-
Description: The Cyber Operations project sustains MDA DoD RMF certification and Controls Validation Testing activities for the TMI PE.			
FY 2022 Plans: - No funding is requested in FY 2022 for this effort			
FY 2023 Plans: - No funding is requested in FY 2023 for this effort			
FY 2022 to FY 2023 Increase/Decrease Statement:			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency										Date: April 2022		
Appropriation/Budget Activity 0400 / 4				R-1 Program Element (Number/Name) PE 0604115C / <i>Technology Maturation Initiatives</i>				Project (Number/Name) MC98 / <i>Cyber Operations</i>				
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)												
N/A										FY 2021	FY 2022	FY 2023
Accomplishments/Planned Programs Subtotals										0.168	0.000	0.000
C. Other Program Funding Summary (\$ in Millions)												
Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost	
• 0603176C: <i>Advanced Concepts and Performance Assessment</i>	49.069	40.000	16.737	-	16.737	17.265	17.693	18.109	18.477	Continuing	Continuing	
• 0603180C: <i>Advanced Research</i>	29.621	47.966	22.023	-	22.023	22.758	23.296	23.851	24.335	Continuing	Continuing	
Remarks												
D. Acquisition Strategy												
The acquisition strategy for Cyber Operations, consists of using MDA civilian employees and the existing competitively awarded contractor support services.												

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0604115C / <i>Technology Maturation Initiatives</i>						Project (Number/Name) MC98 / <i>Cyber Operations</i>			
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Network / System Certification and Accreditation (C&A) - Cyber Development and Engineering	C/CPFF	Davidson Technologies, JHU, Raytheon : AL, MD, MA	5.000	0.000		0.000		0.000		-		0.000	0.000	5.000	0.000
Network / System Certification and Accreditation (C&A) - Cybersecurity Management and Computer Network Defense	C/CPFF	TEAMS : AL, NM	0.604	0.000		0.000		0.000		-		0.000	0.000	0.604	0.000
Network / System Certification and Accreditation (C&A) - Network / System Certification and Accreditation (C and A) - Agency Operations - Civilian Salaries and Travel	Allot	Missile Defense Agency : NM	0.591	0.168	Nov 2020	0.000		0.000		-		0.000	0.000	0.759	0.000
Network / System Certification and Accreditation (C&A) - Network / System Certification and Accreditation (C and A) - CDS Implementation	C/CPFF	Northrop Grumman : CO	0.331	0.000		0.000		0.000		-		0.000	0.000	0.331	0.000
Subtotal			6.526	0.168		0.000		0.000		-		0.000	0.000	6.694	N/A
Remarks N/A															

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency										Date: April 2022					
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0604115C / Technology Maturation Initiatives					Project (Number/Name) MC98 / Cyber Operations					
			Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			6.526	0.168		0.000		0.000		-		0.000	0.000	6.694	N/A
Remarks N/A															

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Missile Defense Agency							Date: April 2022										
Appropriation/Budget Activity 0400 / 4				R-1 Program Element (Number/Name) PE 0604115C / Technology Maturation Initiatives				Project (Number/Name) MC98 / Cyber Operations									
Significant Event Complete ▲		Milestone Decision Complete ★		Element Test Complete ◆		System Level Test Complete ●		Complete Activity ◆									
Significant Event Planned △		Milestone Decision Planned ☆		Element Test Planned ◇		System Level Test Planned ○		Planned Activity ◇									
				FY 2021		FY 2022		FY 2023		FY 2024		FY 2025		FY 2026		FY 2027	
Cyber Security Support				◆													

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Missile Defense Agency			Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604115C / Technology Maturation Initiatives	Project (Number/Name) MC98 / Cyber Operations	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Cyber Security Support	1	2021	1	2021

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency										Date: April 2022		
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0604115C / <i>Technology Maturation Initiatives</i>				Project (Number/Name) MD40 / <i>Program Wide Support</i>			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
MD40: <i>Program Wide Support</i>	31.117	2.677	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	33.794
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Program Wide Support (PWS) is allocated on a pro-rata basis across multiple Agency PE's each fiscal year based on the total Agency budget, and therefore fluctuates per PE by fiscal year.

A. Mission Description and Budget Item Justification

PWS contains non-headquarters management costs in support of MDA functions and activities across the entire MDS. These functions include Government Civilians and Contract Support Services. This effort provides integrity and oversight of the MDS as well as supports MDA in the development and evaluation of technologies that will respond to the changing threat. Additionally, PWS includes personnel to support global deployments performing deployment site preparation and activation, and provides facility capabilities for MDA Executing Agent locations worldwide. Other MDA wide costs include: physical and technical security; civilian drug testing; audit readiness; the Science, Technology, Engineering, and Mathematics (STEM) program; legal services and settlements; travel and agency training; office, equipment, vehicle, and warehouse leases; utilities and base operations across multiple geographic locations; commercial and ancillary facility services; management of all facility aspects regardless of lifecycle stage; supplies and maintenance; compliance with statutory environmental requirements; data and unified communications support; materiel and readiness and central property management of equipment; Facilities Sustainment, Restoration and Modernization (FSRM) program, (formerly Real Property Maintenance) to keep the Department's inventory of facilities in good working order; and similar operating expenses. PWS is allocated on a pro-rata basis across most Agency PEs and therefore fluctuates per PE by fiscal year based on the total Agency budget in that fiscal year.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2021	FY 2022	FY 2023
Title: Program Wide Support	2.677	0.000	0.000
Articles:	-	-	-
Description: PWS contains non-headquarters management costs in support of MDA functions and activities across the entire MDS. These functions include Government Civilians and Contract Support Services. This effort provides integrity and oversight of the MDS as well as supports MDA in the development and evaluation of technologies that will respond to the changing threat. Additionally, PWS includes personnel to support global deployments performing deployment site preparation and activation, and provides facility capabilities for MDA Executing Agent locations worldwide. Other MDA wide costs include: physical and technical security; civilian drug testing; audit readiness; the Science, Technology, Engineering, and Mathematics (STEM) program; legal services and settlements; travel and agency training; office, equipment, vehicle, and warehouse leases; utilities and base operations across multiple geographic locations; commercial and ancillary facility services; management of all facility aspects regardless of lifecycle stage; supplies and maintenance; compliance with statutory environmental requirements; data and unified communications support; materiel and readiness and central property management of equipment; Facilities Sustainment,			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency		Date: April 2022	
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604115C / <i>Technology Maturation Initiatives</i>	Project (Number/Name) MD40 / <i>Program Wide Support</i>	
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2021	FY 2022
<p>Restoration and Modernization (FSRM) program, (formerly Real Property Maintenance) to keep the Department's inventory of facilities in good working order; and similar operating expenses. PWS is allocated on a pro-rata basis across most Agency PEs and therefore fluctuates per PE by fiscal year based on the total Agency budget in that fiscal year.</p> <p><i>FY 2022 Plans:</i> N/A</p> <p><i>FY 2023 Plans:</i> N/A</p> <p><i>FY 2022 to FY 2023 Increase/Decrease Statement:</i> N/A</p>			
Accomplishments/Planned Programs Subtotals		2.677	0.000
C. Other Program Funding Summary (\$ in Millions) N/A			
Remarks			
D. Acquisition Strategy N/A			

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0604115C / Technology Maturation Initiatives				Project (Number/Name) MD40 / Program Wide Support					
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Wide Support - Agency Facilities and Maintenance	MIPR	Various : AL, CO, CA, VA	9.129	1.262	Nov 2020	0.000		0.000		-		0.000	0.000	10.391	0.000
Program Wide Support - Agency Operations Management	MIPR	Various : Multi: AL, VA	0.364	0.000		0.000		0.000		-		0.000	0.000	0.364	0.000
Program Wide Support - Agency Operations and Support Other Agency Services	MIPR	Various : Multi: AK, AL, CO, CA, HI, MD, VA	0.000	1.200	Nov 2020	0.000		0.000		-		0.000	0.000	1.200	0.000
Program Wide Support - Agency Operations and Support Services	C/CPFF	Various : Multi: AK, AL, CA, CO, VA	21.624	0.000		0.000		0.000		-		0.000	0.000	21.624	0.000
Program Wide Support - Agency Operations, Sustainment and GPC	C/FFP	Various : Multi: AK, AL, CA, HI, NY, VA	0.000	0.215	Nov 2020	0.000		0.000		-		0.000	0.000	0.215	0.000
Subtotal			31.117	2.677		0.000		0.000		-		0.000	0.000	33.794	N/A
Remarks N/A															
			Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			31.117	2.677		0.000		0.000		-		0.000	0.000	33.794	N/A
Remarks Award Date reflects date of first obligation. Additional obligations may incrementally occur throughout the year.															

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PE 0604115C: *Technology Maturation Initiatives* **UNCLASSIFIED** Page 28 of 29 R-1 Line #96 **Volume 2a - 628**

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Missile Defense Agency			Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604115C / Technology Maturation Initiatives	Project (Number/Name) MD40 / Program Wide Support	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
MD40 Program-Wide Support	1	2021	4	2021

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Missile Defense Agency	Date: April 2022
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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 0604181C <i>I Hypersonic Defense</i>
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COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
Total Program Element	582.172	267.589	287.796	225.477	-	225.477	108.540	110.220	287.535	449.590	Continuing	Continuing
MD29: <i>Hypersonic Defense</i>	570.084	257.506	279.016	217.617	-	217.617	104.720	106.452	276.734	432.593	Continuing	Continuing
MD40: <i>Program Wide Support</i>	12.088	10.083	8.780	7.860	-	7.860	3.820	3.768	10.801	16.997	Continuing	Continuing

Program MDAP/MAIS Code: 362

Note

Decrease from FY 2022 to FY 2023 reflects a reduction in technology advancements, systems engineering activities and system upgrades to prioritize the development of a regional, hypersonic glide phase defense capability that will integrate with terminal defense systems to provide a layered defensive capability against hypersonic threats.

A. Mission Description and Budget Item Justification

Strategic competitors and regional adversaries are heavily investing in offensive and defensive hypersonic capabilities, and currently have operational hypersonic systems deployed. These are challenging realities of the emerging missile threat environment that U.S. missile defense policy, strategy, and capabilities must address. These competitors continue to expand the capability and capacity of their offensive hypersonic missile inventories for both strategic and regional hypersonic missiles. Rogue nations have also demonstrated hypersonic missiles in recent flight tests.

The regional Hypersonic Defense (HD) Program Element (PE) includes execution of the systems engineering activities, upgrade of existing systems, investment in new technologies, and development of new defensive capabilities for delivery in the 2030s. MDA's Hypersonic Missile Defense (HMD) strategy includes leveraging existing systems, delivering an initial layered defense capability, and increasing defense capabilities in the future. Activities enabling this strategy are the following:

- Integrate existing and new overhead sensors like the Hypersonic and Ballistic Tracking Space Sensor (HBTSS)
- Update existing Ballistic Missile Defense System (BMDS) Overhead Architecture (BOA)
- Modify existing Aegis SPY radar, fire control, and communications, as well as Command & Control, Battle Management, and Communications (C2BMC) for track and warning of hypersonic threats
- Execute systems engineering for HD (architecture analysis, technology prioritization, requirements development, planning, analysis and capability development)
- Develop a regional Glide Phase Intercept (GPI) operational prototype to engage hypersonic threats during the glide phase of flight
- Mature critical technologies and mitigate key technical risks including testing in relevant environments prior to selecting a final concept
- Partner with the Services and other agencies to leverage work on common technologies, test infrastructure, weapon development, testing, and war-gaming
- Partner with Allies where possible
- Demonstrate the regional defensive capability and performance against hypersonic threats through system testing

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Missile Defense Agency	Date: April 2022
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Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> / BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0604181C / <i>Hypersonic Defense</i>
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B. Program Change Summary (\$ in Millions)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Previous President's Budget	272.632	247.931	0.000	-	0.000
Current President's Budget	267.589	287.796	225.477	-	225.477
Total Adjustments	-5.043	39.865	225.477	-	225.477
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	39.865			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	-5.043	0.000			
• Missile Defeat and Defense Enhancement	0.000	0.000	0.000	-	0.000
• Other Adjustment	0.000	0.000	225.477	-	225.477

Change Summary Explanation

Increase of \$ 39.8 million in FY 2022 provides Congressional Plus-up for partnered flight test participation, engineering enablers and disruptive technologies for future architectures.

FY 2023 funding increase reflects the fact that the FY 2022 President's Budget request did not include out-year funding.

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency										Date: April 2022		
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0604181C / <i>Hypersonic Defense</i>				Project (Number/Name) MD29 / <i>Hypersonic Defense</i>			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
MD29: <i>Hypersonic Defense</i>	570.084	257.506	279.016	217.617	-	217.617	104.720	106.452	276.734	432.593	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Decrease from FY 2022 to FY 2023 reflects a reduction in technology advancements, systems engineering activities and system upgrades to prioritize the development of a regional, hypersonic glide phase defense capability that will integrate with terminal defense systems to provide a layered defensive capability against hypersonic threats.

A. Mission Description and Budget Item Justification

Strategic competitors and regional adversaries are heavily investing in hypersonics, both offense and defense, and currently have operational hypersonic systems deployed. These are challenging realities of the emerging missile threat environment that U.S. missile defense policy, strategy, and capabilities must address. These competitors continue to expand the capability and capacity of their offensive hypersonic missile inventories for both strategic and regional hypersonic missiles. Rogue nations have also demonstrated hypersonic missiles in flight tests.

The regional Hypersonic Defense (HD) Program Element (PE) includes executing systems engineering activities, upgrading existing systems, investing in new technologies, and developing new defensive capabilities. MDA's counter hypersonic threats strategy includes leveraging existing systems, delivering an initial layered defense capability, and increasing defense capabilities in the future. Activities enabling this strategy are the following:

- Integrate existing and new overhead sensors like the Hypersonic and Ballistic Tracking Space Sensor (HBTSS)
- Update existing Ballistic Missile Defense System (BMDS) Overhead Architecture (BOA)
- Modify existing Aegis SPY radar, fire control, and communications, as well as Command & Control, Battle Management, and Communications (C2BMC) for track and warning of hypersonic threats
- Execute systems engineering for HD (architecture analysis, technology prioritization, requirements development, planning, analysis and capability development)
- Develop a regional Glide Phase Intercept (GPI) operational prototype to engage hypersonic threats during the glide phase of flight
- Mature critical technologies and mitigate key technical risks including testing in relevant environments prior to selecting a final concept
- Partner with the Services and other agencies to leverage work on common technologies, test infrastructure, weapon development, testing, and war-gaming
- Partner with Allies where possible
- Demonstrate the regional defensive capability and performance against hypersonic threats through system testing

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2021	FY 2022	FY 2023
Title: Engineering Enablers	59.841	77.038	46.932
Articles:	-	-	-

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2021	FY 2022
<p>Description: Provides systems engineering activities required to evolve the Missile Defense System (MDS) to address hypersonic threats, to include architecture analysis, capability roadmap development, and requirements development. Recurring activities include:</p> <ul style="list-style-type: none"> - Conduct foundational Systems Engineering activities required to develop regional Hypersonic Defense (HD), including concept definition, requirements and interfaces, system design, integration, test planning, and use of digital engineering tools and practices -- Provide key products for development and maintenance of the technical baseline -- Assess current MDS capabilities against hypersonic threats and analyze future HD solutions to counter the evolving threat -- Develop and integrate modeling and simulation tools to validate HD requirements and assess HD performance -- Support HD reviews to coordinate the technical and program baselines to ensure development of a successful capability -- Continue to mature modeling and simulation architecture - Perform engineering analysis, develop requirements, and define interfaces for sensor-to-weapon fire control using C2BMC to lay the path for connectivity, battle management, and sensor tasking to a weapon system such as Aegis <p>Specific and/or unique accomplishments to each FY are as follows:</p> <p>FY 2022 Plans:</p> <ul style="list-style-type: none"> - Provide Truth and Threat Modeling to stimulate and enable integrated M&S federations (Ground Test and All-Digital in-line Truth Models and Threat Modeling) - Develop hypersonic threat models and update existing threat models based on real-world data to support analysis - Conduct wind tunnel and aero optics testing - Develop end game guidance and performance M&S anchored in aero and aero optical test data - Conduct mid-term and long-term Hypersonic defense architecture analysis - Perform architecture analysis for hypersonic defense and continue implementation of digital engineering - Conduct lethality analysis for both kinetic and non-kinetic measures against hypersonic threats <p>FY 2023 Plans:</p> <ul style="list-style-type: none"> - Perform architecture analysis for regional hypersonic defense and continue implementation of digital engineering - Conduct analysis and testing to reduce risk of key technical enablers for regional hypersonic defense - Reduce technical risk with Federally Funded Research Development Centers, University Affiliated Research Centers, and National Labs to conduct analysis, develop prototypes, and execute testing for both kinetic and non-kinetic defensive measures - Continue development of HD models, to include Core Truth Model updates - Leverage cost share opportunities with offensive hypersonic systems to test engineering payloads in low-cost sounding rocket flight tests 			

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Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604181C / Hypersonic Defense	Project (Number/Name) MD29 / Hypersonic Defense		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2021	FY 2022	FY 2023
- Continue development of hypersonic threat models and update existing threat models based on real-world data to support analysis				
FY 2022 to FY 2023 Increase/Decrease Statement: Decrease from FY 2022 to FY 2023 reflects the Congressional add for engineering risk assessment and analysis efforts and the reduction of engineering activities to realign regional Hypersonic Defense resources to support regional GPI development.				
Title: Disruptive Technologies for Future Architecture		64.919	26.565	9.261
Articles:		-	-	-
Description: Provides identification, development of new technology and capabilities needed across the kill chain in support of Hypersonic Missile Defense architecture alternatives, and the ability to address advanced threats through kinetic and non-kinetic capabilities. Specific and/or unique accomplishments to each FY are as follows:				
FY 2022 Plans:				
- Continue to develop low-cost/light weight Focal Plane Array sensor electronics for increased throughput and cryocoolers in an open architecture applicable to multiple sensor systems				
- Continue development of advanced technology concepts to counter the evolving threats				
- Continue to develop propulsion technology to increase maneuverability and energy management for future endo-atmospheric hypersonic interceptor kill vehicles and rocket motors to include testing and demonstrations in relevant environments				
- Conduct technology risk reduction activities for advanced long term seeker windows, on-demand propulsion, thermal protection system testing and lethality testing of non-kinetic systems				
FY 2023 Plans:				
- Continue to develop supporting low-cost/light weight Focal Plane Array sensor electronics for increased throughput and cryocoolers in an open architecture applicable to multiple sensor systems				
- Continue development of advanced technology concepts to counter the evolving threats				
- Continue to develop propulsion technology to increase maneuverability and energy management for future endo-atmospheric hypersonic interceptor kill vehicles and rocket motors to include testing and demonstrations in relevant environments				
FY 2022 to FY 2023 Increase/Decrease Statement: Decrease from FY 2022 to 2023 reflects the Congressional add for characterization testing of advanced technologies and the reduction of development efforts for hypersonic component technology advancements.				
Title: Leverage and Upgrade Existing Systems		34.379	21.559	12.424
Articles:		-	-	-
Description: Analyze existing systems capability to defend against hypersonic threats and upgrade existing systems to support hypersonic missile defense activities. Specific and/or unique accomplishments to each FY are as follows:				

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Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604181C / Hypersonic Defense	Project (Number/Name) MD29 / Hypersonic Defense		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2021	FY 2022	FY 2023
FY 2022 Plans: - Upgrade BOA/C2BMC to support regional Aegis Glide Phase Intercept (GPI) capability - Continue BOA/C2BMC algorithm development and prototyping for advanced threat battle management to support weapon system engagement - Complete AN/TPY-2 test integration and track reporting threats with C2BMC using CX software version 5 (CX5), which will contribute to end-to-end missile defense system performance FY 2023 Plans: - Continue upgrade for BOA/C2BMC to support regional Aegis GPI capability - Provide BOA algorithm development and prototyping for low latency tracks in support of regional GPI hypersonic defense efforts FY 2022 to FY 2023 Increase/Decrease Statement: Decrease from FY 2022 to FY 2023 reflects completion of AN/TPY-2 test integration and track reporting threats with C2BMC for end-to-end missile defense system performance.				
Title: Regional Glide Phase Defeat Weapon System <div>Articles:</div> Description: This effort develops an operational defensive capability to engage and defeat regional hypersonic threats during the glide phase of flight using the proven Aegis Weapon System. This will provide an additional layer of regional hypersonic defense from an Aegis ship which also augments Sea-Based Terminal capability by extending the battlespace of early terminal. The operational defensive capability includes the development of a regional GPI missile that reduces the operational seam currently used by hypersonic threats to fly between air defense and ballistic missile defense systems. The effort also includes updates to the Aegis Weapon System (AWS) for planning, tracking and conducting launch on remote engagements against hypersonic threats within the MDS as well as conducting studies and advancing hypersonic capability to legacy Aegis Weapon Systems. Specific and/or unique accomplishments to each FY are as follows: FY 2022 Plans: Regional GPI Missile - Continue regional GPI design analysis activities and requirements definition - Conduct Technology Readiness Level Assessments of contractor designs - Conduct regional GPI Missile System Requirement Reviews (SRR) for multiple vendor designs which ensures the system under review can proceed into initial systems development - Initiate preparations for multiple regional GPI missile Preliminary Design Reviews (PDR) which establishes the allocated baseline for the regional GPI capability to include Mk 41 Vertical Launch System integration and Aegis Launch on Remote engagement capability - Conduct studies to explore and advance concepts in missile technology		95.358 -	135.854 -	149.000 -

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)			FY 2021	FY 2022	FY 2023
<div>- Design and procure material for Software Evaluation Station (SWES), Computer In The Loop (CIL) and Hardware In The Loop (HIL)</div> <div>Aegis Weapon System</div> <div>- Conduct Aegis Weapon System trade studies and concepts supporting Level A-Specification development</div> <div>- Continue modeling changes needed to incorporate Aegis Weapon System upgrades and Interceptor development</div> <div>- Initiate preparations for Aegis Weapon System (AWS) development Preliminary Design Reviews (PDR) which establishes the allocated baseline work associated with the regional GPI Interceptor to include Mission Planning capabilities</div> <div>-- Launch On Remote Engagement Capability</div> <div>-- C2 logic required for hypersonic vehicle glide phase engagements</div> <div>-- C2BMC algorithm development and prototyping for advanced threat battle management to support weapon system engagement</div> <div>-- Hypersonic glide phase engagement sequences</div> <div>-- Integration of AWS with new regional Hypersonic Glide Phase Interceptor</div> <div>-- Interoperability of AWS Regional Glide Phase capability with the MDS</div> <div>- Conduct reviews and activities for improving defense against hypersonic threats with the Aegis platform</div> <div>- Conduct studies to explore and advance concepts in weapon system technology</div> <div>FY 2023 Plans:</div> <div>Regional GPI Missile</div> <div>- Continue Technology Readiness Level Assessments of contractor designs</div> <div>- Purchase materials for the technology level maturation testing of critical technologies</div> <div>- Initiate preparations for GPI missile Preliminary Design Reviews (PDR) for multiple vendor designs to establish the baseline for the regional GPI capability to include Mk 41 Vertical Launch System integration and Aegis Engage on Remote engagement capability</div> <div>- Conduct studies to explore and advance concepts in missile technology</div> <div>Aegis Weapon System</div> <div>- Continue AWS trade studies and concepts supporting Aegis BMD Element Specification development</div> <div>- Continue modeling changes needed to incorporate AWS upgrades and Interceptor development</div> <div>- Continue Systems Engineering preparations for AWS SRR which establishes the Aegis BMD element specification requirements for a regional GPI capability and the integration of the regional GPI layered defense (regional GPI plus regional GPI with Sea Base Terminal (SBT) Increment 3)</div> <div>- Perform interoperability planning of AWS Regional Glide Phase capability with the MDS</div> <div>- Continue reviews and activities for improving defense against hypersonic threats with the Aegis platform</div> <div>- Continue studies to explore and advance concepts in weapon system technology</div>					

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Appropriation/Budget Activity 0400 / 4				R-1 Program Element (Number/Name) PE 0604181C / Hypersonic Defense				Project (Number/Name) MD29 / Hypersonic Defense			
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)									FY 2021	FY 2022	FY 2023
- Develop Prototype Code for observation purposes during FTX-40 and FTM-43 to support GPI development											
FY 2022 to FY 2023 Increase/Decrease Statement: Increase from FY 2022 to FY 2023 provides continued delivery of initial regional hypersonic glide phase defense capability.											
Title: Partnered Flight Test Participation									3.009	18.000	0.000
Articles:									-	-	-
Description: MDA's participation in Partner Flight Test events is critical for data collection across a diverse hypersonic threat set from multiple types of launch platforms. Participation in these test events supports the development and fielding of MDA's regional Hypersonic Defense capabilities to protect the United States, its allies, and deployed forces in all phases of flight.											
FY 2022 Plans: Participate and collect data in flight test events to support development and fielding of Hypersonic Defense capabilities.											
FY 2023 Plans: N/A.											
FY 2022 to FY 2023 Increase/Decrease Statement: Decrease from FY 2022 to FY 2023 reflects the FY 2022 Congressional add to support partnered flight test events.											
Accomplishments/Planned Programs Subtotals									257.506	279.016	217.617
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• 0603176C: Advanced Concepts and Performance Assessment	49.069	40.000	16.737	-	16.737	17.265	17.693	18.109	18.477	Continuing	Continuing
• 0603180C: Advanced Research	29.621	47.966	22.023	-	22.023	22.758	23.296	23.851	24.335	Continuing	Continuing
• 0603884C: Ballistic Missile Defense Sensors	259.605	254.962	231.134	-	231.134	250.028	274.705	276.254	257.575	Continuing	Continuing
• 0603890C: BMD Enabling Programs	607.167	623.644	591.847	-	591.847	613.589	625.761	635.633	640.374	Continuing	Continuing
• 0603892C: AEGIS BMD	861.809	639.549	600.072	-	600.072	658.798	574.014	570.018	580.496	Continuing	Continuing
• 0603896C: Ballistic Missile Defense Command and Control, Battle Management & Communication	639.027	564.946	589.374	-	589.374	575.883	588.824	612.853	605.801	Continuing	Continuing

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

<u>Line Item</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u> <u>Base</u>	<u>FY 2023</u> <u>OCO</u>	<u>FY 2023</u> <u>Total</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• 0603915C: <i>Ballistic Missile Defense Targets</i>	534.348	560.478	559.513	-	559.513	555.341	623.995	628.146	632.072	Continuing	Continuing
• 1206895C: <i>Ballistic Missile Defense System Space Programs</i>	161.267	292.811	129.957	-	129.957	120.392	124.652	48.055	49.029	Continuing	Continuing

Remarks

D. Acquisition Strategy

To optimize Missile Defense System performance, MDA leverages the nation's engineering centers of excellence at government agencies, Military Services, Federally Funded Research and Development Centers (FFRDCs), University Affiliated Research Centers (UARCs), and industry. The executing agents use varying contracting strategies in a flexible manner to maximize their contribution to the Missile Defense System. MDA acquires products and services by competitive means to the extent that is possible, practical and uses the Advanced Technology Broad Area Announcement process to award concept definition contracts.

For the regional Glide Phase Interceptor (GPI), MDA developed the acquisition strategy to utilize a Broad Agency Announcement (BAA) for the competitive selection and award of Other Transaction Authority (OTA) agreements. This strategy plans to award to one or more contractors through SRR to drive innovation in missile system modification. OTA Agreement awarded in November 2021.

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Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0604181C / Hypersonic Defense				Project (Number/Name) MD29 / Hypersonic Defense					
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Engineering Enablers - Regional Hypersonic Defense - Systems Engineering - Hypersonic Architectures Modeling, Requirements and Simulations (HAMRS)	MIPR	DOD - USA - COMBAT CAPABILITIES DEVELOPMENT COMMAND (CCDC) AVIATION AND MISSILE CENTER (AVMC) : AL	0.000	0.000		0.000		6.113	Dec 2022	-		6.113	Continuing	Continuing	Continuing
Engineering Enablers - Regional Hypersonic Defense - Systems Engineering - MITRE	MIPR	THE MITRE CORPORATION : Various	0.000	0.000		0.000		1.658	Dec 2022	-		1.658	Continuing	Continuing	Continuing
Engineering Enablers - Regional Hypersonic Defense - Systems Engineering - Engineering Architecture Analysis Support	MIPR	MASSACHUSETTS INSTITUTE OF TECHNOLOGY : MA	0.000	0.000		0.000		4.667	Dec 2022	-		4.667	Continuing	Continuing	Continuing
Engineering Enablers - Regional Hypersonic Defense - Systems Engineering - Aerospace	MIPR	THE AEROSPACE CORPORATION : CA	0.000	0.000		0.000		2.111	Dec 2022	-		2.111	Continuing	Continuing	Continuing
Engineering Enablers - Regional Hypersonic Defense - Systems Engineering - SNL	IA	Department of Energy (DOE)/National Nuclear Security Administration/ Sandia Field Office (NNSA SFO) : NM	0.000	0.000		0.000		4.066	Dec 2022	-		4.066	Continuing	Continuing	Continuing
Hypersonic Defense - Component Technology for Sensors and Weapons	MIPR	Various : AL	20.500	0.000		0.000		0.000		-		0.000	0.000	20.500	0.000
Engineering Enablers - Engineering Enablers - Regional Hypersonic Defense - Systems Engineering	Various	Various : Various	0.000	0.000		0.000		1.681	Dec 2022	-		1.681	Continuing	Continuing	Continuing

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Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
– Requirements Development															
Hypersonic Defense - MDS C2BMC Upgrades	C/Various	Various : AL	33.645	0.000		0.000		0.000		-		0.000	0.000	33.645	0.000
Hypersonic Defense - MDS Sensor Upgrades - AN/TPY-2	SS/CPFF	Raytheon : MA	16.474	0.000		0.000		0.000		-		0.000	0.000	16.474	0.000
Hypersonic Defense - MDS Sensor Upgrades - LRDR	C/FFP	Lockheed Martin : NJ	12.007	0.000		0.000		0.000		-		0.000	0.000	12.007	0.000
Engineering Enablers - Regional Hypersonic Defense - Systems Engineering	Various	MDA : AL, VA	12.620	8.342	Nov 2020	33.020	Nov 2021	1.000	Dec 2022	-		1.000	Continuing	Continuing	Continuing
Engineering Enablers - Regional Hypersonic Defense - Systems Engineering - JHU/APL	FFRDC	JOHNS HOPKINS UNIVERSITY APPLIED PHYSICS LABORATORY LLC, THE : MD	0.000	0.000		0.000		10.578	Dec 2022	-		10.578	Continuing	Continuing	Continuing
Engineering Enablers - Regional Hypersonic Defense - Systems Engineering - Lethality and Analysis	IA	DOE - DEPARTMENT OF ENERGY (DOE) : Various	8.325	8.407	Nov 2020	8.575	Nov 2021	4.441	Nov 2022	-		4.441	Continuing	Continuing	Continuing
Engineering Enablers - Regional Hypersonic Defense - Systems Engineering - M&S	C/CPAF	Northrop Grumman : AL	6.680	6.815	Jan 2021	9.153	Dec 2021	4.559	Dec 2022	-		4.559	Continuing	Continuing	Continuing
Engineering Enablers - Regional Hypersonic Defense - Systems Engineering - Threat Engineering	Various	Various : AL	12.834	4.053	Feb 2021	2.050	Dec 2021	2.000	Dec 2022	-		2.000	Continuing	Continuing	Continuing
Engineering Enablers - Regional Hypersonic	C/CPFF	PARSONS GOVERNMENT	7.473	3.533	Nov 2020	3.531	Nov 2021	2.758	Nov 2022	-		2.758	Continuing	Continuing	Continuing

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Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Defense - Systems Engineering -- CSS		SERVICES INC. : AL, VA													
Engineering Enablers - Regional Hypersonic Defense - Systems Engineering -- FFRDC/UARC	MIPR	Various : AL, VA	28.502	28.691	Oct 2020	20.709	Dec 2021	0.000		-		0.000	0.000	77.902	0.000
Hypersonic Defense - Sensor Technology - Advanced Threat Tracking and Analysis / Low Latency Processing	MIPR	Various : AL, CA	13.016	0.000		0.000		0.000		-		0.000	0.000	13.016	0.000
Hypersonic Defense - Sensor Technology - Sensor Concept and Development	MIPR	Various : AL	21.522	0.000		0.000		0.000		-		0.000	0.000	21.522	0.000
Hypersonic Defense - Systems Engineering	Allot	MDA : AL, VA	5.444	0.000		0.000		0.000		-		0.000	0.000	5.444	0.000
Engineering Enablers - Systems Engineering - CS Specialized	C/CPFF	TBD : Various	0.000	0.000		0.000		1.300	Nov 2022	-		1.300	Continuing	Continuing	Continuing
Hypersonic Defense - Systems Engineering -- CSS	C/CPFF	TEAMS : AL, VA	6.688	0.000		0.000		0.000		-		0.000	0.000	6.688	0.000
Hypersonic Defense - Systems Engineering -- FFRDC/UARC	MIPR	Various : VA, AL	7.257	0.000		0.000		0.000		-		0.000	0.000	7.257	0.000
Hypersonic Defense - Systems Engineering -- Industry	C/CPAF	Boeing : AL	3.539	0.000		0.000		0.000		-		0.000	0.000	3.539	0.000
Hypersonic Defense - Technology Development Program Operations	Allot	MDA : AL, VA	11.861	0.000		0.000		0.000		-		0.000	0.000	11.861	0.000
Hypersonic Defense - Weapon Concept	C/Various	Various : AL	38.301	0.000		0.000		0.000		-		0.000	0.000	38.301	0.000

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Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Definition & Risk Reduction															
Disruptive Technologies for Future Architecture - Component Technology for Sensors and Weapons - High Temperature Materials	C/CPFF	Various : Various	0.000	0.000		0.000		0.500	Dec 2022	-		0.500	Continuing	Continuing	Continuing
Disruptive Technologies for Future Architecture - Component Technology for Sensors and Weapons - Propulsion and Aero-Controls	C/CPFF	NORTHROP GRUMMAN : Various	0.000	0.000		4.000	Jul 2022	0.917	Dec 2022	-		0.917	Continuing	Continuing	Continuing
Disruptive Technologies for Future Architecture - Component Technology for Sensors and Weapons - Seeker and Aero-Optics - Boeing	C/CPFF	BOEING : AL	0.000	0.000		0.500	Jul 2022	1.980	Dec 2022	-		1.980	Continuing	Continuing	Continuing
Disruptive Technologies for Future Architecture - Component Technology for Sensors and Weapons - Seeker and Aero-Optics - SDL	C/CPFF	SPACE DYNAMICS LABORATORY : Various	0.000	0.000		3.200	Apr 2022	0.938	Dec 2022	-		0.938	Continuing	Continuing	Continuing
Disruptive Technologies for Future Architecture - Regional Hypersonic Defense - Component Technology for Sensors and Weapons	MIPR	Various : AL	16.104	37.678	Nov 2020	11.794	Dec 2021	0.000		-		0.000	0.000	65.576	0.000
Disruptive Technologies for Future Architecture - Regional Hypersonic Defense - Sensor Technology - Advanced	MIPR	Various : AL, CA	7.351	14.375	May 2021	2.300	May 2022	0.000		-		0.000	0.000	24.026	0.000

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Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0604181C / Hypersonic Defense					Project (Number/Name) MD29 / Hypersonic Defense				
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Threat Tracking and Analysis / Low Latency Processing															
Disruptive Technologies for Future Architecture - Regional Hypersonic Defense - Sensor Technology / Sensor Concept and Development	MIPR	DOD - USAF - SECRETARY OF THE AIR FORCE, FINANCIAL MANAGEMENT (SAF/FM) : Various	15.068	12.866	Jun 2021	4.771	Dec 2021	4.926	Dec 2022	-		4.926	Continuing	Continuing	Continuing
Leverage and Upgrade Existing Systems - Regional Hypersonic Defense - C2BMC Regional GPI	C/CPAF	SciTec : Newark, NJ	0.000	0.000		4.181	Nov 2021	0.000		-		0.000	0.000	4.181	0.000
Leverage and Upgrade Existing Systems - Regional Hypersonic Defense - C2BMC Regional GPI (PRIME)	C/CPIF	Lockheed Martin : AL	0.000	0.000		0.000		0.000		-		0.000	0.000	0.000	0.000
Leverage and Upgrade Existing Systems - Regional Hypersonic Defense - C2BMC Regional GPI Prototype/ Development	C/CPAF	Northrop Grumman : CO	0.000	0.000		12.600	Mar 2022	0.000		-		0.000	0.000	12.600	0.000
Leverage and Upgrade Existing Systems - Regional Hypersonic Defense - MDS C2BMC	Various	Various : Various	28.092	7.378	Jun 2021	0.000		0.000		-		0.000	0.000	35.470	0.000
Leverage and Upgrade Existing Systems - Regional Hypersonic Defense - MDS C2BMC Upgrades (Prime)	C/CPIF	Lockheed Martin : AL	8.398	10.207	Apr 2021	0.048	Nov 2021	0.000		-		0.000	0.000	18.653	0.000
Leverage and Upgrade Existing Systems - Regional Hypersonic	C/CPAF	Northrop Grumman : CO	23.181	7.417	Mar 2021	3.740	Nov 2021	0.000		-		0.000	0.000	34.338	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0604181C / Hypersonic Defense						Project (Number/Name) MD29 / Hypersonic Defense			
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Defense - MDS C2BMC Upgrades for HD															
Leverage and Upgrade Existing Systems - Regional Hypersonic Defense - MDS Sensor Upgrades	C/FFP	Lockheed Martin : NJ	4.189	0.000		0.000		0.000		-		0.000	0.000	4.189	0.000
Leverage and Upgrade Existing Systems - Regional Hypersonic Defense - MDS Sensor Upgrades - AN/TPY-2	SS/CPFF	Raytheon : MA	30.793	0.000		0.990	Nov 2021	0.000		-		0.000	0.000	31.783	0.000
Leverage and Upgrade Existing Systems - Regional Hypersonic Defense-C2BMC Regional GPI Upgrades	C/CPFF	NORTHROP GRUMMAN : CO	0.000	0.000		0.000		12.424	Dec 2022	-		12.424	Continuing	Continuing	Continuing
Leverage and Upgrade Existing Systems - Regional Hypersonic Defense-MDS C2BMC Upgrades BAA	C/CPFF	LOCKHEED MARTIN CORPORATION : TX	0.000	9.377	Mar 2021	0.000		0.000		-		0.000	0.000	9.377	0.000
Regional Glide Phase Defeat Weapon System - Regional Glide Phase Defeat Weapon System - Regional Hypersonic Defense - Missile System	C/Various	Various : Various	0.000	15.700	Nov 2021	0.000		115.092	Nov 2022	-		115.092	Continuing	Continuing	Continuing
Regional Glide Phase Defeat Weapon System - Regional Hypersonic Defense - Engineering Support	MIPR	NSWCD : VA	0.000	9.259	Nov 2020	13.525	Nov 2021	8.000	Nov 2022	-		8.000	Continuing	Continuing	Continuing
Regional Glide Phase Defeat Weapon System - Regional Hypersonic	MIPR	NIWC PAC : CA	0.000	2.091	Nov 2020	3.560	Nov 2021	0.000		-		0.000	0.000	5.651	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0604181C / Hypersonic Defense				Project (Number/Name) MD29 / Hypersonic Defense					
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Defense - Interface Change Proposals															
Regional Glide Phase Defeat Weapon System - Regional Hypersonic Defense - Special Studies	C/CPAF	APL : MD	0.000	9.314	Nov 2020	4.271	Nov 2021	6.450	Nov 2022	-		6.450	Continuing	Continuing	Continuing
Regional Glide Phase Defeat Weapon System - Regional Hypersonic Defense - Systems Engineering	MIPR	MIT/LL : MA	0.000	4.300	Nov 2020	14.237	Nov 2021	3.000	Nov 2022	-		3.000	Continuing	Continuing	Continuing
Regional Glide Phase Defeat Weapon System - Regional Hypersonic Defense - Systems Engineering Support	MIPR	MITRE : VA	0.000	0.443	Nov 2020	1.424	Nov 2021	0.458	Nov 2022	-		0.458	Continuing	Continuing	Continuing
Regional Glide Phase Defeat Weapon System - Regional Hypersonic Defense - Weapon Concept Definition and Risk Reduction	C/Various	Various : VA	62.275	0.000		0.000		0.000		-		0.000	0.000	62.275	0.000
Regional Glide Phase Defeat Weapon System - Regional Hypersonic Defense - Weapon System Modification	C/CPIF	Lockheed Martin : NJ	0.000	44.165	Sep 2021	98.837	Nov 2021	16.000	Nov 2022	-		16.000	Continuing	Continuing	Continuing
Regional Glide Phase Defeat Weapon System - Regional Hypersonic Defense -MDA	Allot	MDA : AL, VA	3.866	7.086	Oct 2020	0.000		0.000		-		0.000	0.000	10.952	0.000
Regional Glide Phase Defeat Weapon System - Regional Hypersonic Defense- Weapon System Special Studies	Various	Various : TBD	0.000	3.000	Aug 2021	0.000		0.000		-		0.000	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0604181C / Hypersonic Defense				Project (Number/Name) MD29 / Hypersonic Defense					
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			466.005	254.497		261.016		217.617		-		217.617	Continuing	Continuing	N/A
Remarks N/A															
Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Partnered Flight Test Participation - Partner Flight Test Participation	MIPR	Space and Missile Defense Command/ US Maritime Administration/ Pacific Missile Range Facility/ Ronald Reagan Test Site/ L3/JHU/APL/ MDIOC/ Lockheed Martin/AMRDEC/ NSWC/NAWC : AL/ CA/CO/DC/HI/TN/TX	104.079	3.009	Aug 2021	18.000	Jul 2022	0.000		-		0.000	0.000	125.088	0.000
Subtotal			104.079	3.009		18.000		0.000		-		0.000	0.000	125.088	N/A
Remarks N/A															
			Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			570.084	257.506		279.016		217.617		-		217.617	Continuing	Continuing	N/A
Remarks Award Dates reflect date of first obligation. Additional obligations may incrementally occur throughout the year.															

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Missile Defense Agency **Date:** April 2022

Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604181C / <i>Hypersonic Defense</i>	Project (Number/Name) MD29 / <i>Hypersonic Defense</i>
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Significant Event Complete ▲	Milestone Decision Complete ★	Element Test Complete ◆	System Level Test Complete ●	Complete Activity ◆															
Significant Event Planned △	Milestone Decision Planned ☆	Element Test Planned ◇	System Level Test Planned ○	Planned Activity ◇															
					FY 2021		FY 2022		FY 2023		FY 2024		FY 2025		FY 2026		FY 2027		
Regional Hypersonic Defense Sensor and Weapons Component Technology Performance Testing					◆	◆	◆	◆											
C2BMC Capability Development					◇	◇	◇	◇	◇	◇	◇	◇	◇						
Hypersonic Threat Sensor Technology Development					◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇
Weapons Technology Risk Reduction Contract(s) Award					◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇
Regional Hypersonic Defense Sensor & Weapons Component Technology Capability Development					◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇
Missile System Requirement Review																			
Weapon System Preliminary System Review																			
Weapons System Requirement Review														◇					
Weapon System Development Preliminary Design Review																		◇	
Missile System Preliminary Design Review																		◇	

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Missile Defense Agency	Date: April 2022
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Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604181C / <i>Hypersonic Defense</i>	Project (Number/Name) MD29 / <i>Hypersonic Defense</i>
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Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Regional Hypersonic Defense Sensor and Weapons Component Technology Performance Testing	1	2021	4	2021
C2BMC Capability Development	1	2021	2	2024
Hypersonic Threat Sensor Technology Development	1	2021	4	2027
Weapons Technology Risk Reduction Contract(s) Award	1	2021	4	2027
Regional Hypersonic Defense Sensor & Weapons Component Technology Capability Development	1	2021	4	2027
Missile System Requirement Review	4	2022	4	2022
Weapon System Preliminary System Review	4	2022	4	2022
Weapons System Requirement Review	4	2024	4	2024
Weapon System Development Preliminary Design Review	4	2027	4	2027
Missile System Preliminary Design Review	4	2027	4	2027

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency										Date: April 2022		
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0604181C / Hypersonic Defense				Project (Number/Name) MD40 / Program Wide Support			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
MD40: Program Wide Support	12.088	10.083	8.780	7.860	-	7.860	3.820	3.768	10.801	16.997	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Program Wide Support (PWS) is allocated on a pro-rata basis across multiple Agency PEs each fiscal year based on the total Agency budget, and therefore fluctuates per PE by fiscal year.

A. Mission Description and Budget Item Justification

PWS contains non-headquarters management costs in support of MDA functions and activities across the entire MDS. These functions include Government Civilians and Contract Support Services. This effort provides integrity and oversight of the MDS as well as supports MDA in the development and evaluation of technologies that will respond to the changing threat. Additionally, PWS includes personnel to support global deployments performing deployment site preparation and activation, and provides facility capabilities for MDA Executing Agent locations worldwide. Other MDA wide costs include: physical and technical security; civilian drug testing; audit readiness; the Science, Technology, Engineering, and Mathematics (STEM) program; legal services and settlements; travel and agency training; office, equipment, vehicle, and warehouse leases; utilities and base operations across multiple geographic locations; commercial and ancillary facility services; management of all facility aspects regardless of lifecycle stage; supplies and maintenance; compliance with statutory environmental requirements; data and unified communications support; materiel and readiness and central property management of equipment; Facilities Sustainment, Restoration and Modernization (FSRM) program, (formerly Real Property Maintenance) to keep the Department's inventory of facilities in good working order; and similar operating expenses. PWS is allocated on a pro-rata basis across most Agency PEs and therefore fluctuates per PE by fiscal year based on the total Agency budget in that fiscal year.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2021	FY 2022	FY 2023
Title: Program Wide Support	10.083	8.780	7.860
Articles:	-	-	-
Description: PWS contains non-headquarters management costs in support of MDA functions and activities across the entire MDS. These functions include Government Civilians and Contract Support Services. This effort provides integrity and oversight of the MDS as well as supports MDA in the development and evaluation of technologies that will respond to the changing threat. Additionally, PWS includes personnel to support global deployments performing deployment site preparation and activation, and provides facility capabilities for MDA Executing Agent locations worldwide. Other MDA wide costs include: physical and technical security; civilian drug testing; audit readiness; the Science, Technology, Engineering, and Mathematics (STEM) program; legal services and settlements; travel and agency training; office, equipment, vehicle, and warehouse leases; utilities and base operations across multiple geographic locations; commercial and ancillary facility services; management of all facility aspects regardless of lifecycle stage; supplies and maintenance; compliance with statutory environmental requirements; data and unified communications support; materiel and readiness and central property management of equipment; Facilities Sustainment, Restoration and Modernization (FSRM) program, (formerly Real Property Maintenance) to keep the Department's inventory of			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency		Date: April 2022	
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604181C / <i>Hypersonic Defense</i>	Project (Number/Name) MD40 / <i>Program Wide Support</i>	
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2021	FY 2022
<p>facilities in good working order; and similar operating expenses. PWS is allocated on a pro-rata basis across most Agency PEs and therefore fluctuates per PE by fiscal year based on the total Agency budget in that fiscal year.</p> <p><i>FY 2022 Plans:</i> - SEE ABOVE.</p> <p><i>FY 2023 Plans:</i> - SEE ABOVE.</p> <p><i>FY 2022 to FY 2023 Increase/Decrease Statement:</i> Decrease from FY 2022 to FY 2023 reflects the PWS allocation on a pro-rata basis across multiple Agency PEs each fiscal year based on the total Agency budget, and therefore fluctuates per PE by fiscal year.</p>			
Accomplishments/Planned Programs Subtotals		10.083	8.780
C. Other Program Funding Summary (\$ in Millions)			
N/A			
Remarks			
D. Acquisition Strategy			
N/A			

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0604181C / Hypersonic Defense				Project (Number/Name) MD40 / Program Wide Support					
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Wide Support - Agency Facilities and Maintenance	MIPR	Various : AL, CO, CA, VA	0.000	0.000		6.485	Nov 2021	0.015	Nov 2022	-		0.015	Continuing	Continuing	Continuing
Program Wide Support - Agency Facilities and Maintenance SRM	MIPR	Various : Multi: AK, AL, CA, CO, HI, VA	0.000	4.370	Dec 2020	1.084	Dec 2021	1.472	Nov 2022	-		1.472	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations Management	Various	Various : Multi, AL, CA, CO, VA	0.182	1.979	Nov 2020	0.000		0.000		-		0.000	0.000	2.161	0.000
Program Wide Support - Agency Operations and Support Other Agency Services	MIPR	Various : Multi: AK/AL/CA/CO/HI/MD/VA/NJ/NY/OCONUS	0.000	0.265	Nov 2020	0.000		0.000		-		0.000	0.000	0.265	0.000
Program Wide Support - Agency Operations and Support Services	C/Various	PARSONS GOVERNMENT SERVICES INC. : Multi: AK, AL, CA, CO, HI, VA	5.308	0.000		1.211	Nov 2021	6.373	Nov 2022	-		6.373	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations, Sustainment and GPC	C/FFP	Various : Multi: AK, AL, CA, HI, NY, NM, VA	0.000	3.469	Nov 2020	0.000		0.000		-		0.000	0.000	3.469	0.000
Program Wide Support - Facilities Maintenance	MIPR	Various : Multi: AK, AL, CA, CO, HI, VA	6.598	0.000		0.000		0.000		-		0.000	0.000	6.598	0.000
Subtotal			12.088	10.083		8.780		7.860		-		7.860	Continuing	Continuing	N/A
Remarks N/A															
			Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			12.088	10.083		8.780		7.860		-		7.860	Continuing	Continuing	N/A
Remarks Award Date reflects date of first obligation. Additional obligations may incrementally occur throughout the year.															

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Missile Defense Agency														Date: April 2022															
Appropriation/Budget Activity 0400 / 4										R-1 Program Element (Number/Name) PE 0604181C / Hypersonic Defense										Project (Number/Name) MD40 / Program Wide Support									
Significant Event Complete ▲					Milestone Decision Complete ★					Element Test Complete ◆					System Level Test Complete ●					Complete Activity ◆									
Significant Event Planned △					Milestone Decision Planned ☆					Element Test Planned ◇					System Level Test Planned ○					Planned Activity ◇									
										FY 2021		FY 2022		FY 2023		FY 2024		FY 2025		FY 2026		FY 2027							
MD40 Program-Wide Support										◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇					

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Missile Defense Agency			Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604181C / Hypersonic Defense	Project (Number/Name) MD40 / Program Wide Support	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
MD40 Program-Wide Support	1	2021	4	2027

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Missile Defense Agency	Date: April 2022
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Appropriation/Budget Activity					R-1 Program Element (Number/Name)							
0400: Research, Development, Test & Evaluation, Defense-Wide I BA 4: Advanced Component Development & Prototypes (ACD&P)					PE 0604672C I Homeland Defense Radar-Hawaii							
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
Total Program Element	245.491	133.000	75.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	453.491
MD41: Homeland Defense Radar-Hawaii (HDR-H)	245.491	133.000	75.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	453.491

Program MDAP/MAIS Code: 362

Note

Decrease from FY 2022 to FY 2023 reflects completion of the \$75.0 million Congressional Plus Up (CPU) to continue development of the Homeland Defense Radar-Hawaii. No funding is requested in FY 2023 for this program.

A. Mission Description and Budget Item Justification

The Homeland Defense Radar - Hawaii (HDR-H) was envisioned as a persistent tracking and discrimination radar that could provide added capability to the Ballistic Missile System (BMDs) to support defense of Hawaii. The defense of Hawaii remains a high priority mission for the Department of Defense. The Department has recently initiated a broader study on the defense of Hawaii. This study will characterize the broader air and missile evolved threat to Hawaii and identify the most effective means of mitigating this risk, considering domain awareness capabilities, passive resilience measures, and active defense. The results of this study are intended to inform potential investment options for President's Budget (PB) 2024. Pending the outcome of the study, MDA will explore alternate options for potential uses of already produced components and technology. Subsequently, the Department, pending congressional approval, will determine the best option to utilize these components and technology, which may include potential placement of sensors in other locations.

B. Program Change Summary (\$ in Millions)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Previous President's Budget	133.000	0.000	0.000	-	0.000
Current President's Budget	133.000	75.000	0.000	-	0.000
Total Adjustments	0.000	75.000	0.000	-	0.000
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	75.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Missile Defeat and Defense Enhancement	0.000	0.000	0.000	-	0.000
• Other Adjustment	0.000	0.000	0.000	-	0.000

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Missile Defense Agency		Date: April 2022
Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0604672C <i>I Homeland Defense Radar-Hawaii</i>	
Change Summary Explanation Increase of \$75 million in FY 2022 provides Congressional Plus-up for the continued development of the Homeland Defense Radar-Hawaii.		

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency										Date: April 2022		
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0604672C / Homeland Defense Radar-Hawaii				Project (Number/Name) MD41 / Homeland Defense Radar-Hawaii (HDR-H)			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
MD41: Homeland Defense Radar-Hawaii (HDR-H)	245.491	133.000	75.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	453.491
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

The FY 2022 Defense Appropriation included a \$75 million Congressional Plus Up (CPU) for the continued development of the Homeland Defense Radar-Hawaii.

A. Mission Description and Budget Item Justification

The Homeland Defense Radar - Hawaii (HDR-H) was envisioned as a persistent tracking and discrimination radar that could provide added capability to the Ballistic Missile System (BMDs) to support defense of Hawaii. The defense of Hawaii remains a high priority mission for the Department of Defense. The Department has recently initiated a broader study on the defense of Hawaii. This study will characterize the broader air and missile evolved threat to Hawaii and identify the most effective means of mitigating this risk, considering domain awareness capabilities, passive resilience measures, and active defense. The results of this study are intended to inform potential investment options for President's Budget (PB) 2024. Pending the outcome of the study, MDA will explore alternate options for potential uses of already produced components and technology. Subsequently, the Department, pending congressional approval, will determine the best option to utilize these components and technology, which may include potential placement of sensors in other locations.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2021	FY 2022	FY 2023
Title: Homeland Defense Radar - Hawaii (HDR-H)	133.000	75.000	0.000
Articles:	-	-	-
<p>Description: The HDR-H program includes requirements development activities associated with systems engineering, hardware and software development, discrimination improvements, design reviews, testing, and Modeling and Simulation (M&S) efforts for radar development. Efforts include site activation and preparation of site infrastructure for construction activities. The program will develop and integrate C2BMC systems for HDR-H functionality. The program will develop and deliver radar software releases and will conduct Independent Verification and Validation (IV&V) testing of tactical software. The program includes procurement of radar long lead materials, initiation of production for radar components and sub-assemblies, and test of long lead components.</p> <p>Specific and/or unique accomplishments to each FY are as follows:</p> <p>FY 2022 Plans:</p> <ul style="list-style-type: none"> -Continue production of HDR-H hardware including: sub-array suites (SAS), antenna panels, and tactical on-array hardware -Continue Electromagnetic environment analysis at Pacific Missile Range Facility (PMRF) -Continue Environmental Impact Statement (EIS) effort, site selection, and radar site planning -Continue technical studies and analyses to support facility design 			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency										Date: April 2022		
Appropriation/Budget Activity 0400 / 4				R-1 Program Element (Number/Name) PE 0604672C / Homeland Defense Radar-Hawaii				Project (Number/Name) MD41 / Homeland Defense Radar-Hawaii (HDR-H)				
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)										FY 2021	FY 2022	FY 2023
-Continue HDR-H software development												
FY 2023 Plans:												
-No funding requested for this effort in FY 2023												
FY 2022 to FY 2023 Increase/Decrease Statement:												
No funding is requested in FY 2023 for HDR-H												
Accomplishments/Planned Programs Subtotals										133.000	75.000	0.000
C. Other Program Funding Summary (\$ in Millions)												
Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost	
• 0603882C: Ballistic Missile Defense Midcourse Defense Segment	1,195.853	724.028	667.524	-	667.524	870.817	802.617	781.973	765.733	Continuing	Continuing	
• 0603884C: Ballistic Missile Defense Sensors	259.605	254.962	231.134	-	231.134	250.028	274.705	276.254	257.575	Continuing	Continuing	
• 0603896C: Ballistic Missile Defense Command and Control, Battle Management & Communication	639.027	564.946	589.374	-	589.374	575.883	588.824	612.853	605.801	Continuing	Continuing	
• 0604873C: Long Range Discrimination Radar (LRDR)	135.088	133.335	75.120	-	75.120	103.451	95.712	71.715	76.316	Continuing	Continuing	
• 0604879C: Ballistic Missile Defense Sensor Test	64.245	77.428	88.326	-	88.326	91.495	98.146	103.010	145.810	Continuing	Continuing	
• 32199903: MILCON PLANNING and DESIGN	0.000	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
Remarks												
D. Acquisition Strategy												
An acquisition strategy was approved in December 2017 for the procurement of a single Homeland Defense Radar (HDR) for Hawaii. In May of 2018, this acquisition strategy was updated to include the procurement of up to three Homeland Defense Radars. A competitively awarded multiple-award indefinite delivery, indefinite quantity (IDIQ) contract was awarded in July 2018 to three contractors. The first IDIQ delivery order was competitively awarded on December 18, 2018 for the development, construction, integration and testing, and delivery of one HDR to be sited in Hawaii. The HDR-H delivery order contract includes fixed price and cost-												

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency		Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604672C / <i>Homeland Defense Radar-Hawaii</i>	Project (Number/Name) MD41 / <i>Homeland Defense Radar-Hawaii (HDR-H)</i>
<p>reimbursable line items that properly balance acquisition costs and risks. Performance and cost incentives were included to motivate contractor performance. The HDR-H delivery order contract includes the requirement for the radar prime to deliver a full technical data package (TDP) that will enable the Government to effectively and affordably sustain the system. As a result of delays in site selection, MDA issued a Partial Stop-Work Order on January 30, 2020 in accordance with Federal Acquisition Regulations (FAR) Clause 52.242-15, Stop-Work Order, and directed Lockheed Martin to stop work against the HDR-H Radar Prime contract except for efforts associated with the manufacturing of sub-array suites (SAS), antenna panels, and two processing cabinets.</p>		

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0604672C / Homeland Defense Radar-Hawaii				Project (Number/Name) MD41 / Homeland Defense Radar-Hawaii (HDR-H)					
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Homeland Defense Radar - Hawaii (HDR-H) - Civilians/Travel	Allot	MDA : Various	3.509	4.480	Oct 2020	0.865	May 2022	0.000		-		0.000	0.000	8.854	0.000
Homeland Defense Radar - Hawaii (HDR-H) - Communications Integration	SS/CPIF	Lockheed Martin : AL	2.978	6.044	Apr 2021	0.000		0.000		-		0.000	0.000	9.022	0.000
Homeland Defense Radar - Hawaii (HDR-H) - Contractor Support Services	C/CPFF	MDA Various : AL	10.109	3.503	Nov 2020	2.536	Jul 2022	0.000		-		0.000	0.000	16.148	0.000
Homeland Defense Radar - Hawaii (HDR-H) - FFRDC/UARC	MIPR	GTRI, JHU/APL, MITRE : GA, VA, AL	5.075	1.968	Jul 2021	0.195	Jul 2022	0.000		-		0.000	0.000	7.238	0.000
Homeland Defense Radar - Hawaii (HDR-H) - Lead Service Cell	C/CPFF	MDA Various : AL, CO	0.308	0.000		0.000		0.000		-		0.000	0.000	0.308	0.000
Homeland Defense Radar - Hawaii (HDR-H) - Prime Contractor	C/FPIF	Lockheed Martin : NJ	209.410	117.005	Apr 2021	70.404	Apr 2022	0.000		-		0.000	0.000	396.819	0.000
Homeland Defense Radar - Hawaii (HDR-H) - Radar Material	MIPR	Air Force : GA	0.175	0.000		0.000		0.000		-		0.000	0.000	0.175	0.000
Homeland Defense Radar - Hawaii (HDR-H) - Site Activation & Studies	MIPR	Various : AL, HI	13.927	0.000		1.000	Aug 2022	0.000		-		0.000	0.000	14.927	0.000
Subtotal			245.491	133.000		75.000		0.000		-		0.000	0.000	453.491	N/A
Remarks N/A															

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022		
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0604672C / Homeland Defense Radar-Hawaii				Project (Number/Name) MD41 / Homeland Defense Radar-Hawaii (HDR-H)				

Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total					
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-		-	-	-	N/A

Remarks N/A																	
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	Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	245.491	133.000		75.000		0.000		-		0.000	0.000	453.491	N/A

Remarks Award Dates reflect date of first obligation. Additional obligations may incrementally occur throughout the year.																	
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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Missile Defense Agency							Date: April 2022										
Appropriation/Budget Activity 0400 / 4				R-1 Program Element (Number/Name) PE 0604672C / Homeland Defense Radar-Hawaii				Project (Number/Name) MD41 / Homeland Defense Radar-Hawaii (HDR-H)									
Significant Event Complete ▲		Milestone Decision Complete ★		Element Test Complete ◆		System Level Test Complete ●		Complete Activity ◆									
Significant Event Planned △		Milestone Decision Planned ☆		Element Test Planned ◇		System Level Test Planned ○		Planned Activity ◇									
				FY 2021		FY 2022		FY 2023		FY 2024		FY 2025		FY 2026		FY 2027	
Homeland Defense Radar - Hawaii (HDR-H)				◇◇◇◇		◇◇◇◇											

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Missile Defense Agency			Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604672C / Homeland Defense Radar-Hawaii	Project (Number/Name) MD41 / Homeland Defense Radar-Hawaii (HDR-H)	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Homeland Defense Radar - Hawaii (HDR-H)	1	2021	4	2022

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Missile Defense Agency										Date: April 2022		
Appropriation/Budget Activity					R-1 Program Element (Number/Name)							
0400: Research, Development, Test & Evaluation, Defense-Wide / BA 4: Advanced Component Development & Prototypes (ACD&P)					PE 0604873C / Long Range Discrimination Radar (LRDR)							
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
Total Program Element	1,037.917	135.088	133.335	75.120	-	75.120	103.451	95.712	71.715	76.316	Continuing	Continuing
MD96: Long Range Discrim Radar (LRDR)	985.417	129.636	128.192	72.392	-	72.392	99.810	92.440	69.021	73.431	Continuing	Continuing
MD40: Program Wide Support	52.500	5.452	5.143	2.728	-	2.728	3.641	3.272	2.694	2.885	Continuing	Continuing
Program MDAP/MAIS Code: 362												

Note

Decrease from FY 2022 to FY 2023 reflects the completion of the Long Range Discrimination Radar (LRDR) Increment 6B.1 development effort.

A. Mission Description and Budget Item Justification

The mission of the LRDR program is to design, develop, integrate, deliver, field, and sustain the LRDR as an element of the Missile Defense System (MDS) Increment 6B.1 Homeland Defense Capability. Initial fielding of the LRDR was planned for late 2020 leading to approval to add LRDR to the MDS Operational Capability Baseline (OCB) in FY 2021 and an Operational Acceptance by the United States Space Force (USSF) in FY 2023. Those milestones were impacted by a cessation of work at Clear Space Force Station (CSFS), AK in the spring of 2020 to mitigate the potential spread of COVID-19. Initial fielding of LRDR was completed on December 6, 2021 and LRDR will now be added to the Increment 6B.1 OCB in FY 2023. MDS Increment 6C/7 includes software upgrades to LRDR to assess and further improve discrimination techniques and capability which will expand capability to a broader spectrum of threats, increase support to Space Domain Awareness and Space Object Identification, and examine cost reduction initiatives to reduce life cycle operating costs. The OCB/Technical Capability Declaration for Increment 6C/7 is planned for FY 2026. The LRDR is comprised of a LRDR Equipment Shelter, housing two radar array faces, a Mission Control Facility, which supports radar operations, and supporting facilities and infrastructure. The Secretary of the Air Force approved CSFS, formerly known as Clear Air Force Station, AK as the LRDR site. The USSF Space Operations Command is the designated Lead Major Command.

The LRDR operates in the S-band frequency, features scalable and open systems architecture to mitigate evolving threats, and integrates into the MDS through the Command and Control, Battle Management, and Communications system. This Program Element includes MDS threat discrimination improvements to enhance MDS effectiveness against the evolving threat. The result will be a MDS architecture more capable of discriminating and intercepting re-entry vehicles with a higher degree of confidence to improve Warfighter shot doctrine, and conserve Ground Based Interceptor inventory. LRDR also supports additional mission areas including Space Domain Awareness and Space Object Identification.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Missile Defense Agency	Date: April 2022
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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 0604873C / <i>Long Range Discrimination Radar (LRDR)</i>
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B. Program Change Summary (\$ in Millions)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Previous President's Budget	138.317	133.335	0.000	-	0.000
Current President's Budget	135.088	133.335	75.120	-	75.120
Total Adjustments	-3.229	0.000	75.120	-	75.120
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	-3.391	0.000			
• Missile Defeat and Defense Enhancement	0.000	0.000	0.000	-	0.000
• Other Adjustment	0.162	0.000	75.120	-	75.120

Change Summary Explanation

FY 2023 funding increase reflects the fact that the FY 2022 President's Budget request did not include out-year funding.

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency										Date: April 2022		
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0604873C / Long Range Discrimination Radar (LRDR)				Project (Number/Name) MD96 / Long Range Discrim Radar (LRDR)			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
MD96: Long Range Discrim Radar (LRDR)	985.417	129.636	128.192	72.392	-	72.392	99.810	92.440	69.021	73.431	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

The decrease from FY 2022 to FY 2023 reflects the completion of the Long Range Discrimination Radar (LRDR) Increment 6B.1 development effort.

A. Mission Description and Budget Item Justification

This project includes development of the LRDR which will provide an improved persistent midcourse Missile Defense System (MDS) discrimination capability in the Pacific sensor architecture. Initial fielding of the LRDR capability was completed on December 6, 2021 and operational fielding of LRDR will be completed when added to the Operational Capability Baseline (OCB) in FY 2023 leading to Operational Acceptance (OA) by the United States Space Force (USSF). The LRDR will also increase the defensive capacity of the Ground Based Interceptor inventory and address evolving threats. The Missile Defense Agency's (MDA's) request includes funding for the design and development of the LRDR, system engineering, software development, software Independent Verification and Validation (IV&V), qualification testing, developmental testing support, Modeling and Simulation (M&S), and acquisition sustainment. M&S includes development of LRDR digital simulations and their integration into the MDS, M&S architecture, and Verification, Validation, and Accreditation of LRDR models. The USSF will leverage the LRDR inherent capabilities to augment ancillary missions including Space Domain Awareness (SDA) and Space Object Identification (SOI).

This project also includes MDS Increment 6C/7 software upgrades. MDS Increment 6C/7 includes software upgrades to LRDR to further verify and improve discrimination techniques and capability, verify and improve electronic protection techniques and capability, expand capability to a broader spectrum of threats, increase support to SDA and SOI, and examine cost reduction initiatives to reduce life cycle operating costs. Operational fielding of the LRDR Increment 6C/7 capability will be completed when added to the OCB in FY 2026.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2021	FY 2022	FY 2023
Title: Long Range Discrimination Radar (LRDR)	129.636	128.192	72.392
Articles:	-	-	-
Description: The LRDR program includes requirement development activities associated with systems engineering, software development, discrimination improvements, design reviews, testing, and M&S efforts for radar development. Efforts include LRDR site activation and preparation of site infrastructure for construction activities. The program will develop and integrate Command and Control, Battle Management, and Communications (C2BMC) systems for LRDR functionality. The program will develop, maintain, and deliver radar software Increment 6B.1 and establish the IV&V lab for testing of operational software. The program includes purchase, manufacture, integration and test of radar materials. This program will also establish the operational baseline, initiate radar operations and communication, and initiate sustainment operations. The program also includes logistics			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency		Date: April 2022	
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604873C / <i>Long Range Discrimination Radar (LRDR)</i>	Project (Number/Name) MD96 / <i>Long Range Discrim Radar (LRDR)</i>	
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2021	FY 2022
<p>management, reliability, availability, maintainability efforts, data management, and operations support for the LRDR program office. This project also includes MDS Increment 6C/7 software upgrades to LRDR to further verify and improve discrimination techniques and capability, verify and improve electronic protection techniques and capability, expand capability to a broader spectrum of threats, increase support to SDA and SOI, and implement cost reduction initiatives to reduce life cycle operating costs.</p> <p>Specific and/or unique accomplishments to each FY are as follows:</p> <p>FY 2022 Plans:</p> <ul style="list-style-type: none"> -- Achieve Authority to Operate -- Achieve final Government acceptance of radar (DD 250) -- Complete LRDR addition to the OCB for Increment 6B.1 -- Continue efforts to achieve OA by USSF by FY 2023 -- Continue Increment 6C/7 development --Cost Reduction Initiative to reduce power consumption --Enhanced SDA/SOI messaging --Expanded reporting / messaging --Cybersecurity upgrades -- Complete iterative System Requirements Review process for Increment 6C/7 -- Complete Preliminary Design Review (PDR) and Critical Design Review (CDR) for Increment 6C/7 -- Continue post-fielding operations and sustainment -- Complete demobilization of Temporary Workforce Camp at Clear Space Force Station (CSFS), AK <p>FY 2023 Plans:</p> <ul style="list-style-type: none"> -- Continue Increment 6C/7 development -- Complete PDR and CDR for Increment 6C/7 -- Complete software build for Integrated Ground Test -- Initiate fielding preparations to place LRDR improvements onto the MDS Increment 6C/7 OCB -- Complete OA of LRDR by USSF -- Complete Transition and Transfer of LRDR -- Complete Interim Contractor Support phase 2 <p>FY 2022 to FY 2023 Increase/Decrease Statement:</p>			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency			Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604873C / Long Range Discrimination Radar (LRDR)	Project (Number/Name) MD96 / Long Range Discrim Radar (LRDR)	

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023
Decrease from FY 2022 to FY 2023 reflects the completion of the LRDR Increment 6B.1 development effort.			
Accomplishments/Planned Programs Subtotals	129.636	128.192	72.392

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

Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• 0603882C: Ballistic Missile Defense Midcourse Defense Segment	1,195.853	724.028	667.524	-	667.524	870.817	802.617	781.973	765.733	Continuing	Continuing
• 0603884C: Ballistic Missile Defense Sensors	259.605	254.962	231.134	-	231.134	250.028	274.705	276.254	257.575	Continuing	Continuing
• 0603896C: Ballistic Missile Defense Command and Control, Battle Management & Communication	639.027	564.946	589.374	-	589.374	575.883	588.824	612.853	605.801	Continuing	Continuing
• 0603904C: Missile Defense Integration and Operations Center (MDIOC)	54.026	52.403	49.367	-	49.367	51.744	56.502	57.833	59.006	Continuing	Continuing
• 0604672C: Homeland Defense Radar-Hawaii	133.000	75.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	208.000
• 0604873C: Long Range Discrimination Radar MILCON	0.000	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000
• 0604879C: Ballistic Missile Defense Sensor Test	64.245	77.428	88.326	-	88.326	91.495	98.146	103.010	145.810	Continuing	Continuing
• 31299903: MILCON PLANNING and DESIGN	0.000	19.000	47.063	-	47.063	0.000	0.000	0.000	0.000	0.000	66.063

Remarks

D. Acquisition Strategy

The LRDR acquisition strategy, which was approved on January 7, 2015, incorporates robust acquisition practices to ensure delivery of a best value solution that meets mission performance requirements and reduces lifecycle costs. MDA awarded a fixed-price incentive contract to Lockheed Martin Corporation of Moorestown, NJ, on October 21, 2015 to design, develop, manufacture, integrate & test, and field the LRDR prime mission equipment. The prime contract included other fixed-price and cost-reimbursable line items and options in order to properly balance acquisition costs and risks. Performance and cost incentives were included to motivate

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency		Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604873C / Long Range Discrimination Radar (LRDR)	Project (Number/Name) MD96 / Long Range Discrim Radar (LRDR)
<p>contractor performance. The radar prime contractor will deliver a full technical data package, which will enable the government to effectively and affordably sustain the system. MDA synchronized the radar development contract efforts with a simultaneous Military Construction effort, which was executed through the US Army Corps of Engineers. The LRDR completed the initial fielding milestone on December 6, 2021 for MDS integration and testing of the Increment 6B.1 capability and an expected fielding of LRDR when it is added to the MDS OCB in FY 2023. The Acquisition Strategy was updated in FY 2021 to add the Increment 6C/7 capability. MDA awarded a cost-plus incentive fee contract to Lockheed Martin on September 20, 2021 to develop and deliver the Increment 6/7 software upgrade.</p>		

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0604873C / Long Range Discrimination Radar (LRDR)						Project (Number/Name) MD96 / Long Range Discrim Radar (LRDR)			
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Long Range Discrimination Radar (LRDR) - Prime Contractor - Future Configuration	SS/TBD	LOCKHEED MARTIN CORPORATION : NJ	0.000	0.000		0.000		5.429	Jun 2023	-		5.429	Continuing	Continuing	Continuing
Long Range Discrimination Radar (LRDR) - BMEWS Remediation and Removal	MIPR	USACE : AL, AK	25.110	0.000		0.000		0.000		-		0.000	0.000	25.110	0.000
Long Range Discrimination Radar (LRDR) - Civilians/ Travel	Allot	MDA : AL	5.875	3.795	Oct 2020	3.725	Oct 2021	4.032	Oct 2022	-		4.032	Continuing	Continuing	Continuing
Long Range Discrimination Radar (LRDR) - Communications Integration	SS/CPIF	Lockheed Martin : AL, NJ	34.986	0.000		0.732	May 2022	0.000		-		0.000	0.000	35.718	0.000
Long Range Discrimination Radar (LRDR) - Contract Support Services	C/CPFF	Various : Various	9.409	4.939	Nov 2020	6.127	Oct 2021	0.000		-		0.000	0.000	20.475	0.000
Long Range Discrimination Radar (LRDR) - FFRDC/ UARC-No longer funded in this cost category	MIPR	GTRI, JHU/APL, MITRE, MIT/LL : AL, GA, IL, MA, VA	6.042	3.712	Oct 2020	2.390	Oct 2021	0.000		-		0.000	0.000	12.144	0.000
Long Range Discrimination Radar (LRDR) - Hybrid Program Office	MIPR	US Air Force : Various	0.692	0.000		0.000		0.000		-		0.000	0.000	0.692	0.000
Long Range Discrimination Radar (LRDR) - IV&V	MIPR	DOD - USA - COMBAT CAPABILITIES DEVELOPMENT COMMAND (CCDC) AVIATION AND MISSILE CENTER (AVMC) : Huntsville, AL	15.346	4.592	Dec 2020	4.388	Nov 2021	3.354	Nov 2022	-		3.354	0.000	27.680	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0604873C / Long Range Discrimination Radar (LRDR)				Project (Number/Name) MD96 / Long Range Discrim Radar (LRDR)					
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Long Range Discrimination Radar (LRDR) - Prime Contractor -Increment 6B.1	C/FPIF	LOCKHEED MARTIN CORPORATION : NJ	759.201	75.191	Nov 2020	17.884	Nov 2021	0.000		-		0.000	0.000	852.276	0.000
Long Range Discrimination Radar (LRDR) - Prime Contractor -Increment 6C/7	SS/CPIF	LOCKHEED MARTIN CORPORATION : NJ	0.000	13.342	Sep 2021	67.000	Oct 2021	23.639	Oct 2022	-		23.639	Continuing	Continuing	Continuing
Long Range Discrimination Radar (LRDR) - Program Office - No longer funded in this cost category	Various	MDA, JHU/APL, GSA AL, MA, IL : AL, MA, IL	10.616	0.000		0.000		0.000		-		0.000	0.000	10.616	0.000
Long Range Discrimination Radar (LRDR) - Radar Operations, Sustainment, and Fuel	MIPR	DOD - USSF - US SPACE FORCE (USSF) : AK	9.134	14.104	Nov 2020	24.006	Nov 2021	0.000		-		0.000	0.000	47.244	0.000
Long Range Discrimination Radar (LRDR) - Site Activation & Studies	MIPR	USACE : AL, AK	109.006	9.961	Nov 2020	1.710	Feb 2022	0.000		-		0.000	0.000	120.677	0.000
Long Range Discrimination Radar (LRDR) - Transition & Transfer	C/TBD	MDA : AL	0.000	0.000		0.230	Jan 2022	0.000		-		0.000	0.000	0.230	0.000
Subtotal			985.417	129.636		128.192		36.454		-		36.454	Continuing	Continuing	N/A
Remarks N/A															
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Long Range Discrimination Radar (LRDR) - Contract Support Services	C/CPFF	Various : Various	0.000	0.000		0.000		1.658	Oct 2022	-		1.658	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0604873C / Long Range Discrimination Radar (LRDR)						Project (Number/Name) MD96 / Long Range Discrim Radar (LRDR)			
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Long Range Discrimination Radar (LRDR) - Contract Support Services - Logistics	C/CPFF	VENTURI, INC. : Various	0.000	0.000		0.000		1.371	Oct 2022	-		1.371	Continuing	Continuing	Continuing
Long Range Discrimination Radar (LRDR) - Contract Support Services - Systems Engineering	C/CPFF	PARSONS GOVERNMENT SERVICES INC. : Various	0.000	0.000		0.000		2.411	Oct 2022	-		2.411	Continuing	Continuing	Continuing
Long Range Discrimination Radar (LRDR) - FFRDC-MITRE	MIPR	DOD - USA - COMMUNICATIONS ELECTRONICS COMMAND (CECOM) : Various	0.000	0.000		0.000		1.065	Nov 2022	-		1.065	Continuing	Continuing	Continuing
Long Range Discrimination Radar (LRDR) - Prime Radar Integration	MIPR	DOD - USA - US ARMY CORPS OF ENGINEERS (USACE) : Various	0.000	0.000		0.000		1.732	Nov 2022	-		1.732	Continuing	Continuing	Continuing
Long Range Discrimination Radar (LRDR) - Radar Operations, Sustainment, and Fuel	MIPR	DOD - USSF - US SPACE FORCE (USSF) : AK	0.000	0.000		0.000		25.131	Nov 2022	-		25.131	Continuing	Continuing	Continuing
Long Range Discrimination Radar (LRDR) - UARC - JHU/APL	SS/CPFF	JOHNS HOPKINS UNIVERSITY APPLIED PHYSICS LABORATORY LLC, THE : Various	0.000	0.000		0.000		2.570	Nov 2022	-		2.570	Continuing	Continuing	Continuing
Subtotal			0.000	0.000		0.000		35.938		-		35.938	Continuing	Continuing	N/A
Remarks N/A															

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022		
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0604873C / Long Range Discrimination Radar (LRDR)				Project (Number/Name) MD96 / Long Range Discrim Radar (LRDR)				

Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	N/A

Remarks N/A															
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	Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	985.417	129.636		128.192		72.392		-		72.392	Continuing	Continuing	N/A

Remarks Award Dates reflect date of first obligation. Additional obligations may incrementally occur throughout the year.													
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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Missile Defense Agency										Date: April 2022																			
Appropriation/Budget Activity 0400 / 4										R-1 Program Element (Number/Name) PE 0604873C / Long Range Discrimination Radar (LRDR)										Project (Number/Name) MD96 / Long Range Discrim Radar (LRDR)									
Significant Event Complete ▲ Significant Event Planned △				Milestone Decision Complete ★ Milestone Decision Planned ☆				Element Test Complete ◆ Element Test Planned ◇				System Level Test Complete ● System Level Test Planned ○				Complete Activity ◆ Planned Activity ◇													
										FY 2021		FY 2022		FY 2023		FY 2024		FY 2025		FY 2026		FY 2027							
Long Range Discrimination Radar Capability										◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇				
System Requirements Review for Increment 6C/7												▲																	
Initial Fielding													▲																
GTI-08a (N/I) (MDS Ground Test)													◇																
FTX-26 (OT) (SN, OT Target Only Flight Test)														△															
FTX-45														△															
GTD-08a (N/I) (MDS Ground Test)															◇														
LRDR Operational Capability Baseline (OCB) / Increment 6B.1 Technical Capability Declaration (TCD)																△													
GTI-08b (N/I)																◇													
Operational Acceptance (OA)																△													
GTI-08b Sprint 1 (N/I) (MDS Ground Test)																	◇												
GTD-08b (N/I)																	◇												
GTI-13 Sprint 1 (N/I) (MDS Ground Test)																		◇											
GTI-13 Sprint 2 (N/I) (MDS Ground Test)																			◇										
GTD-13 (N/I) (MDS Ground Test)																				◇									
LRDR Operational Capability Baseline (OCB) / Increment 6C/7 Technical Capability Declaration (TCD)																					△								
GTI-14 Sprint 1 (N/I)																						◇							
GTI-14 (N/I) Sprint 2 (MDS Ground Test)																							◇						
GTD-14 (N/I) (MDS Ground Test)																								◇					

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Missile Defense Agency			Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604873C / Long Range Discrimination Radar (LRDR)	Project (Number/Name) MD96 / Long Range Discrim Radar (LRDR)	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Long Range Discrimination Radar Capability	1	2021	4	2027
System Requirements Review for Increment 6C/7	3	2021	3	2021
Initial Fielding	1	2022	1	2022
GTI-08a (N/I) (MDS Ground Test)	3	2022	3	2022
FTX-26 (OT) (SN, OT Target Only Flight Test)	4	2022	4	2022
FTX-45	4	2022	4	2022
GTD-08a (N/I) (MDS Ground Test)	1	2023	1	2023
LRDR Operational Capability Baseline (OCB) / Increment 6B.1 Technical Capability Declaration (TCD)	3	2023	3	2023
GTI-08b (N/I)	4	2023	4	2023
Operational Acceptance (OA)	4	2023	4	2023
GTI-08b Sprint 1 (N/I) (MDS Ground Test)	1	2024	1	2024
GTD-08b (N/I)	2	2024	2	2024
GTI-13 Sprint 1 (N/I) (MDS Ground Test)	1	2025	1	2025
GTI-13 Sprint 2 (N/I) (MDS Ground Test)	3	2025	3	2025
GTD-13 (N/I) (MDS Ground Test)	4	2025	4	2025
LRDR Operational Capability Baseline (OCB) / Increment 6C/7 Technical Capability Declaration (TCD)	1	2026	1	2026
GTI-14 Sprint 1 (N/I)	4	2026	4	2026
GTI-14 (N/I) Sprint 2 (MDS Ground Test)	2	2027	2	2027
GTD-14 (N/I) (MDS Ground Test)	4	2027	4	2027

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency										Date: April 2022		
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0604873C / Long Range Discrimination Radar (LRDR)				Project (Number/Name) MD40 / Program Wide Support			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
MD40: Program Wide Support	52.500	5.452	5.143	2.728	-	2.728	3.641	3.272	2.694	2.885	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Program Wide Support (PWS) is allocated on a pro-rata basis across multiple Agency program elements (PEs) each fiscal year based on the total Agency budget, and therefore fluctuates per PE by fiscal year.

A. Mission Description and Budget Item Justification

PWS contains non-headquarters management costs in support of MDA functions and activities across the entire MDS. These functions include Government Civilians and Contract Support Services. This effort provides integrity and oversight of the MDS as well as supports MDA in the development and evaluation of technologies that will respond to the changing threat. Additionally, PWS includes personnel to support global deployments performing deployment site preparation and activation, and provides facility capabilities for MDA Executing Agent locations worldwide. Other MDA wide costs include: physical and technical security; civilian drug testing; audit readiness; the Science, Technology, Engineering, and Mathematics (STEM) program; legal services and settlements; travel and agency training; office, equipment, vehicle, and warehouse leases; utilities and base operations across multiple geographic locations; commercial and ancillary facility services; management of all facility aspects regardless of lifecycle stage; supplies and maintenance; compliance with statutory environmental requirements; data and unified communications support; materiel and readiness and central property management of equipment; Facilities Sustainment, Restoration and Modernization (FSRM) program (formerly Real Property Maintenance) to keep the Department's inventory of facilities in good working order; and similar operating expenses. PWS is allocated on a pro-rata basis across most Agency PEs and therefore fluctuates per PE by fiscal year based on the total Agency budget in that fiscal year.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2021	FY 2022	FY 2023
Title: Program Wide Support	5.452	5.143	2.728
Articles:	-	-	-
Description: PWS contains non-headquarters management costs in support of MDA functions and activities across the entire MDS. These functions include Government Civilians and Contract Support Services. This effort provides integrity and oversight of the MDS as well as supports MDA in the development and evaluation of technologies that will respond to the changing threat. Additionally, PWS includes personnel to support global deployments performing deployment site preparation and activation, and provides facility capabilities for MDA Executing Agent locations worldwide. Other MDA wide costs include: physical and technical security; civilian drug testing; audit readiness; the Science, Technology, Engineering, and Mathematics (STEM) program; legal services and settlements; travel and agency training; office, equipment, vehicle, and warehouse leases; utilities and base operations across multiple geographic locations; commercial and ancillary facility services; management of all facility aspects regardless of lifecycle stage; supplies and maintenance; compliance with statutory environmental requirements; data and unified communications support; materiel and readiness and central property management of equipment; the FSRM program			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency		Date: April 2022		
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604873C / Long Range Discrimination Radar (LRDR)	Project (Number/Name) MD40 / Program Wide Support		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each) (formerly Real Property Maintenance) to keep the Department's inventory of facilities in good working order; and similar operating expenses. PWS is allocated on a pro-rata basis across most Agency PEs and therefore fluctuates per PE by fiscal year based on the total Agency budget in that fiscal year. FY 2022 Plans: - SEE ABOVE. FY 2023 Plans: - SEE ABOVE. FY 2022 to FY 2023 Increase/Decrease Statement: Decrease from FY 2022 to FY 2023 reflects the PWS allocation on a pro-rata basis across multiple Agency PE's each fiscal year based on the total Agency budget, and therefore fluctuates per PE by fiscal year.		FY 2021	FY 2022	FY 2023
Accomplishments/Planned Programs Subtotals		5.452	5.143	2.728
C. Other Program Funding Summary (\$ in Millions) N/A				
Remarks				
D. Acquisition Strategy N/A				

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0604873C / Long Range Discrimination Radar (LRDR)				Project (Number/Name) MD40 / Program Wide Support					
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Wide Support - Agency Facilities and Maintenance SRM (MIPR)	MIPR	Various : Multi: AL, VA, Aust, Japan	24.395	0.000		0.000		0.000		-		0.000	0.000	24.395	0.000
Program Wide Support - Agency Operations Management	Various	Various : Multi: AL, CA, CO, VA	0.625	0.000		0.000		0.000		-		0.000	0.000	0.625	0.000
Program Wide Support - Agency Operations Sustainment and GPC	C/FFP	Various : Multi: AL, CA, CO, VA etc.	2.327	0.000		0.000		0.000		-		0.000	0.000	2.327	0.000
Program Wide Support - Agency Operations and Support Services	C/CPFF	CHENEGA : AL	20.027	5.452	Apr 2021	5.143	Jan 2022	2.728	Nov 2022	-		2.728	Continuing	Continuing	Continuing
Program Wide Support - Prior year no longer funded in the FYDP	Various	Various : Various	5.126	0.000		0.000		0.000		-		0.000	0.000	5.126	0.000
Subtotal			52.500	5.452		5.143		2.728		-		2.728	Continuing	Continuing	N/A
Remarks N/A															
			Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			52.500	5.452		5.143		2.728		-		2.728	Continuing	Continuing	N/A
Remarks Award Date reflects date of first obligation. Additional obligations may incrementally occur throughout the year.															

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Missile Defense Agency															Date: April 2022																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Missile Defense Agency		Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604873C / Long Range Discrimination Radar (LRDR)	Project (Number/Name) MD40 / Program Wide Support

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
MD40 Program-Wide Support	1	2021	4	2027

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Missile Defense Agency										Date: April 2022		
Appropriation/Budget Activity					R-1 Program Element (Number/Name)							
0400: Research, Development, Test & Evaluation, Defense-Wide I BA 4: Advanced Component Development & Prototypes (ACD&P)					PE 0604874C I Improved Homeland Defense Interceptors							
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
Total Program Element	540.748	843.899	884.125	1,833.357	-	1,833.357	2,104.382	2,232.025	1,448.632	1,358.561	Continuing	Continuing
MD15: Risk Reduction	155.000	200.000	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	355.000
MD80: Next Generation Interceptor Development (NGI)	310.000	617.520	848.206	1,766.786	-	1,766.786	2,030.625	2,156.053	1,394.502	1,307.197	Continuing	Continuing
MD40: Program Wide Support	75.748	26.379	35.919	66.571	-	66.571	73.757	75.972	54.130	51.364	Continuing	Continuing
Program MDAP/MAIS Code: 362												
Note												
The increase from FY 2022 to FY 2023 provides NGI development including two vendors through Critical Design Review to deliver the NGI in accordance with the two awarded contracts to support first operational delivery in late FY2027. The increase provides for engineering design development and component level parts testing necessary to achieve PDR for two NGI contractors, including completion of sub-system and component Survivability analysis and testing for natural and tactical space environments. Increase also provides for technical risk mitigation leading to CDR, expansion of the Integrated Digital Data Environment and Software Factory Framework to support analysis, functional baseline verification, Modeling and Simulation development, and system designs analysis.												
A. Mission Description and Budget Item Justification												
The Improved Homeland Defense Interceptor Program Element will develop, test, and deliver an NGI for Homeland Defense, meeting the U.S. Northern Command's Operational Needs for the NGI. The NGI acquisition covers the development, integration, and testing of an All Up Round (AUR) boost vehicle/ kill vehicle system capable of surviving both natural and hostile environments while countering the allocated threats. The budget requested continues to support the planned first NGI delivery in FY2027, one year earlier than originally planned, which addresses the number one priority in the Operational Needs document												
The NGI will provide the Warfighter a cost-effective solution that is lethal across the specified threat space and upgradeable to address future and advancing threats. The Missile Defense Agency issued a Request for Proposal in FY 2020 and competitively awarded two best value contracts on March 24, 2021 for an NGI acquisition, which covers the development, integration, and testing of an AUR boost vehicle/ kill vehicle system. MDA plans to maintain the competitive environment through CDR in FY 2025 to reduce technical risk throughout the design development activities, secure competitive production pricing, and support the Department's ability to field a system capable of negating the expanded threat.												

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Missile Defense Agency				Date: April 2022	
Appropriation/Budget Activity		R-1 Program Element (Number/Name)			
0400: Research, Development, Test & Evaluation, Defense-Wide I BA 4: Advanced Component Development & Prototypes (ACD&P)		PE 0604874C I Improved Homeland Defense Interceptors			
B. Program Change Summary (\$ in Millions)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Previous President's Budget	860.384	926.125	0.000	-	0.000
Current President's Budget	843.899	884.125	1,833.357	-	1,833.357
Total Adjustments	-16.485	-42.000	1,833.357	-	1,833.357
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	-42.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	-16.485	0.000			
• Missile Defeat and Defense Enhancement	0.000	0.000	0.000	-	0.000
• Other Adjustment	0.000	0.000	1,833.357	-	1,833.357
Change Summary Explanation					
Decrease of \$42 million in FY 2022 reflects the Congressional reduction for Next generation interceptor funds phasing.					
FY 2023 funding increase reflects the fact that the FY 2022 President's Budget request did not include out-year funding.					

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency										Date: April 2022		
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0604874C / Improved Homeland Defense Interceptors				Project (Number/Name) MD15 / Risk Reduction			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
MD15: Risk Reduction	155.000	200.000	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	355.000
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
Note N/A												
A. Mission Description and Budget Item Justification Risk Reduction for enhancing existing homeland defense against near- and mid-term threats that focuses on the entire Ground Based Defense Weapon System and In-Service Fleet, ensuring optimal operation and warfighting capability.												
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)									FY 2021	FY 2022	FY 2023	
Title: Risk Reduction <div style="text-align: right;">Articles:</div> Description: Risk Reduction for enhancing existing homeland defense and post-Next Generation Interceptor fielding capabilities against near- and mid- term threats. Funding used to build up payload for flight test Ground Based Midcourse Boost Vehicle Test - 03 (GM BVT-03), integrate a Ground Based Interceptor (GBI) from available parts, update software to bring mid-term discrimination capabilities to the Capability Enhancement-I fleet, install enhanced maintenance built-in testing equipment, install improved high-altitude electromagnetic pulse protection improvements, instantiate a digital engineering infrastructure, complete improved lethality engineering, and improved survivability modeling. FY 2022 Plans: N/A FY 2023 Plans: N/A FY 2022 to FY 2023 Increase/Decrease Statement: N/A									200.000	0.000	0.000	
Accomplishments/Planned Programs Subtotals									200.000	0.000	0.000	

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency										Date: April 2022	
Appropriation/Budget Activity 0400 / 4				R-1 Program Element (Number/Name) PE 0604874C / Improved Homeland Defense Interceptors				Project (Number/Name) MD15 / Risk Reduction			
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• 0208866C: MD08: <i>Midcourse Defense O&M</i>	148.741	156.623	185.564	-	185.564	199.248	204.864	188.486	186.647	Continuing	Continuing
• 0208866C: MD08:: <i>GMD Procurement</i>	150.000	0.000	11.300	-	11.300	0.000	18.403	42.725	48.866	Continuing	Continuing
• 0603882C: <i>Ballistic Missile Defense Midcourse Defense Segment</i>	1,195.853	724.028	667.524	-	667.524	870.817	802.617	781.973	765.733	Continuing	Continuing
• 0604887C: <i>Ballistic Missile Defense Midcourse Defense Segment Test</i>	67.071	61.424	84.075	-	84.075	73.920	68.490	95.223	191.476	Continuing	Continuing
Remarks											
D. Acquisition Strategy											
N/A											

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency													Date: April 2022		
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0604874C / Improved Homeland Defense Interceptors				Project (Number/Name) MD15 / Risk Reduction					

Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Risk Reduction - Risk Reduction	C/CPIF	Various : Various	155.000	200.000	Jun 2021	0.000		0.000		-		0.000	0.000	355.000	0.000
Subtotal			155.000	200.000		0.000		0.000		-		0.000	0.000	355.000	N/A

Remarks
Award Date reflects date of first obligation. Additional obligations may incrementally occur throughout the year.

	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	155.000	200.000	0.000	0.000	-	0.000	0.000	355.000	N/A

Remarks
N/A

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PE 0604874C: *Improved Homeland Defense Interceptors*
Missile Defense Agency

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Missile Defense Agency			Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604874C / Improved Homeland Defense Interceptors	Project (Number/Name) MD15 / Risk Reduction	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Risk Reduction - Risk Reduction FY 2021	3	2021	4	2022

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency										Date: April 2022		
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0604874C / Improved Homeland Defense Interceptors				Project (Number/Name) MD80 / Next Generation Interceptor Development (NGI)			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
MD80: Next Generation Interceptor Development (NGI)	310.000	617.520	848.206	1,766.786	-	1,766.786	2,030.625	2,156.053	1,394.502	1,307.197	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

The increase from FY 2022 to FY 2023 provides NGI development including two vendors through Critical Design Review to deliver the NGI in accordance with the two awarded contracts to support first operational delivery in late FY2027. The increase provides for engineering design development and component level parts testing necessary to achieve PDR for two NGI contractors, including completion of sub-system and component Survivability analysis and testing for natural and tactical space environments. Increase also provides for technical risk mitigation leading to CDR, expansion of the Integrated Digital Data Environment and Software Factory Framework to support analysis, functional baseline verification, Modeling and Simulation development, and system designs analysis.

A. Mission Description and Budget Item Justification

The Improved Homeland Defense Interceptor Program Element will develop, test, and deliver an NGI for Homeland Defense, meeting the warfighter's number one priority for Homeland Defense. U.S. Northern Command (USNORTHCOM) developed and maintained the Operational Needs for the NGI. The NGI acquisition covers the development, integration, and testing of an All Up Round (AUR) boost vehicle/ kill vehicle system capable of surviving both natural and hostile environments while countering the allocated threats.

The NGI will provide the Warfighter a cost-effective solution that is lethal across the specified threat space and upgradeable to address future and advancing threats. The Missile Defense Agency (MDA) issued a Request for Proposal in FY 2020 and competitively awarded two best value contracts on March 24, 2021 for an NGI acquisition, which covers the development, integration, and testing of an AUR boost vehicle/ kill vehicle system. MDA plans to maintain the competitive environment through CDR in FY 2025 to reduce technical risk throughout the design development activities, secure competitive production pricing, and support the Department's ability to field a system capable of negating the expanded threat.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2021	FY 2022	FY 2023
Title: Next Generation Interceptor Development (NGI)	595.489	827.612	1,745.981
Articles:	-	-	-
Description: The Improved Homeland Defense Interceptor Program Element will deliver a NGI for Homeland Defense. The NGI has improved survivability against natural and hostile environments and increases performance capability against 2030 threats compared to the currently fielded Ground Based Interceptors (GBIs).			
Recurring efforts include:			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency		Date: April 2022	
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604874C / <i>Improved Homeland Defense Interceptors</i>	Project (Number/Name) MD80 / <i>Next Generation Interceptor Development (NGI)</i>	
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2021	FY 2022
<ul style="list-style-type: none"> - Continue the interceptor design and development to include completion of design trade studies and engineering analysis for AUR PDR - Continue analysis of concept design against required threats leading to the PDR - Continue activities to support achieving Knowledge Point #1 (PDR) exit criteria - Continue to purchase and initiate testing of NGI parts to gain early confidence in the NGI design - Continue Parts, Materials, and Processes Board Requirements approval for all parts - Continue to purchase NGI parts and radiation/suitability testing to gain early confidence in NGI design and development by building in reliability into design - Continue initiation of battlespace and threat containment requirement analysis - Continue development of the Development, Security, and Operations initial software factory <p>FY 2022 Plans:</p> <ul style="list-style-type: none"> - Initiate purchase of long-lead materials for the initial AUR test articles - Purchase of NGI parts and testing to gain early confidence in NGI design and development by building in reliability into design - Purchase of NGI parts and testing to continue initiation of battlespace and threat containment requirement analysis <p>FY 2023 Plans:</p> <ul style="list-style-type: none"> -Initiate flight-like sub-assembly testing -Increase part and Sub-Assembly qualification testing -Complete Sub-Assembly PDRs (Booster and Payload) -Complete Assembly and Check out of sub-systems (seekers, avionics, motors, etc.) for AUR PDR -Validate Software Factory to enable continuous delivery and integration of NGI software development -Complete and Deliver analysis of Battle Space Requirements and threat containment/Engagement Management -Develop Test and Prototyping plan -Complete Critical Technology Element designs and risk mitigations -Complete Software Demonstrations -Purchase low-risk long-lead materials for the initial AUR test articles -Develop NGI AUR transportation capability <p>FY 2022 to FY 2023 Increase/Decrease Statement:</p> <p>The increase from FY 2022 to FY 2023 provides NGI development including two vendors through Critical Design Review to deliver the NGI in accordance with the two awarded contracts to support first operational delivery in late FY2027. The increase provides for engineering design development and component level parts testing necessary to achieve PDR for two NGI contractors, including completion of sub-system and component Survivability analysis and testing for natural and tactical space environments. Increase also provides for technical risk mitigation leading to CDR, expansion of the Integrated Digital Data Environment and</p>			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency									Date: April 2022		
Appropriation/Budget Activity 0400 / 4				R-1 Program Element (Number/Name) PE 0604874C / Improved Homeland Defense Interceptors				Project (Number/Name) MD80 / Next Generation Interceptor Development (NGI)			
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)									FY 2021	FY 2022	FY 2023
Software Factory Framework to support analysis, functional baseline verification, Modeling and Simulation development, and system designs analysis.											
Title: Program Operations									22.031	20.594	20.805
Articles:									-	-	-
Description: Program Operations provides: -Technical and business management support, financial management, cost and schedule performance analysis, cost estimation and analysis, configuration management, and integration activities to ensure the program meets cost, schedule, and performance goals -Ground-Based Midcourse Defense (GMD) NGI program compliance with internal and external direction, policies, and regulations to deliver critical capability via a consistent and disciplined process -Mission Assurance and Manufacturing Engineering processes to include quality, configuration management, manufacturing, engineering, and safety in all phases of the system life cycle, throughout the supply chain, and at all levels of assembly emphasizing high yield rates which minimize test and rework costs -Technical and testing oversight, verification of hardware and software development, quality / safety / mission assurance, integrated logistics support, and government manpower and infrastructure to develop, test, and sustain the NGI Specific and/or unique accomplishments to each FY are as follows: FY 2022 Plans: -SEE ABOVE. FY 2023 Plans: -SEE ABOVE FY 2022 to FY 2023 Increase/Decrease Statement: N/A											
Accomplishments/Planned Programs Subtotals									617.520	848.206	1,766.786
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• 0208866C: MD08: BMD Midcourse Defense O&M	148.741	156.623	185.564	-	185.564	199.248	204.684	188.486	186.647	Continuing	Continuing
• 0208866C: MD08: GMD Procurement	150.000	0.000	11.300	-	11.300	0.000	18.403	42.725	48.866	Continuing	Continuing

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency										Date: April 2022	
Appropriation/Budget Activity 0400 / 4				R-1 Program Element (Number/Name) PE 0604874C / Improved Homeland Defense Interceptors				Project (Number/Name) MD80 / Next Generation Interceptor Development (NGI)			
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• 0603882C: Ballistic Missile Defense Midcourse Defense Segment	1,195.853	724.028	667.524	-	667.524	870.817	802.617	781.973	765.733	Continuing	Continuing
• 0604887C: Ballistic Missile Defense Midcourse Defense Segment Test	67.071	61.424	84.075	-	84.075	73.920	68.490	95.223	191.476	Continuing	Continuing
Remarks											
D. Acquisition Strategy											
<p>GMDs overarching acquisition strategy included a competitive source selection to develop and test an AUR interceptor to meet warfighter requirements and defeat the 2030 threat. MDA has established multiple knowledge points and flight tests to evaluate NGI Component and GMD Element performance during development, followed by production decisions. The Government plans to utilize two contractors through CDR to develop the NGI and maximize the likelihood of delivering this critical capability at the earliest possible opportunity.</p> <p>The NGI effort includes, but is not limited to, systems engineering, hardware, software, and firmware development, manufacture, integration and checkout/test, and delivery of NGI's, culminating in four (4) intercept flight tests. Based on successful capability demonstration during flight tests, MDA will seek approval from the Under Secretary of Defense for Acquisition and Sustainment to proceed with procurement of operational AURs.</p> <p>MDA competitively awarded two best value contracts for NGI to Northrop Grumman (known as NGI Gold Program) and Lockheed Martin (known as NGI Black Program) on March 24, 2021, and plans to maintain competition to develop the NGI through CDR. The NGI competitive acquisition strategy is intended to reduce technical risk, drive industry behavior(s) through retention of a competitive environment throughout early design development activities, secure competitive production pricing, and support the Department's ability to field a system capable of negating the expanded threat, as well as, maximize the likelihood of delivering this critical capability at the earliest possible opportunity.</p> <p>The NGI will be an integrated capability of the greater Ground-Based Element, the GMD System, and will provide a fully qualified, production representative NGI AUR. Once the NGI AUR is accepted by the Government, it will be integrated into the GMD Element and operated by the System Engineering, Integration, Test, and Readiness (SITR) Contract. The NGI is constrained to the existing silo dimensions. Industry proposed all changes required to the GMD Weapon System interfaces and to silo infrastructure to support their proposed solution in their competitive proposals.</p> <p>An option is available on each contract to extend efforts through December 2028 for activities and hardware to support Missile Defense System Ground Testing, as well as, activities and hardware to deliver up to ten (10) NGI units as an AUR configuration in support of the corresponding MDS flight test campaigns. After CDR, the contractors will submit a proposal for one test article and 20 production units, broken into two production lots.</p>											

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency		Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604874C / <i>Improved Homeland Defense Interceptors</i>	Project (Number/Name) MD80 / <i>Next Generation Interceptor Development (NGI)</i>
<p>The GMD Acquisition Strategy scope satisfies future GMD requirements beyond the Development and Sustainment Contract (DSC) and initiates and executes concurrently while the DSC scope is completed.</p> <p>The GMD Acquisition Strategy includes: MDA plans to competitively award a single SITR contract to provide, along with the Technical Direction Agent, a synergistic approach in executing the GMD Element-level engineering, integration, test, and readiness of the GMD Weapon System. The SITR contractor is charged with being the Government's technical partner for day-to-day operation and sustainment of the GMD Weapon System alongside the USNORTHCOM Warfighters. While the Government maintains overall authority, the SITR contractor will assume a technical role responsible for ensuring overall GMD integration including physical and logical integration of the GMD Components, GMD Element, and MDA enterprise level integration, planning and execution of all necessary testing to verify and validate overall requirements compliance.</p> <p>MDA plans to competitively award a single GMD Weapon System (GWS) contract to provide design, development, production, product level testing, sustainment planning, and deployment of new capabilities for the Weapon System. The GWS contractor is responsible for developing weapon system solutions, including fire control and communication systems improvements, required to update the legacy system to remain effective while NGI is under development, as well as, preparing for the seamless introduction of NGI and other future MDS capabilities. The GWS contract will update the system interface for the addition of NGIs to the fleet, provide the Warfighter capability to operate the GWS with a mixed fleet of GBIs and NGIs, and identify and develop solutions for message exchanges between GWS and in-flight kill vehicles. All of this must be accomplished while maintaining a robust cyber defense network capable of detecting and defending against current and future cybersecurity threats.</p> <p>Any interface change will be coordinated with the Government, SITR contractor, and GWS contractor, approved by the Government, and flowed to the GMD contract(s) via contract modification(s).</p>		

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency **Date:** April 2022

Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604874C / Improved Homeland Defense Interceptors	Project (Number/Name) MD80 / Next Generation Interceptor Development (NGI)
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Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Next Generation Interceptor Development (NGI) - NGI Development - Lockheed-Martin	C/CPIF	LOCKHEED MARTIN CORPORATION : Various	0.000	0.000		0.000		995.876	Nov 2022	-		995.876	Continuing	Continuing	Continuing
Next Generation Interceptor Development (NGI) - NGI Development - Northrop-Grumman	C/CPIF	NORTHROP GRUMMAN : Various	0.000	0.000		0.000		733.255	Nov 2022	-		733.255	Continuing	Continuing	Continuing
Next Generation Interceptor Development (NGI) - NGI Development - Various	C/CPIF	Lockheed-Martin, Northrop-Grumman : AL	302.429	588.646	Mar 2021	822.383	Nov 2021	0.000		-		0.000	0.000	1,713.458	0.000
Next Generation Interceptor Development (NGI) - NGI Development Lab & System Support	C/CPIF	Lockheed-Martin, Northrop-Grumman : AL	0.888	6.843	Mar 2021	0.000		0.000		-		0.000	0.000	7.731	0.000
Subtotal			303.317	595.489		822.383		1,729.131		-		1,729.131	Continuing	Continuing	N/A

Remarks

Award Date reflects date of first obligation. Additional obligations may incrementally occur throughout the year.

Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Next Generation Interceptor Development (NGI) - NGI Development	C/CPIF	Various : AL	0.000	0.000		0.000		0.000		-		0.000	0.000	0.000	0.000
Next Generation Interceptor Development (NGI) - NGI Development Lab & System Support	C/CPIF	CCDC, Torch Technologies Inc. : AL	0.000	0.000		5.229	Mar 2022	0.000		-		0.000	0.000	5.229	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0604874C / Improved Homeland Defense Interceptors						Project (Number/Name) MD80 / Next Generation Interceptor Development (NGI)			
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Next Generation Interceptor Development (NGI) - NGI Development Lab & System Support - CCDC	MIPR	USA CCDC AVIATION AND MISSILE CENTE : AL	0.000	0.000		0.000		15.736	Jan 2023	-		15.736	Continuing	Continuing	Continuing
Next Generation Interceptor Development (NGI) - NGI Development Lab & System Support - JACOBS TECHNOLOGY INC.	C/CPIF	JACOBS TECHNOLOGY INC. : AL	0.000	0.000		0.000		1.114	Nov 2022	-		1.114	Continuing	Continuing	Continuing
Program Operations - Contract Support Services	C/CPFF	Various : AL/AK/ CA/ CO/VA	5.070	13.102	Oct 2020	0.000		0.000		-		0.000	0.000	18.172	0.000
Program Operations - Government Civilian Salaries	Allot	MDA : AL/VA	1.613	8.440	Oct 2020	8.064	Oct 2021	8.386	Jan 2023	-		8.386	Continuing	Continuing	Continuing
Program Operations - Government Travel	Allot	MDA : AL/VA	0.000	0.489	Oct 2020	0.499	Oct 2021	0.503	Jan 2023	-		0.503	Continuing	Continuing	Continuing
Subtotal			6.683	22.031		13.792		25.739		-		25.739	Continuing	Continuing	N/A
Remarks N/A															
Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Operations - Contract Support Services - PARSONS GOVERNMENT SERVICES INC.	C/CPIF	PARSONS GOVERNMENT SERVICES INC. : AL	0.000	0.000		0.000		10.321	Nov 2022	-		10.321	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0604874C / Improved Homeland Defense Interceptors				Project (Number/Name) MD80 / Next Generation Interceptor Development (NGI)					
Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Operations - Contract Support Services - Various	C/CPFF	Various : AL	0.000	0.000		12.031	Oct 2021	1.595	Nov 2022	-		1.595	Continuing	Continuing	Continuing
Subtotal			0.000	0.000		12.031		11.916		-		11.916	Continuing	Continuing	N/A
Remarks															
Award Date reflects date of first obligation. Additional obligations may incrementally occur throughout the year.															
			Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			310.000	617.520		848.206		1,766.786		-		1,766.786	Continuing	Continuing	N/A
Remarks															
Award Date reflects date of first obligation. Additional obligations may incrementally occur throughout the year.															

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Missile Defense Agency														Date: April 2022																				
Appropriation/Budget Activity 0400 / 4										R-1 Program Element (Number/Name) PE 0604874C / Improved Homeland Defense Interceptors										Project (Number/Name) MD80 / Next Generation Interceptor Development (NGI)														
Significant Event Complete ▲ Significant Event Planned △					Milestone Decision Complete ★ Milestone Decision Planned ☆					Element Test Complete ◆ Element Test Planned ◇					System Level Test Complete ● System Level Test Planned ○					Complete Activity ◆ Planned Activity ◇														
										FY 2021			FY 2022			FY 2023			FY 2024			FY 2025			FY 2026			FY 2027						
Next Generation Interceptor TD Phase										◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇												
Next Generation Interceptor PD Phase																					◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇		
Next Generation Interceptor IP Phase																														◇	◇	◇		
Next Generation Interceptor (Black) SRR														▲																				
Next Generation Interceptor (Black) PDR																			△															
Next Generation Interceptor (Black) CDR																								△										
Next Generation Interceptor (Gold) SRR														▲																				
Next Generation Interceptor (Gold) PDR																				△														
Next Generation Interceptor (Gold) CDR																							△											

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Missile Defense Agency			Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604874C / <i>Improved Homeland Defense Interceptors</i>	Project (Number/Name) MD80 / <i>Next Generation Interceptor Development (NGI)</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Next Generation Interceptor TD Phase	2	2021	3	2024
Next Generation Interceptor PD Phase	3	2024	2	2027
Next Generation Interceptor IP Phase	2	2027	4	2028
Next Generation Interceptor (Black) SRR	1	2022	1	2022
Next Generation Interceptor (Black) PDR	4	2023	4	2023
Next Generation Interceptor (Black) CDR	3	2025	3	2025
Next Generation Interceptor (Gold) SRR	1	2022	1	2022
Next Generation Interceptor (Gold) PDR	2	2024	2	2024
Next Generation Interceptor (Gold) CDR	3	2025	3	2025

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency										Date: April 2022		
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0604874C / Improved Homeland Defense Interceptors				Project (Number/Name) MD40 / Program Wide Support			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
MD40: Program Wide Support	75.748	26.379	35.919	66.571	-	66.571	73.757	75.972	54.130	51.364	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Program Wide Support (PWS) is allocated on a pro-rata basis across multiple Agency PEs each fiscal year based on the total Agency budget, and therefore fluctuates per PE by fiscal year.

A. Mission Description and Budget Item Justification

PWS contains non-headquarters management costs in support of MDA functions and activities across the entire MDS. These functions include Government Civilians and Contract Support Services. This effort provides integrity and oversight of the MDS as well as supports MDA in the development and evaluation of technologies that will respond to the changing threat. Additionally, PWS includes personnel to support global deployments performing deployment site preparation and activation, and provides facility capabilities for MDA Executing Agent locations worldwide. Other MDA wide costs include: physical and technical security; civilian drug testing; audit readiness; the Science, Technology, Engineering, and Mathematics (STEM) program; legal services and settlements; travel and agency training; office, equipment, vehicle, and warehouse leases; utilities and base operations across multiple geographic locations; commercial and ancillary facility services; management of all facility aspects regardless of lifecycle stage; supplies and maintenance; compliance with statutory environmental requirements; data and unified communications support; materiel and readiness and central property management of equipment; Facilities Sustainment, Restoration and Modernization (FSRM) program (formerly Real Property Maintenance) to keep the Department's inventory of facilities in good working order; and similar operating expenses. PWS is allocated on a pro-rata basis across most Agency PEs and therefore fluctuates per PE by fiscal year based on the total Agency budget in that fiscal year.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2021	FY 2022	FY 2023
Title: Program Wide Support	26.379	35.919	66.571
Articles:	-	-	-
Description: PWS contains non-headquarters management costs in support of MDA functions and activities across the entire MDS. These functions include Government Civilians and Contract Support Services. This effort provides integrity and oversight of the MDS as well as supports MDA in the development and evaluation of technologies that will respond to the changing threat. Additionally, PWS includes personnel to support global deployments performing deployment site preparation and activation, and provides facility capabilities for MDA Executing Agent locations worldwide. Other MDA wide costs include: physical and technical security; civilian drug testing; audit readiness; the STEM program; legal services and settlements; travel and agency training; office, equipment, vehicle, and warehouse leases; utilities and base operations across multiple geographic locations; commercial and ancillary facility services; management of all facility aspects regardless of lifecycle stage; supplies and maintenance; compliance with statutory environmental requirements; data and unified communications support; materiel and readiness and central property management of equipment; the FSRM program (formerly Real Property Maintenance) to keep the Department's			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency		Date: April 2022	
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604874C / <i>Improved Homeland Defense Interceptors</i>	Project (Number/Name) MD40 / <i>Program Wide Support</i>	
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2021	FY 2022
inventory of facilities in good working order; and similar operating expenses. PWS is allocated on a pro-rata basis across most Agency PEs and therefore fluctuates per PE by fiscal year based on the total Agency budget in that fiscal year.			
FY 2022 Plans: - SEE ABOVE.			
FY 2023 Plans: - SEE ABOVE.			
FY 2022 to FY 2023 Increase/Decrease Statement: Increase from FY 2022 to FY 2023 provides the PWS allocation on a pro-rata basis across multiple Agency PEs each fiscal year based on the total Agency budget, and therefore fluctuates per PE by fiscal year.			
Accomplishments/Planned Programs Subtotals		26.379	35.919
C. Other Program Funding Summary (\$ in Millions) N/A			
Remarks			
D. Acquisition Strategy N/A			

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0604874C / Improved Homeland Defense Interceptors				Project (Number/Name) MD40 / Program Wide Support					
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Wide Support - Agency Facilities and Maintenance	MIPR	Various Multi : AL, VA	28.813	2.492	Nov 2020	2.978	Dec 2021	12.295	Nov 2022	-		12.295	Continuing	Continuing	Continuing
Program Wide Support - Agency Facilities and Maintenance SRM	MIPR	Various : Multi: AK, AL, CA, CO, HI, NY, VA	0.000	0.000		3.775	Dec 2021	2.675	Nov 2022	-		2.675	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations and Support Civilian Salaries, Travel, Training	Various	Various Multi : AL, VA	0.956	1.500	Nov 2020	0.000		22.960	Oct 2022	-		22.960	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations and Support Other Agency Services	MIPR	Various Multi : AL, VA	15.086	4.450	Nov 2020	2.980	Nov 2021	0.000		-		0.000	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations and Support Services	C/CPFF	Various Multi : AL, VA	30.893	17.937	Dec 2020	22.626	Nov 2021	28.641	Nov 2022	-		28.641	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations, Sustainment and GPC	C/FFP	Various : Multi: AK, AL, CA, HI, NY, VA	0.000	0.000		3.560	Dec 2021	0.000		-		0.000	Continuing	Continuing	Continuing
Subtotal			75.748	26.379		35.919		66.571		-		66.571	Continuing	Continuing	N/A
Remarks N/A															
			Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			75.748	26.379		35.919		66.571		-		66.571	Continuing	Continuing	N/A
Remarks Award Date reflects date of first obligation. Additional obligations may incrementally occur throughout the year.															

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Missile Defense Agency														Date: April 2022																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
Appropriation/Budget Activity 0400 / 4										R-1 Program Element (Number/Name) PE 0604874C / Improved Homeland Defense Interceptors										Project (Number/Name) MD40 / Program Wide Support																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Missile Defense Agency			Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604874C / Improved Homeland Defense Interceptors	Project (Number/Name) MD40 / Program Wide Support	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
MD40 Program-Wide Support	1	2021	4	2027

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Missile Defense Agency	Date: April 2022
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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 0604876C / <i>Ballistic Missile Defense Terminal Defense Segment Test</i>
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COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
Total Program Element	304.071	1.000	32.697	69.762	-	69.762	43.602	34.063	153.853	133.524	Continuing	Continuing
MT07: <i>THAAD Test</i>	289.889	0.676	30.174	67.229	-	67.229	42.419	33.070	148.262	128.476	Continuing	Continuing
MD40: <i>Program Wide Support</i>	14.182	0.324	2.523	2.533	-	2.533	1.183	0.993	5.591	5.048	Continuing	Continuing

Program MDAP/MAIS Code: 362

Note

Increase from FY 2022 to FY 2023 is in accordance with the current Integrated Master Test Plan (IMTP).

A. Mission Description and Budget Item Justification

Ballistic Missile Defense Terminal Defense Segment Test provides the Terminal High Altitude Area Defense (THAAD) program's participation in Missile Defense System (MDS) Flight Tests and Ground Tests in accordance with the IMTP. THAAD Test coordinates with Operational Test Agencies, conducts pretest planning, coordination and analysis, conducts flight test operations, performs post-flight test reporting, and performs data distribution and storage.

<u>B. Program Change Summary (\$ in Millions)</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023 Base</u>	<u>FY 2023 OCO</u>	<u>FY 2023 Total</u>
Previous President's Budget	1.000	32.697	0.000	-	0.000
Current President's Budget	1.000	32.697	69.762	-	69.762
Total Adjustments	0.000	0.000	69.762	-	69.762
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Missile Defeat and Defense Enhancement	0.000	0.000	0.000	-	0.000
• Other Adjustment	0.000	0.000	69.762	-	69.762

Change Summary Explanation

FY 2023 funding increase reflects the fact that the FY 2022 President's Budget request did not include out-year funding.

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency										Date: April 2022		
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0604876C / Ballistic Missile Defense Terminal Defense Segment Test				Project (Number/Name) MT07 / THAAD Test			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
MT07: THAAD Test	289.889	0.676	30.174	67.229	-	67.229	42.419	33.070	148.262	128.476	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
Note Increase from FY 2022 to FY 2023 is in accordance with the current Integrated Master Test Plan (IMTP).												
A. Mission Description and Budget Item Justification Terminal High Altitude Area Defense (THAAD) Test conducts Missile Defense System (MDS) Flight Tests and Ground Tests with other MDS elements (such as Army Navy / Transportable Radar Surveillance and Control (AN/TPY-2), MDS Command, Control, Battle Management, and Communication (C2BMC), Phased Array Tracking Intercept of Target (PATRIOT), and Aegis) in accordance with the IMTP. THAAD Test coordinates with Operational Test Agencies, conducts all pre and post flight test, ground test, cyber security enhancements, and wargames and exercises requirements.												
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)									FY 2021	FY 2022	FY 2023	
Title: Flight Test Execution Articles: Description: Performs all requirements to support flight test execution such as mission planning, pre-flight integration testing, conduct of readiness reviews, test asset transportation, flight test execution and data collection, post flight test reporting and data distribution in accordance with the IMTP. Specific and/or unique planned accomplishments to each FY are as follows: FY 2022 Plans: -SEE ABOVE. FY 2023 Plans: -SEE ABOVE. FY 2022 to FY 2023 Increase/Decrease Statement: Increase from FY 2022 to FY 2023 is in accordance with the current IMTP.									0.000	16.280	54.024	
									-	-	-	
Title: Ground Test Execution Articles: Description: Ground Test Execution includes:									0.000	7.475	7.493	
									-	-	-	

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency		Date: April 2022	
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604876C / <i>Ballistic Missile Defense Terminal Defense Segment Test</i>	Project (Number/Name) MT07 / <i>THAAD Test</i>	
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2021	FY 2022
- SEE ABOVE.			
FY 2022 to FY 2023 Increase/Decrease Statement: N/A.			
Title: Wargames and Exercises Articles: Description: Wargames and Exercises support the Combatant Commands with model and simulations and subject matter expertise during exercise events. Continue to assist in developing/refining Tactics, Techniques, and Procedures and Pre-Planned Responses to incorporate in future events. Demonstrate THAAD capability to the warfighter community in the Integrated Air and Missile Defense environment. Specific and/or unique planned accomplishments to each FY are as follows: FY 2022 Plans: - SEE ABOVE. FY 2023 Plans: - SEE ABOVE. FY 2022 to FY 2023 Increase/Decrease Statement: N/A.		0.000 -	0.447 -
Title: Test Program Operations Articles: Description: Program Operations provides strategic planning, program integration, acquisition, engineering, financial management, internal reviews and audits, and program assessments for THAAD Test Activities. Specific and/or unique planned accomplishments to each FY are as follows: FY 2022 Plans: - SEE ABOVE. FY 2023 Plans: - SEE ABOVE. FY 2022 to FY 2023 Increase/Decrease Statement:		0.676 -	4.250 -

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency			Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604876C / <i>Ballistic Missile Defense Terminal Defense Segment Test</i>	Project (Number/Name) MT07 / <i>THAAD Test</i>	

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023
Decrease from FY 2022 to FY 2023 is in accordance with the current IMTP.			
Accomplishments/Planned Programs Subtotals	0.676	30.174	67.229

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

Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• 0208866C:MD07: <i>THAAD O&M</i>	89.706	86.828	86.945	-	86.945	89.297	91.789	93.995	96.024	Continuing	Continuing
• 0208866C:MD07: <i>THAAD Procurement</i>	578.335	380.722	74.994	-	74.994	211.524	435.682	464.343	643.513	Continuing	Continuing
• 0603881C: <i>Ballistic Missile</i>	305.081	213.382	190.216	-	190.216	196.279	213.945	224.146	238.269	Continuing	Continuing
<i>Defense Terminal Defense Segment</i>											
• 0603914C: <i>Ballistic</i> <i>Missile Defense Test</i>	364.994	389.156	367.824	-	367.824	363.963	421.261	476.991	490.176	Continuing	Continuing

Remarks

D. Acquisition Strategy

THAAD awards Indefinite Delivery Indefinite Quantity (IDIQ) Task Orders on the Advanced Capability Development contract for the continuation of THAAD development and test as described and approved in the Missile Defense Agency Integrated Master Test Plan. The discrete task orders allow management and tracking of IMTP-related work.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0604876C / <i>Ballistic Missile Defense Terminal Defense Segment Test</i>						Project (Number/Name) MT07 / <i>THAAD Test</i>			
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Test Program Operations - Program Operations	Various	Missile Defense Agency (MDA) : Ft. Belvoir, VA/ Huntsville, AL	16.994	0.676	Oct 2020	4.250	Oct 2021	0.000		-		0.000	21.920	43.840	21.920
Subtotal			16.994	0.676		4.250		0.000		-		0.000	21.920	43.840	N/A
Remarks N/A															
Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Flight Test Execution - Execution, Support and Planning	MIPR	MDA / US Army Combat Capabilities Development Command (CCDC) / KLC / RTS : AL / CO / AK / HI / Wake Island / Kwajalein	121.552	0.000		9.505	Nov 2021	37.699	Nov 2022	-		37.699	Continuing	Continuing	Continuing
Flight Test Execution - Planning, Analysis, and Execution	SS/IDIQ	Lockheed Martin : Sunnyvale, CA / Huntsville, AL	79.678	0.000		6.775	Nov 2021	16.325	Nov 2022	-		16.325	Continuing	Continuing	Continuing
Ground Test Execution - MDS Ground Test Support	MIPR	US Army Combat Capabilities Development Command (CCDC) : Huntsville, AL	32.798	0.000		7.475	Nov 2021	7.493	Nov 2022	-		7.493	Continuing	Continuing	Continuing
Resources - All Prior Years	Various	Various : Various	5.961	0.000		0.000		0.000		-		0.000	0.000	5.961	0.000
Resources - Test and Range Infrastructure	MIPR	US Army Combat Capabilities Development Command (CCDC) / White Sands Missile	30.870	0.000		1.722	Nov 2021	1.619	Nov 2022	-		1.619	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0604876C / <i>Ballistic Missile Defense Terminal Defense Segment Test</i>				Project (Number/Name) MT07 / <i>THAAD Test</i>					

Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
		Range / Lincoln Labs : Huntsville, AL / White Sands, NM / MA													
Wargames and Exercises - Wargames and Exercises	MIPR	MDA / Space and Missile Defense Command : Huntsville, AL	2.036	0.000		0.447	Nov 2021	0.453	Nov 2022	-		0.453	Continuing	Continuing	Continuing
Subtotal			272.895	0.000		25.924		63.589		-		63.589	Continuing	Continuing	N/A

Remarks
N/A

Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Test Program Operations - Contractor Support Services	C/CPFF	Various : Various	0.000	0.000		0.000		3.640	Oct 2022	-		3.640	Continuing	Continuing	Continuing
Subtotal			0.000	0.000		0.000		3.640		-		3.640	Continuing	Continuing	N/A

Remarks
N/A

	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	289.889	0.676	30.174	67.229	-	67.229	Continuing	Continuing	N/A

Remarks
Award Date reflects date of first obligation. Additional obligations may incrementally occur throughout the year.

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Missile Defense Agency															Date: April 2022										
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0604876C / Ballistic Missile Defense Te rminal Defense Segment Test										Project (Number/Name) MT07 / THAAD Test										
Significant Event Complete ▲ Significant Event Planned △					Milestone Decision Complete ★ Milestone Decision Planned ☆					Element Test Complete ◆ Element Test Planned ◇					System Level Test Complete ● System Level Test Planned ○					Complete Activity ◆ Planned Activity ◇					
					FY 2021			FY 2022			FY 2023			FY 2024			FY 2025			FY 2026			FY 2027		
TH CTV-01 (LTPO, DT Interceptor Only Flight Test)								▲																	
FTT-21 (TH, DT Intercept Flight Test)									△																
TH CTV-01a (LTPO, DT Interceptor Only Flight Test)									◆																
GTI-08a (N/I) (MDS Ground Test)										◇															
GTD-08a (N/I) (MDS Ground Test)											◇														
FTT-25 (TH, DT/OT Intercept Flight Test)												△													
GTI-ISR (23) (MDS Ground Test)													◇												
GTI-08b Sprint 1 (N/I) (MDS Ground Test)														◇											
FTX-28 E2 (TH, DT/OT Tracking Exercise Flight Test)															△										
FTX-28 E1 (TH, DT/OT Tracking Exercise Flight Test)															△										
FTX-28 E3 (TH, DT/OT Tracking Exercise Flight Test)															△										
GTI-13 Sprint 1 (N/I) (MDS Ground Test)																	◇								
GTI-13 Sprint 2 (N/I) (MDS Ground Test)																		◇							
GTI-ISR (25) (MDS Ground Test)																			◇						
GTI-12 Sprint 1 (E/C) (MDS Ground Test)																				◇					
GTD-13 (N/I) (MDS Ground Test)																					◇				
GTI-12 Sprint 2 (E/C) (MDS Ground Test)																						◇			
GTD-10 (E/C) (MDS Ground Test)																							◇		
GTI-10 (E/C) (MDS Ground Test)																								◇	
GTD-12 (E/C) (MDS Ground Test)																								◇	
TH CTV-03 (TH, DT Interceptor Only Flight Test)																							△		
GTI-ISR (27) (MDS Ground Test)																								◇	
GTI-15 Sprint 1 (E/C) (MDS Ground Test)																								◇	
FTT-22 (TH, DT/OT Intercept Flight Test)																								△	

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Missile Defense Agency												Date: April 2022							
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0604876C / Ballistic Missile Defense Terminal Defense Segment Test						Project (Number/Name) MT07 / THAAD Test							
Significant Event Complete ▲		Significant Event Planned △		Milestone Decision Complete ★		Milestone Decision Planned ☆		Element Test Complete ◆		Element Test Planned ◇		System Level Test Complete ●		System Level Test Planned ○		Complete Activity ◆		Planned Activity ◇	
						FY 2021		FY 2022		FY 2023		FY 2024		FY 2025		FY 2026		FY 2027	
GTD-14 (N/I) (MDS Ground Test)																			◇

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Missile Defense Agency			Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604876C / <i>Ballistic Missile Defense Terminal Defense Segment Test</i>	Project (Number/Name) MT07 / <i>THAAD Test</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
TH CTV-01 (LTPO, DT Interceptor Only Flight Test)	4	2021	4	2021
FTT-21 (TH, DT Intercept Flight Test)	2	2022	2	2022
TH CTV-01a (LTPO, DT Interceptor Only Flight Test)	2	2022	2	2022
GTI-08a (N/I) (MDS Ground Test)	3	2022	3	2022
GTD-08a (N/I) (MDS Ground Test)	1	2023	1	2023
FTT-25 (TH, DT/OT Intercept Flight Test)	3	2023	3	2023
GTI-ISR (23) (MDS Ground Test)	4	2023	4	2023
GTI-08b Sprint 1 (N/I) (MDS Ground Test)	1	2024	1	2024
FTX-28 E2 (TH, DT/OT Tracking Exercise Flight Test)	2	2024	2	2024
FTX-28 E1 (TH, DT/OT Tracking Exercise Flight Test)	2	2024	2	2024
FTX-28 E3 (TH, DT/OT Tracking Exercise Flight Test)	2	2024	2	2024
GTI-13 Sprint 1 (N/I) (MDS Ground Test)	1	2025	1	2025
GTI-13 Sprint 2 (N/I) (MDS Ground Test)	3	2025	3	2025
GTI-ISR (25) (MDS Ground Test)	2	2025	2	2025
GTI-12 Sprint 1 (E/C) (MDS Ground Test)	3	2025	3	2025
GTD-13 (N/I) (MDS Ground Test)	4	2025	4	2025
GTI-12 Sprint 2 (E/C) (MDS Ground Test)	1	2026	1	2026
GTD-10 (E/C) (MDS Ground Test)	2	2026	2	2026
GTI-10 (E/C) (MDS Ground Test)	1	2026	1	2026
GTD-12 (E/C) (MDS Ground Test)	2	2026	2	2026
TH CTV-03 (TH, DT Interceptor Only Flight Test)	4	2026	4	2026
GTI-ISR (27) (MDS Ground Test)	4	2027	4	2027

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Missile Defense Agency			Date: April 2022		
Appropriation/Budget Activity 0400 / 4		R-1 Program Element (Number/Name) PE 0604876C / Ballistic Missile Defense Terminal Defense Segment Test		Project (Number/Name) MT07 / THAAD Test	
		Start		End	
Events		Quarter	Year	Quarter	Year
GTI-15 Sprint 1 (E/C) (MDS Ground Test)		3	2027	3	2027
FTT-22 (TH, DT/OT Intercept Flight Test)		3	2027	3	2027
GTD-14 (N/I) (MDS Ground Test)		4	2027	4	2027

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency										Date: April 2022		
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0604876C / Ballistic Missile Defense Te rminal Defense Segment Test				Project (Number/Name) MD40 / Program Wide Support			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
MD40: Program Wide Support	14.182	0.324	2.523	2.533	-	2.533	1.183	0.993	5.591	5.048	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Program Wide Support (PWS) is allocated on a pro-rata basis across multiple Agency Program Elements (PE) each fiscal year based on the total Agency budget, and therefore fluctuates per PE by fiscal year.

A. Mission Description and Budget Item Justification

PWS contains non-headquarters management costs in support of MDA functions and activities across the entire MDS. These functions include Government Civilians and Contract Support Services. This effort provides integrity and oversight of the MDS as well as supports MDA in the development and evaluation of technologies that will respond to the changing threat. Additionally, PWS includes personnel to support global deployments performing deployment site preparation and activation, and provides facility capabilities for MDA Executing Agent locations worldwide. Other MDA wide costs include: physical and technical security; civilian drug testing; audit readiness; the Science, Technology, Engineering, and Mathematics (STEM) program; legal services and settlements; travel and agency training; office, equipment, vehicle, and warehouse leases; utilities and base operations across multiple geographic locations; commercial and ancillary facility services; management of all facility aspects regardless of lifecycle stage; supplies and maintenance; compliance with statutory environmental requirements; data and unified communications support; materiel and readiness and central property management of equipment; Facilities Sustainment, Restoration and Modernization (FSRM) program (formerly Real Property Maintenance) to keep the Department's inventory of facilities in good working order; and similar operating expenses. PWS is allocated on a pro-rata basis across most Agency PEs and therefore fluctuates per PE by fiscal year based on the total Agency budget in that fiscal year.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2021	FY 2022	FY 2023
Title: Program Wide Support	0.324	2.523	2.533
Articles:	-	-	-
Description: PWS contains non-headquarters management costs in support of MDA functions and activities across the entire MDS. These functions include Government Civilians and Contract Support Services. This effort provides integrity and oversight of the MDS as well as supports MDA in the development and evaluation of technologies that will respond to the changing threat. Additionally, PWS includes personnel to support global deployments performing deployment site preparation and activation, and provides facility capabilities for MDA Executing Agent locations worldwide. Other MDA wide costs include: physical and technical security; civilian drug testing; audit readiness; the STEM program; legal services and settlements; travel and agency training; office, equipment, vehicle, and warehouse leases; utilities and base operations across multiple geographic locations; commercial and ancillary facility services; management of all facility aspects regardless of lifecycle stage; supplies and maintenance; compliance with statutory environmental requirements; data and unified communications support; materiel and readiness and central property management of equipment; the FSRM program (formerly Real Property Maintenance) to keep the Department's			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency		Date: April 2022	
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604876C / <i>Ballistic Missile Defense Terminal Defense Segment Test</i>	Project (Number/Name) MD40 / <i>Program Wide Support</i>	
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2021	FY 2022
inventory of facilities in good working order; and similar operating expenses. PWS is allocated on a pro-rata basis across most Agency PEs and therefore fluctuates per PE by fiscal year based on the total Agency budget in that fiscal year.			
FY 2022 Plans: - SEE ABOVE.			
FY 2023 Plans: - SEE ABOVE.			
FY 2022 to FY 2023 Increase/Decrease Statement: N/A			
Accomplishments/Planned Programs Subtotals		0.324	2.523
C. Other Program Funding Summary (\$ in Millions) N/A			
Remarks			
D. Acquisition Strategy N/A			

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0604876C / <i>Ballistic Missile Defense Terminal Defense Segment Test</i>						Project (Number/Name) MD40 / <i>Program Wide Support</i>			
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Wide Support - Agency Operations Management	Various	Various : Multi: AL, VA, Aust, Japan	0.084	0.010	Jul 2021	0.026	Jul 2022	0.000		-		0.000	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations and Support Civilian Salaries, Travel, Training	Various	Various : VA	4.174	0.000		0.000		0.000		-		0.000	0.000	4.174	0.000
Program Wide Support - Agency Operations and Support Services	C/CPFF	YORKTOWN SYSTEMS GROUP, INC. : Multi: AL, VA	8.990	0.314	May 2021	2.497	Nov 2021	0.616	Nov 2022	-		0.616	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations and Support Services, includes FFRDC/UARC	MIPR	DOD - DEFENSE FINANCE AND ACCOUNTING SERVICES (DFAS) : IN	0.360	0.000		0.000		1.917	Dec 2022	-		1.917	Continuing	Continuing	Continuing
Program Wide Support - Prior year no longer funded in the FYDP	Various	Various : Various	0.574	0.000		0.000		0.000		-		0.000	0.000	0.574	0.000
Subtotal			14.182	0.324		2.523		2.533		-		2.533	Continuing	Continuing	N/A
Remarks N/A															
			Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			14.182	0.324		2.523		2.533		-		2.533	Continuing	Continuing	N/A
Remarks Award Date reflects date of first obligation. Additional obligations may incrementally occur throughout the year.															

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Missile Defense Agency														Date: April 2022									
Appropriation/Budget Activity 0400 / 4								R-1 Program Element (Number/Name) PE 0604876C / Ballistic Missile Defense Terminal Defense Segment Test								Project (Number/Name) MD40 / Program Wide Support							
Significant Event Complete ▲				Milestone Decision Complete ★				Element Test Complete ◆				System Level Test Complete ●				Complete Activity ◆							
Significant Event Planned △				Milestone Decision Planned ☆				Element Test Planned ◇				System Level Test Planned ○				Planned Activity ◇							
								FY 2021		FY 2022		FY 2023		FY 2024		FY 2025		FY 2026		FY 2027			
MD40 Program-Wide Support								◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Missile Defense Agency			Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604876C / Ballistic Missile Defense Terminal Defense Segment Test	Project (Number/Name) MD40 / Program Wide Support	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
MD40 Program-Wide Support	1	2021	4	2027

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Missile Defense Agency	Date: April 2022
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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 0604878C / <i>Aegis BMD Test</i>
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COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
Total Program Element	685.802	71.481	111.206	182.776	-	182.776	173.492	159.125	203.851	187.494	Continuing	Continuing
MT09: <i>AEGIS BMD Test</i>	661.153	64.693	106.147	176.139	-	176.139	167.502	154.072	196.586	181.162	Continuing	Continuing
MD40: <i>Program Wide Support</i>	24.649	6.788	5.059	6.637	-	6.637	5.990	5.053	7.265	6.332	Continuing	Continuing

Program MDAP/MAIS Code: 362

Note

Increase from FY 2022 to FY 2023 provides the transfer of flight test budget from the Special Programs Program Element (0603891C) in accordance with the current Integrated Master Test Plan (IMTP).

A. Mission Description and Budget Item Justification

The Aegis Ballistic Missile Defense (BMD) mission is to deliver an enduring, operationally effective, and supportable BMD capability to defend the nation, deployed forces, friends, and allies and to increase this capability by delivering evolutionary improvements as part of Missile Defense System (MDS) upgrades. The Aegis element of the MDS capitalizes upon and evolves from the existing U.S. Navy Aegis Weapons System (AWS) and Standard Missile (SM) infrastructures. Aegis BMD provides a forward-deployable, mobile capability to detect and track Ballistic Missiles of all ranges and the ability to destroy Short-Range Ballistic Missiles (SRBMs), Medium-Range Ballistic Missiles (MRBMs), and Intermediate-Range Ballistic Missiles (IRBMs) in the midcourse phase of flight in addition to shorter range missiles in the terminal phase of flight. Aegis BMD also provides a Long Range Surveillance and Track (LRS&T) capability to the MDS. Upgrades to both the Aegis Weapon System and the SM-3 configuration provides effective and supportable defensive capability against longer range more sophisticated threats and an enduring Aegis Ashore defensive capability.

- Working with all U.S. Armed Services that participate in the MDS level Operational Test Agency (OTA) Team, with the support of the Director of Operational Test and Evaluation (DOT&E), MDA has developed a test program to improve confidence in missile defense capabilities under development and ensure the capabilities transferred to the warfighter are operationally effective, suitable, and survivable.
- As part of the MDA's rigorous test program, System Pre-Flight predictions provide confidence in test execution by predicting element performance and exercising element interfaces. System Post-Flight Reconstruction replicates the MDS configuration, actual environmental conditions, and target dynamics observed in flight to anchor Modeling and Simulation (M&S) results.
- The IMTP is event-oriented and extends until the collection of all identified data is completed ensuring adequate test investments.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Missile Defense Agency	Date: April 2022
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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 0604878C / <i>Aegis BMD Test</i>
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B. Program Change Summary (\$ in Millions)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Previous President's Budget	71.498	117.055	0.000	-	0.000
Current President's Budget	71.481	111.206	182.776	-	182.776
Total Adjustments	-0.017	-5.849	182.776	-	182.776
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	-5.849			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	-0.017	0.000			
• Missile Defeat and Defense Enhancement	0.000	0.000	0.000	-	0.000
• Other Adjustment	0.000	0.000	182.776	-	182.776

Change Summary Explanation

Decrease of \$5.8 million in FY 2022 reflects Congressional reduction of Layered Homeland Defense due to lack of validated requirement and acquisition strategy.

FY 2023 funding increase reflects the fact that the FY 2022 President's Budget request did not include out-year funding.

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency										Date: April 2022		
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0604878C / Aegis BMD Test				Project (Number/Name) MT09 / AEGIS BMD Test			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
MT09: AEGIS BMD Test	661.153	64.693	106.147	176.139	-	176.139	167.502	154.072	196.586	181.162	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Increase from FY 2022 to FY 2023 provides the transfer of flight test budget from Special Programs Program Element (PE) 0603891C in accordance with the current Integrated Master Test Plan (IMTP).

A. Mission Description and Budget Item Justification

The FY 2021 Aegis BMD Test Program concentrates on critical IMTP flight tests that support the BMDS incremental development strategy and the U.S. Navy, European Phased Adaptive Approach (EPAA).

The FY 2022 Aegis BMD Test Program concentrates on critical IMTP flight tests that support the U.S. Navy and European Phased Adaptive Approach (EPAA), Weapon System Certification, and Missile Production Decision requirements. Aegis Ballistic Missile Defense (BMD) will concentrate on Aegis Baseline (BL) 9.C2 (BMD 5.x) enhancements and Standard Missile SM-3 Block IIA operational testing.

The FY 2023 Aegis BMD Test Program concentrates on critical IMTP flight tests that support the U.S. Navy, Weapon System Certification, and Missile Production Decision requirements. Aegis BMD will concentrate on Aegis BL 9.C2 (BMD 5.x) enhancements and Standard Missile SM-3 Block IIA operational testing.

- Working with the U.S. Navy Integrated Warfare System (IWS) Services' Operational Test Agencies (OTA), with the support of the Director of Operational Test and Evaluation (DOT&E), MDA has developed a test program to improve missile defense capabilities under development and ensure the capabilities transferred to the warfighter are operationally effective, suitable, and survivable.

- As part of MDA's rigorous test program, System Pre-Flight predictions provide confidence in test execution by predicting element performance and exercising element interfaces. System Post-Flight Reconstruction replicates the Ballistic Missile Defense System configuration and actual environmental conditions and target dynamics observed in flight to anchor Modeling and Simulation (M&S) results.

- The IMTP is event-oriented and extends until the collection of all identified data is completed ensuring adequate test investments.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2021	FY 2022	FY 2023
Title: Aegis BMD Flight Test Execution	17.059	65.502	121.325
Articles:	-	-	-
Description: Aegis BMD Flight Test Program performs comprehensive testing of Aegis BMD components and their interoperability with the Missile Defense System (MDS) using accredited M&S that provides the evidence required for the MDA and Combatant Commanders to transition the capability to the Operational Capability Baseline. All flight testing is reflected in the R-4 schedule and the IMTP.			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency			Date: April 2022		
Appropriation/Budget Activity 0400 / 4		R-1 Program Element (Number/Name) PE 0604878C / Aegis BMD Test	Project (Number/Name) MT09 / AEGIS BMD Test		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)			FY 2021	FY 2022	FY 2023
<p>Recurring Accomplishments include:</p> <p>-Prepare for and conduct MDS Flight Test events as reflected in the IMTP and the R-4 schedule.</p> <p>-Collect Aegis BMD data for M&S anchoring used in comprehensive flight testing.</p> <p>-Conduct Aegis BMD specific analysis during pre- and post-mission analysis phases to confirm pre-mission predictions of mission success and validate post-test results.</p> <p>-Conduct test milestone reviews to ensure readiness for test execution and accomplishment of test objectives.</p> <p>Specific and/or unique accomplishments to each FY are as follows:</p> <p>FY 2022 Plans:</p> <p>-SEE ABOVE.</p> <p>FY 2023 Plans:</p> <p>-SEE ABOVE.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement:</p> <p>Increase from FY 2022 to FY 2023 provides Aegis BMD participation as aligned in the current IMTP for flight tests previously budgeted for in the Special Programs PE 0603891C.</p>					
<p>Title: Aegis BMD Ground Test Execution</p> <p align="right">Articles:</p> <p>Description: Aegis BMD Ground Test (GT) Program performs comprehensive testing of Aegis BMD Components and their interoperability with the MDS using accredited M&S that provides the evidence required for the MDA and Combatant Commanders to transition the capability to the Operational Capability Baseline. More specifically, ground testing is used to collect data for Aegis BMD characterization and assessment, flight test risk reduction, and exploration of scenarios where flight testing is either impracticable or impossible.</p> <p>Recurring Accomplishments include:</p> <p>-Participate in BMD System GT to include pre-mission analysis, mission execution, and post-mission analysis.</p> <p>-Conduct planning to ensure Aegis Ashore Missile Defense Test Complex (AAMDTC), MDS Test Bed San Diego (BTS), and Lockheed Martin Rotary and Mission Systems (LM-RMS) Computer Program Test Site (CPTS) capabilities support Aegis BMD testing, exercises, flight tests, and demonstration requirements. This includes upgrades to the ground testing labs to ensure compliance with operational and test baselines.</p> <p>-Continue testing of U.S. Navy Command, Control, Communications, Computers Intelligence (C4I) Systems and Aegis BMD baselines to ensure MDS interoperability.</p> <p>-Continue to participate in System Level Ground Testing as an element of the layered MDS to collect data for Aegis BMD characterization and assessment and exploration of scenarios where flight testing is either impracticable or impossible.</p>			14.049 -	18.405 -	23.234 -

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency		Date: April 2022		
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604878C / Aegis BMD Test	Project (Number/Name) MT09 / AEGIS BMD Test		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2021	FY 2022	FY 2023
<div>-Continue operation support of Hardware in the loop (HWIL) M&S for Element ground testing.</div> <div>-Aegis BMD HWIL lab participation align to the IMTP GT schedule and implementation of Future Ground Test Concept of Operations (CONOPS) pathfinders.</div> <div>Specific and/or unique accomplishments to each FY are as follows:</div> <div>FY 2022 Plans:</div> <div>-SEE ABOVE.</div> <div>FY 2023 Plans:</div> <div>-SEE ABOVE.</div> <div>FY 2022 to FY 2023 Increase/Decrease Statement:</div> <div>Increase from FY 2022 to FY 2023 provides Aegis BMD participation as aligned in the current IMTP.</div>				
<div>Title: Aegis BMD Test Resources</div> <div>Articles:</div> <div>Description: This effort provides resources to conduct ground and flight testing to improve confidence in missile defense capabilities under development and ensure the capabilities transferred to the warfighter are operationally effective, suitable, and survivable.</div> <div>Recurring Accomplishments include:</div> <div>- Provide Core Test and Evaluation support for Aegis BMD test and evaluation missions and laboratories, field activities, range support activities, analysis activities, and shipboard and land-based test site test teams.</div> <div>- Provide Test & Evaluation (T&E) infrastructure support for Aegis BMD Test Missions as reflected in the IMTP to collect truth data for post-event analysis.</div> <div>- Exercise tactical communications during testing to ensure interoperability with the MDS and Combatant Command systems.</div> <div>- Continue core test planning for Aegis BMD test missions to include assessment of target requirements, and preparation of the range to ensure all missions are executable and apply to the technical program objectives.</div> <div>- Develop and execute risk-reduction activities to minimize or mitigate shipboard and missile test and programs risks.</div> <div>- Develop and execute data collection plans and supporting instrumentation requirements.</div> <div>Specific and/or unique accomplishments to each FY are as follows:</div> <div>FY 2022 Plans:</div> <div>-SEE ABOVE.</div> <div>FY 2023 Plans:</div>		18.705 -	10.460 -	19.539 -

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency			Date: April 2022		
Appropriation/Budget Activity 0400 / 4		R-1 Program Element (Number/Name) PE 0604878C / <i>Aegis BMD Test</i>		Project (Number/Name) MT09 / <i>AEGIS BMD Test</i>	
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)			FY 2021	FY 2022	FY 2023
-SEE ABOVE.					
FY 2022 to FY 2023 Increase/Decrease Statement: Increase from FY 2022 to FY 2023 provides early pre-mission analysis and site preparation for Aegis BMD test infrastructure.					
Title: Engineering & Analysis			8.979	5.927	5.695
Articles:			-	-	-
Description: Engineering & Analysis Description: The Engineering and Analysis effort provides essential MDS ground and flight test event planning, execution, and evaluation activities for each test event. Recurring Accomplishments: <ul style="list-style-type: none"> - Design test architecture, define test objectives and evaluation criteria, define target requirements, and generate ground and flight test scenarios appropriate to the data collection requirements to assess MDS performance and anchor M&S. - Coordinate with Operational Test Agency (OTA) to address, coordinate, and disposition test issues to achieve closure through recommended action plans. - Deliver HWIL M&S integration test cases. - Conduct HWIL M&S integration benchmarking, and integrate the MDS HWIL M&S framework with MDA and non-MDA Elements into the test event MDS architecture. - Integrate, test, and deliver end-to-end MDS simulations supporting ground test missions. - Analyze System-level interoperability. - Conduct modeling and technical analysis for Combatant Command wargames and exercises. - Utilize M&S for pre-test assessment, post-test review, and M&S updates. - Provide test configuration management; risk assessments; and anomaly/deficiency review, assessment and closure. - Analyze test results to identify verification and validation data collection shortfalls and reassign objectives to future test events as required. - Document MDS test observations for system-level test anomalies and coordinate the resulting MDS Discrepancy Reports within the Failure Reporting, Analysis, and Corrective Action System (FRACAS) - Provide the Quick Look Brief, Mission Data Review (MDR), and Executive MDR. - Provide long-range MDS IMTP planning and integration strategies related to overarching MDS analysis product integration. - Upgrade test analysis tools to enhance analysis capability and efficiency. - Populate the Modular Analysis and Reporting Suite (MARS) database with data from the most recently completed tests to support as-built analysis and capability assessments. - Provide engineering analysis process software, to include System Coordination and Observation Reporting Environment (SCORE), Software Change Analysis Review Environment (SCARE), File Manager (FileMan), and ManPower Loading (MPL). Specific and/or unique accomplishments to each FY are as follows:					
FY 2022 Plans:					

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency								Date: April 2022			
Appropriation/Budget Activity 0400 / 4				R-1 Program Element (Number/Name) PE 0604878C / <i>Aegis BMD Test</i>				Project (Number/Name) MT09 / <i>AEGIS BMD Test</i>			

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023
-SEE ABOVE.			
FY 2023 Plans: -SEE ABOVE.			
FY 2022 to FY 2023 Increase/Decrease Statement: N/A			
Title: Test Program Operations <div style="text-align: right;">Articles:</div> Description: This activity funds the Government and contractor workforce that manage the overall Aegis Ballistic Missile Defense (BMD) program and enables the program to develop, build, and test standard missiles and the associated Aegis Weapon Systems. This project includes all operations support for the Aegis program office related to Engineering and Testing. FY 2022 Plans: -SEE ABOVE. FY 2023 Plans: -SEE ABOVE. FY 2022 to FY 2023 Increase/Decrease Statement: N/A	5.901 -	5.853 -	6.346 -
Accomplishments/Planned Programs Subtotals	64.693	106.147	176.139

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• 0603892C: <i>AEGIS BMD</i>	861.809	639.549	600.072	-	600.072	658.798	574.014	570.018	580.496	Continuing	Continuing
• 0604880C: <i>Land Based SM-3 (LBSM3)</i>	52.804	43.158	27.678	-	27.678	26.896	26.021	26.842	27.385	Continuing	Continuing
Remarks											
D. Acquisition Strategy N/A											

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0604878C / Aegis BMD Test				Project (Number/Name) MT09 / AEGIS BMD Test					
Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Aegis BMD Flight Test Execution - Aegis BMD 5.x Development - MD09	MIPR	NSWC/DD : Dahlgren VA	2.179	0.000		0.000		0.000		-		0.000	0.000	2.179	0.000
Aegis BMD Flight Test Execution - Aegis BMD 5.x Development - MD09 - 2	SS/CPAF	Lockheed Martin : Moorestown NJ	7.752	0.000		0.000		0.000		-		0.000	0.000	7.752	0.000
Aegis BMD Flight Test Execution - Aegis BMD 5.x Development - MD09 - Various	MIPR	Various : MA, MD, VA, NJ	1.005	0.000		0.000		0.000		-		0.000	0.000	1.005	0.000
Aegis BMD Flight Test Execution - Aegis BMD Flight Test Execution	MIPR	Various - DT : HI,VA,CA,MA,NC	3.747	0.000		0.000		0.000		-		0.000	0.000	3.747	0.000
Aegis BMD Flight Test Execution - Aegis BMD Flight Test Execution - Flight Test Execution - ARMY- SMDC	MIPR	Army : SMDC	3.056	0.000		0.000		0.000		-		0.000	0.000	3.056	0.000
Aegis BMD Flight Test Execution - Aegis BMD Flight Test Execution - Flight Test Execution - DOT MARAD	MIPR	DOT : MARAD	13.193	0.000		5.500	Dec 2021	6.100	Jan 2023	-		6.100	Continuing	Continuing	Continuing
Aegis BMD Flight Test Execution - Aegis BMD Flight Test Execution - Flight Test Execution - MT09 - SECOTEC	SS/CPFF	SECOTEC : Huntsville AL	2.887	0.000		0.000		0.000		-		0.000	0.000	2.887	0.000
Aegis BMD Flight Test Execution - Aegis BMD Flight Test Execution - MT09 - CPF	MIPR	COMPACTFLT : HI	6.333	0.000		2.004	Dec 2021	2.560	Jan 2023	-		2.560	Continuing	Continuing	Continuing
Aegis BMD Flight Test Execution - Aegis BMD Flight Test Execution - MT09 - Corvid	SS/CPFF	Corvid : NC	6.626	0.000		0.180	Dec 2021	0.680	Dec 2022	-		0.680	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0604878C / Aegis BMD Test				Project (Number/Name) MT09 / AEGIS BMD Test					
Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Aegis BMD Flight Test Execution - Aegis BMD Flight Test Execution - MT09 -JHU/APL	SS/CPFF	JHU/APL : Columbia MD	25.806	4.193	Dec 2020	8.000	Feb 2022	11.000	Feb 2023	-		11.000	Continuing	Continuing	Continuing
Aegis BMD Flight Test Execution - Aegis BMD Flight Test Execution - MT09- Corona	MIPR	NSWC Corona : CA	18.885	2.896	Dec 2020	7.520	Dec 2021	8.520	Jan 2023	-		8.520	Continuing	Continuing	Continuing
Aegis BMD Flight Test Execution - Aegis BMD Flight Test Execution - MT09-DMEA	MIPR	DMEA : McClellan, CA	1.819	0.000		0.840	Dec 2021	1.040	Dec 2022	-		1.040	0.000	3.699	0.000
Aegis BMD Flight Test Execution - Aegis BMD Flight Test Execution - MT09-L3 Communications	C/CPFF	L3 Communications : Waco, TX	7.989	0.000		2.360	Dec 2021	3.860	Dec 2022	-		3.860	Continuing	Continuing	Continuing
Aegis BMD Flight Test Execution - Aegis BMD Flight Test Execution - MT09-NAWC/AD	MIPR	NAWC/AD-PHX Air : Pax River, MD	10.123	0.000		2.160	Dec 2021	3.860	Dec 2022	-		3.860	Continuing	Continuing	Continuing
Aegis BMD Flight Test Execution - Aegis BMD Flight Test Execution - MT09-NAWC/PM	MIPR	NAWC/PM : Pt. Mugu, CA	16.058	0.000		1.800	Dec 2021	3.100	Dec 2022	-		3.100	Continuing	Continuing	Continuing
Aegis BMD Flight Test Execution - Aegis BMD Flight Test Execution - MT09-NRL	MIPR	Naval Research Lab : Washington, DC	1.145	0.000		0.240	Dec 2021	0.440	Dec 2022	-		0.440	Continuing	Continuing	Continuing
Aegis BMD Flight Test Execution - Aegis BMD Flight Test Execution - MT09-NSWC DD	MIPR	NSWC Dahlgren : Dahlgren, VA	13.299	0.440	Dec 2020	9.000	Dec 2021	14.732	Jan 2023	-		14.732	Continuing	Continuing	Continuing
Aegis BMD Flight Test Execution - Aegis BMD Flight Test Execution - MT09-NSWCCR	MIPR	NSWC Carderock : Potomac, MD	10.142	0.000		0.780	Dec 2021	1.680	Dec 2022	-		1.680	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0604878C / Aegis BMD Test				Project (Number/Name) MT09 / AEGIS BMD Test					
Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Aegis BMD Flight Test Execution - Aegis BMD Flight Test Execution - MT09-PHD	MIPR	NSWC PHD : Pt. Hueneme, CA	21.877	1.766	Dec 2020	5.127	Dec 2021	17.627	Dec 2022	-		17.627	Continuing	Continuing	Continuing
Aegis BMD Flight Test Execution - Aegis BMD Flight Test Execution - MT09-PMRF	MIPR	PMRF Barking Sands : Kauai, HI	36.412	0.000		3.500	Dec 2021	5.500	Dec 2022	-		5.500	Continuing	Continuing	Continuing
Aegis BMD Flight Test Execution - Aegis BMD Flight Test Execution - MT09-SSCPAC	MIPR	SPAWAR : San Diego, CA	7.478	0.325	Dec 2020	2.400	Dec 2021	4.600	Dec 2022	-		4.600	Continuing	Continuing	Continuing
Aegis BMD Flight Test Execution - Aegis BMD Flight Test Execution - MT09-Various	MIPR	Various : HI, VA, CA, MA, NC, NJ, AZ	81.996	5.468	Dec 2020	5.000	Dec 2021	18.629	Dec 2022	-		18.629	Continuing	Continuing	Continuing
Aegis BMD Flight Test Execution - Aegis BMD Flight Test Execution - MT09-Xontech	C/CPFF	Northrop Grumman System Corp : Huntsville, AL	3.161	0.000		0.540	Dec 2021	0.840	Dec 2022	-		0.840	Continuing	Continuing	Continuing
Aegis BMD Flight Test Execution - Flight Test Execution	SS/CPFF	Lockheed Martin : NJ	14.779	0.758	Dec 2020	4.500	Dec 2021	10.612	Dec 2022	-		10.612	0.000	30.649	0.000
Aegis BMD Flight Test Execution - Flight Test Execution - RMS	SS/CPFF	Raytheon : AZ	9.494	1.213	Dec 2020	4.051	Dec 2021	5.945	Dec 2022	-		5.945	0.000	20.703	0.000
Aegis BMD Flight Test Execution - Standard Missile - 3 (SM-3) Block IIA Development - Block IIA Flight Test Support - Various	MIPR	Various : CA, VA, MD	1.100	0.000		0.000		0.000		-		0.000	0.000	1.100	0.000
Aegis BMD Flight Test Execution - Standard Missile - 3 (SM-3) Block IIA Development - MT09 -	SS/CPIF	Raytheon : Tucson AZ	8.017	0.000		0.000		0.000		-		0.000	0.000	8.017	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0604878C / <i>Aegis BMD Test</i>						Project (Number/Name) MT09 / <i>AEGIS BMD Test</i>			
Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
SM-3 BLK IIA Flight Test Support															
Aegis BMD Flight Test Execution - Standard Missile - 3 (SM-3) Block IIA Development - MT09 - SM-3 BLK IIA Flight Test Support - DD	MIPR	NSWC DD : Dahlgren VA	0.500	0.000		0.000		0.000		-		0.000	0.000	0.500	0.000
Aegis BMD Flight Test Execution - Standard Missile - 3 (SM-3) Block IIA Development - MT09 - SM-3 BLK IIA Flight Test Support APL	MIPR	JHU/APL : Laurel MD	1.000	0.000		0.000		0.000		-		0.000	0.000	1.000	0.000
Aegis BMD Ground Test Execution - Aegis BMD Ground Test Execution - Aegis BMD Ground Test Execution - MT09 - NSWCDD	MIPR	NSWC : Dahlgren VA	1.954	1.378	Dec 2020	0.000		0.000		-		0.000	0.000	3.332	0.000
Aegis BMD Ground Test Execution - Aegis BMD Ground Test Execution - Aegis BMD Ground Test Execution - MT09 -Navy	MIPR	PEO : IWS	0.302	0.000		0.000		0.000		-		0.000	0.000	0.302	0.000
Aegis BMD Ground Test Execution - Aegis BMD Ground Test Execution - MT09 - CORONA	MIPR	NSWC Corona : CA	5.561	0.448	Dec 2020	0.730	Dec 2021	1.015	Dec 2022	-		1.015	Continuing	Continuing	Continuing
Aegis BMD Ground Test Execution - Aegis BMD Ground Test Execution - MT09 - JHU/APL MDA	SS/CPFF	JHU/APL : MDA	9.035	1.519	Dec 2020	3.211	Dec 2021	3.401	Dec 2022	-		3.401	Continuing	Continuing	Continuing
Aegis BMD Ground Test Execution - Aegis BMD Ground Test Execution - MT09 - LM	SS/CPFF	Lockheed Martin : Moorestown, NJ	33.276	5.232	Dec 2020	5.900	Dec 2021	9.171	Dec 2022	-		9.171	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0604878C / Aegis BMD Test				Project (Number/Name) MT09 / AEGIS BMD Test					
Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Aegis BMD Ground Test Execution - Aegis BMD Ground Test Execution - MT09 - PHD	MIPR	NSWC PHD : Pt. Hueneme, CA	7.308	1.608	Dec 2020	1.800	Dec 2021	1.900	Dec 2022	-		1.900	Continuing	Continuing	Continuing
Aegis BMD Ground Test Execution - Aegis BMD Ground Test Execution - MT09 - SSCPAC	MIPR	SPAWAR : San Diego, CA	28.451	3.864	Dec 2020	6.764	Dec 2021	7.747	Dec 2022	-		7.747	Continuing	Continuing	Continuing
Aegis BMD Test Resources - Aegis BMD Test Resources - DT - Various	MIPR	Various : HI, VA, CA, MA, MD	0.587	0.559	Dec 2020	0.000		0.000		-		0.000	0.000	1.146	0.000
Aegis BMD Test Resources - Aegis BMD Test Resources - MT09 - APL	SS/CPFF	JHU/APL : Columbia MD	36.648	0.833	Dec 2020	1.000	Dec 2021	1.100	Dec 2022	-		1.100	Continuing	Continuing	Continuing
Aegis BMD Test Resources - Aegis BMD Test Resources - MT09 - Aegis	MIPR	Aegis BMD : VA	2.371	0.000		0.000		0.000		-		0.000	0.000	2.371	0.000
Aegis BMD Test Resources - Aegis BMD Test Resources - MT09 - CORONA	MIPR	NSWC Corona : CA	25.033	4.760	Dec 2020	4.500	Dec 2021	5.500	Dec 2022	-		5.500	Continuing	Continuing	Continuing
Aegis BMD Test Resources - Aegis BMD Test Resources - MT09 - NAWC/PM	MIPR	NAWC/PM : Pt. Mugu, CA	3.545	0.734	Dec 2020	1.000	Dec 2021	1.000	Dec 2022	-		1.000	Continuing	Continuing	Continuing
Aegis BMD Test Resources - Aegis BMD Test Resources - MT09 - NSWCDD	MIPR	NSWC Dahlgren : Dahlgren, VA	16.989	3.079	Dec 2020	0.928	Dec 2021	3.128	Dec 2022	-		3.128	Continuing	Continuing	Continuing
Aegis BMD Test Resources - Aegis BMD Test Resources - MT09 - PHD	MIPR	NSWC PHD : Pt. Hueneme, CA	28.118	4.820	Dec 2020	2.000	Dec 2021	3.524	Dec 2022	-		3.524	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0604878C / Aegis BMD Test					Project (Number/Name) MT09 / AEGIS BMD Test				
Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Aegis BMD Test Resources - Aegis BMD Test Resources - MT09 - PMRF	MIPR	PMRF Barking Sands : Kauai, HI	3.266	0.000		0.000		0.000		-		0.000	0.000	3.266	0.000
Aegis BMD Test Resources - Aegis BMD Test Resources - MT09 - SSCPAC	MIPR	SPAWAR : San Diego, CA	10.121	1.915	Dec 2020	0.100	Dec 2021	2.200	Dec 2022	-		2.200	Continuing	Continuing	Continuing
Aegis BMD Test Resources - Aegis BMD Test Resources - MT09 - Various	MIPR	Various : HI, VA, CA, MA, MD	23.198	2.005	Dec 2020	0.932	Dec 2021	3.087	Dec 2022	-		3.087	Continuing	Continuing	Continuing
Engineering & Analysis - Engineering & Analysis	TBD	Teledyne Brown Engineering : Huntsville ,AL	4.500	0.660	Nov 2020	1.672	Nov 2021	1.700	Nov 2022	-		1.700	Continuing	Continuing	Continuing
Engineering & Analysis - Engineering & Analysis - Engineering & Analysis - Engineering Support	C/CPAF	Northrop Grumman : AL, CO	8.201	0.000		0.000		0.000		-		0.000	0.000	8.201	0.000
Engineering & Analysis - Engineering & Analysis - Engineering & Analysis - FFRDC/UARC	MIPR	Various : AL, CO, VA	17.029	0.000		0.000		0.000		-		0.000	0.000	17.029	0.000
Engineering & Analysis - Engineering & Analysis - Engineering & Analysis - Industry	C/CPAF	Boeing : AL	3.696	0.638	Nov 2020	0.000		0.000		-		0.000	0.000	4.334	0.000
Engineering & Analysis - Engineering & Analysis - Engineering & Analysis - OGA	MIPR	CCDC : AL	28.360	1.948	Nov 2020	1.442	Nov 2021	0.624	Nov 2022	-		0.624	Continuing	Continuing	Continuing
Engineering & Analysis - Engineering & Analysis - NME	MIPR	CCDC : CO, AL	5.887	4.780	Nov 2020	0.250	Nov 2021	1.587	Nov 2022	-		1.587	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency										Date: April 2022					
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0604878C / Aegis BMD Test				Project (Number/Name) MT09 / AEGIS BMD Test					
Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Engineering & Analysis - Engineering & Analysis NME Support	MIPR	SPAWAR : CA	2.876	0.000		0.000		0.000		-		0.000	0.000	2.876	0.000
Engineering & Analysis - Engineering & Analysis-Various	MIPR	GTRI : Huntsville, AL	1.529	0.953	Nov 2020	2.563	Nov 2021	1.784	Nov 2022	-		1.784	Continuing	Continuing	Continuing
Test Program Operations - Program Operations - MT09 - Civ Salary	Allot	MDA : Dahlgren, VA	0.000	0.000		1.551	Dec 2021	1.613	Dec 2022	-		1.613	Continuing	Continuing	Continuing
Test Program Operations - Program Operations - MT09 - MDA Travel	Allot	MDA : Dahlgren, VA	1.314	0.615	Dec 2020	0.353	Dec 2021	0.667	Dec 2022	-		0.667	Continuing	Continuing	Continuing
Test Program Operations - Program Operations - MT09 - NAVSEA Civ Sal	MIPR	NAVSEA : Washington DC	1.170	0.540	Dec 2020	0.540	Dec 2021	0.545	Dec 2022	-		0.545	Continuing	Continuing	Continuing
Test Program Operations - Program Operations - MT09 - TEAMS	MIPR	Various : Various	3.946	2.540	Dec 2020	3.409	Dec 2021	3.521	Dec 2022	-		3.521	Continuing	Continuing	Continuing
Subtotal			652.129	62.487		106.147		176.139		-		176.139	Continuing	Continuing	N/A
Remarks N/A															
Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Test Program Operations - Program Operations - MT09 - MIDAESS	C/CPFF	Various : Various	9.024	2.206	Dec 2020	0.000		0.000		-		0.000	0.000	11.230	0.000
Subtotal			9.024	2.206		0.000		0.000		-		0.000	0.000	11.230	N/A
Remarks N/A															

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency											Date: April 2022				
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0604878C / Aegis BMD Test				Project (Number/Name) MT09 / AEGIS BMD Test						
			Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			661.153	64.693		106.147		176.139		-		176.139	Continuing	Continuing	N/A

Remarks

Award Date reflects date of first obligation. Additional obligations may incrementally occur throughout the year.

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Missile Defense Agency										Date: April 2022																				
Appropriation/Budget Activity					R-1 Program Element (Number/Name)					Project (Number/Name)																				
0400 / 4					PE 0604878C / Aegis BMD Test					MT09 / AEGIS BMD Test																				
Significant Event Complete ▲		Milestone Decision Complete ★		Element Test Complete ◆		System Level Test Complete ●		Complete Activity ◆																						
Significant Event Planned △		Milestone Decision Planned ☆		Element Test Planned ◇		System Level Test Planned ○		Planned Activity ◇																						
					FY 2021		FY 2022		FY 2023		FY 2024		FY 2025		FY 2026		FY 2027													
FTM-44 (AEGIS 5.1, DT Intercept Flight Test)					▲																									
FS-21 E1 (AEGIS 5.1, DT Interceptor Only Flight Test)							▲																							
GTI-ISR (21) (MDS Ground Test)									◆																					
FTX-26 (OT) (SN, OT Target Only Flight Test)											△																			
GTI-09 Sprint 1 (E/C) (MDS Ground Test)											◇																			
PACIFIC DRAGON-22 E1 (AEGIS 5.0, DT/OT Intercept Flight Test)											△																			
PACIFIC DRAGON-22 E2 (AEGIS 5.0, DT/OT Tracking Exercise Flight Test)											△																			
PACIFIC DRAGON-22 E3 (AEGIS 5.0, DT/OT Tracking Exercise Flight Test)											△																			
GTD-08a (N/I) (MDS Ground Test)											◇																			
JFTM-07 E4 (JAPAN, DT Intercept Flight Test)											△																			
GTD-07b (Aegis Ashore)											◇																			
GTI-09 Sprint 2 (E/C) (MDS Ground Test)											◇																			
FTX-40 (AEGIS 5.1, DT Tracking Exercise Flight Test)											△																			
FTM-31 E1a (AEGIS SBT, DT/OT Intercept Flight Test)											◇																			
GTI-ISR (23) (MDS Ground Test)													◇																	
FTG-12 (GM, DT/OT Intercept Flight Test)													△																	
GTI-08b (N/I)													◇																	
FTM-32 (AEGIS SBT, DT/OT Intercept Flight Test)													△																	
GTI-ASI (24) (MDS Ground Test)													◇																	
FTX-23 (AEGIS 5.1, DT Tracking Exercise Flight Test)													△																	
FTM-43 (AEGIS 5.1, DT/OT Intercept Flight Test)													△																	
FTM-37 (AEGIS 5.1, DT/OT Intercept Flight Test)															△															
PACIFIC DRAGON-24 E1 (Aegis 5.0, DT/OT Tracking Exercise Flight Test)															△															
PACIFIC DRAGON-24 E2 (Aegis 5.0, DT/OT Intercept Flight Test)															△															

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Missile Defense Agency										Date: April 2022									
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0604878C / Aegis BMD Test					Project (Number/Name) MT09 / AEGIS BMD Test									
Significant Event Complete ▲ Significant Event Planned △		Milestone Decision Complete ★ Milestone Decision Planned ☆		Element Test Complete ◆ Element Test Planned ◇		System Level Test Complete ● System Level Test Planned ○			Complete Activity ◆ Planned Activity ◇										
					FY 2021		FY 2022		FY 2023		FY 2024		FY 2025		FY 2026		FY 2027		
PACIFIC DRAGON-24 E3 (Aegis 5.0, DT/OT Simulated Engagement)													△						
GTI-13 Sprint 1 (N/I) (MDS Ground Test)													◇						
GTI-ISR (25) (MDS Ground Test)														◇					
GTI-12 Sprint 1 (E/C) (MDS Ground Test)															◇				
GTI-13 Sprint 2 (N/I) (MDS Ground Test)															◇				
FS-25 E-1(AEGIS 5.1, DT/OT Tracking Exercise Flight Test)															◇				
FS-25 E-2(AEGIS 5.1, DT/OT Intercept Flight Test)															◇				
FTM-30 (AEGIS 5.1, DT/OT Intercept Flight Test)																△			
GTD-13 (N/I) (MDS Ground Test)															◇				
GTI-10 (E/C) (MDS Ground Test)																◇			
GTI-12 Sprint 2 (E/C) (MDS Ground Test)																◇			
GTD-10 (E/C) (MDS Ground Test)																	◇		
GTD-12 (E/C) (MDS Ground Test)																	◇		
GTI-ASI (26) (MDS Ground Test)																	◇		
FTM-40 (AEGIS 5.1, DT/OT Intercept Flight Test)																	△		
PACIFIC DRAGON-26 E1 (Aegis 5.0, DT/OT Tracking Exercise Flight Test)																	△		
PACIFIC DRAGON-26 E2 (Aegis 5.0, DT/OT Intercept Flight Test)																	△		
PACIFIC DRAGON-26 E3 (Aegis 5.0, DT/OT Simulated Engagement)																	△		
FTM-41 (AEGIS 5.1, DT/OT Intercept Flight Test)																		△	
GTI-15 Sprint 1 (E/C) (MDS Ground Test)																		◇	
GTI-ISR (27) (MDS Ground Test)																		◇	
FTM-42 (AEGIS 5.1, DT/OT Intercept Flight Test)																		△	

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Missile Defense Agency			Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604878C / <i>Aegis BMD Test</i>	Project (Number/Name) MT09 / <i>AEGIS BMD Test</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
FTM-44 (AEGIS 5.1, DT Intercept Flight Test)	1	2021	1	2021
FS-21 E1 (AEGIS 5.1, DT Interceptor Only Flight Test)	3	2021	3	2021
GTI-ISR (21) (MDS Ground Test)	1	2022	1	2022
FTX-26 (OT) (SN, OT Target Only Flight Test)	4	2022	4	2022
GTI-09 Sprint 1 (E/C) (MDS Ground Test)	4	2022	4	2022
PACIFIC DRAGON-22 E1 (AEGIS 5.0, DT/OT Intercept Flight Test)	4	2022	4	2022
PACIFIC DRAGON-22 E2 (AEGIS 5.0, DT/OT Tracking Exercise Flight Test)	4	2022	4	2022
PACIFIC DRAGON-22 E3 (AEGIS 5.0, DT/OT Tracking Exercise Flight Test)	4	2022	4	2022
GTD-08a (N/I) (MDS Ground Test)	1	2023	1	2023
JFTM-07 E4 (JAPAN, DT Intercept Flight Test)	1	2023	1	2023
GTD-07b (Aegis Ashore)	1	2023	1	2023
GTI-09 Sprint 2 (E/C) (MDS Ground Test)	2	2023	2	2023
FTX-40 (AEGIS 5.1, DT Tracking Exercise Flight Test)	2	2023	2	2023
FTM-31 E1a (AEGIS SBT, DT/OT Intercept Flight Test)	2	2023	2	2023
GTI-ISR (23) (MDS Ground Test)	4	2023	4	2023
FTG-12 (GM, DT/OT Intercept Flight Test)	4	2023	4	2023
GTI-08b (N/I)	4	2023	4	2023
FTM-32 (AEGIS SBT, DT/OT Intercept Flight Test)	1	2024	1	2024
GTI-ASI (24) (MDS Ground Test)	2	2024	2	2024
FTX-23 (AEGIS 5.1, DT Tracking Exercise Flight Test)	2	2024	2	2024
FTM-43 (AEGIS 5.1, DT/OT Intercept Flight Test)	2	2024	2	2024
FTM-37 (AEGIS 5.1, DT/OT Intercept Flight Test)	3	2024	3	2024
PACIFIC DRAGON-24 E1 (Aegis 5.0, DT/OT Tracking Exercise Flight Test)	4	2024	4	2024

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Missile Defense Agency			Date: April 2022	
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604878C / Aegis BMD Test		Project (Number/Name) MT09 / AEGIS BMD Test	
Events	Start		End	
	Quarter	Year	Quarter	Year
PACIFIC DRAGON-24 E2 (Aegis 5.0, DT/OT Intercept Flight Test)	4	2024	4	2024
PACIFIC DRAGON-24 E3 (Aegis 5.0, DT/OT Simulated Engagement)	4	2024	4	2024
GTI-13 Sprint 1 (N/I) (MDS Ground Test)	1	2025	1	2025
GTI-ISR (25) (MDS Ground Test)	2	2025	2	2025
GTI-12 Sprint 1 (E/C) (MDS Ground Test)	3	2025	3	2025
GTI-13 Sprint 2 (N/I) (MDS Ground Test)	3	2025	3	2025
FS-25 E-1(AEGIS 5.1, DT/OT Tracking Exercise Flight Test)	3	2025	3	2025
FS-25 E-2(AEGIS 5.1, DT/OT Intercept Flight Test)	3	2025	3	2025
FTM-30 (AEGIS 5.1, DT/OT Intercept Flight Test)	4	2025	4	2025
GTD-13 (N/I) (MDS Ground Test)	4	2025	4	2025
GTI-10 (E/C) (MDS Ground Test)	1	2026	1	2026
GTI-12 Sprint 2 (E/C) (MDS Ground Test)	1	2026	1	2026
GTD-10 (E/C) (MDS Ground Test)	2	2026	2	2026
GTD-12 (E/C) (MDS Ground Test)	2	2026	2	2026
GTI-ASI (26) (MDS Ground Test)	3	2026	3	2026
FTM-40 (AEGIS 5.1, DT/OT Intercept Flight Test)	3	2026	3	2026
PACIFIC DRAGON-26 E1 (Aegis 5.0, DT/OT Tracking Exercise Flight Test)	4	2026	4	2026
PACIFIC DRAGON-26 E2 (Aegis 5.0, DT/OT Intercept Flight Test)	4	2026	4	2026
PACIFIC DRAGON-26 E3 (Aegis 5.0, DT/OT Simulated Engagement)	4	2026	4	2026
FTM-41 (AEGIS 5.1, DT/OT Intercept Flight Test)	1	2027	1	2027
GTI-15 Sprint 1 (E/C) (MDS Ground Test)	3	2027	3	2027
GTI-ISR (27) (MDS Ground Test)	4	2027	4	2027
FTM-42 (AEGIS 5.1, DT/OT Intercept Flight Test)	4	2027	4	2027

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency										Date: April 2022		
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0604878C / Aegis BMD Test				Project (Number/Name) MD40 / Program Wide Support			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
MD40: Program Wide Support	24.649	6.788	5.059	6.637	-	6.637	5.990	5.053	7.265	6.332	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Program Wide Support (PWS) is allocated on a pro-rata basis across multiple Agency PEs each fiscal year based on the total Agency budget, and therefore fluctuates per PE by fiscal year.

A. Mission Description and Budget Item Justification

PWS contains non-headquarters management costs in support of MDA functions and activities across the entire MDS. These functions include Government Civilians and Contract Support Services. This effort provides integrity and oversight of the MDS as well as supports MDA in the development and evaluation of technologies that will respond to the changing threat. Additionally, PWS includes personnel to support global deployments performing deployment site preparation and activation, and provides facility capabilities for MDA Executing Agent locations worldwide. Other MDA wide costs include: physical and technical security; civilian drug testing; audit readiness; the Science, Technology, Engineering, and Mathematics (STEM) program; legal services and settlements; travel and agency training; office, equipment, vehicle, and warehouse leases; utilities and base operations across multiple geographic locations; commercial and ancillary facility services; management of all facility aspects regardless of lifecycle stage; supplies and maintenance; compliance with statutory environmental requirements; data and unified communications support; materiel and readiness and central property management of equipment; Facilities Sustainment, Restoration and Modernization (FSRM) program (formerly Real Property Maintenance) to keep the Department's inventory of facilities in good working order; and similar operating expenses. PWS is allocated on a pro-rata basis across most Agency PEs and therefore fluctuates per PE by fiscal year based on the total Agency budget in that fiscal year.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2021	FY 2022	FY 2023
Title: Program Wide Support	6.788	5.059	6.637
Articles:	-	-	-
Description: PWS contains non-headquarters management costs in support of MDA functions and activities across the entire MDS. These functions include Government Civilians and Contract Support Services. This effort provides integrity and oversight of the MDS as well as supports MDA in the development and evaluation of technologies that will respond to the changing threat. Additionally, PWS includes personnel to support global deployments performing deployment site preparation and activation, and provides facility capabilities for MDA Executing Agent locations worldwide. Other MDA wide costs include: physical and technical security; civilian drug testing; audit readiness; the STEM program; legal services and settlements; travel and agency training; office, equipment, vehicle, and warehouse leases; utilities and base operations across multiple geographic locations; commercial and ancillary facility services; management of all facility aspects regardless of lifecycle stage; supplies and maintenance; compliance with statutory environmental requirements; data and unified communications support; materiel and readiness and central property management of equipment; the FSRM program (formerly Real Property Maintenance) to keep the Department's			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency		Date: April 2022	
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604878C / <i>Aegis BMD Test</i>	Project (Number/Name) MD40 / <i>Program Wide Support</i>	
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2021	FY 2022
inventory of facilities in good working order; and similar operating expenses. PWS is allocated on a pro-rata basis across most Agency PEs and therefore fluctuates per PE by fiscal year based on the total Agency budget in that fiscal year.			
FY 2022 Plans: - SEE ABOVE.			
FY 2023 Plans: - SEE ABOVE.			
FY 2022 to FY 2023 Increase/Decrease Statement: Increase from FY 2022 to FY 2023 provides the PWS allocation on a pro-rata basis across multiple Agency PEs each fiscal year based on the total Agency budget, and therefore fluctuates per PE by fiscal year.			
Accomplishments/Planned Programs Subtotals		6.788	5.059
C. Other Program Funding Summary (\$ in Millions)			
N/A			
Remarks			
D. Acquisition Strategy			
N/A			

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0604878C / Aegis BMD Test				Project (Number/Name) MD40 / Program Wide Support					
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Wide Support - Agency Operations Management	MIPR	DOD - DEFENSE COURIER DIVISION (DCD) : VA	0.783	0.150	Jul 2021	0.175	Jan 2022	0.170	Dec 2022	-		0.170	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations User Services	C/CPAF	Various : Multi: AL, CA, CO, VA	0.324	0.000		0.000		0.000		-		0.000	0.000	0.324	0.000
Program Wide Support - Agency Operations and Support Civilian Salaries, Travel, Training	Allot	Various : MDA Multi: AL, CO, CA, VA,	10.761	0.000		0.000		0.000		-		0.000	0.000	10.761	0.000
Program Wide Support - Agency Operations and Support Other Agency Services (FFP)	C/CPFF	Veterans Technology, LLC : AL	12.726	6.035	Apr 2021	4.274	Feb 2022	5.829	Dec 2022	-		5.829	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations and Support Other Agency Services (MIPR)	MIPR	DOD - DEFENSE LOGISTICS AGENCY (DLA) : VA	0.055	0.603	Oct 2020	0.610	Oct 2021	0.638	Nov 2022	-		0.638	Continuing	Continuing	Continuing
Subtotal			24.649	6.788		5.059		6.637		-		6.637	Continuing	Continuing	N/A
Remarks N/A															
			Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			24.649	6.788		5.059		6.637		-		6.637	Continuing	Continuing	N/A
Remarks Award Date reflects date of first obligation. Additional obligations may incrementally occur throughout the year.															

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Missile Defense Agency														Date: April 2022															
Appropriation/Budget Activity 0400 / 4										R-1 Program Element (Number/Name) PE 0604878C / Aegis BMD Test										Project (Number/Name) MD40 / Program Wide Support									
Significant Event Complete ▲					Milestone Decision Complete ★					Element Test Complete ◆					System Level Test Complete ●					Complete Activity ◆									
Significant Event Planned △					Milestone Decision Planned ☆					Element Test Planned ◇					System Level Test Planned ○					Planned Activity ◇									
										FY 2021		FY 2022		FY 2023		FY 2024		FY 2025		FY 2026		FY 2027							
MD40 Program-Wide Support										◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇					

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Missile Defense Agency			Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604878C / Aegis BMD Test	Project (Number/Name) MD40 / Program Wide Support	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
MD40 Program-Wide Support	1	2021	4	2027

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Missile Defense Agency	Date: April 2022
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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 0604879C I <i>Ballistic Missile Defense Sensor Test</i>
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COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
Total Program Element	469.778	64.245	77.428	88.326	-	88.326	91.495	98.146	103.010	145.810	Continuing	Continuing
MT11: <i>BMDs Radars Test</i>	448.632	61.208	74.272	85.119	-	85.119	88.275	95.133	99.441	141.243	Continuing	Continuing
MD40: <i>Program Wide Support</i>	21.146	3.037	3.156	3.207	-	3.207	3.220	3.013	3.569	4.567	Continuing	Continuing

Program MDAP/MAIS Code: 362

Note

Increase from FY 2022 to FY 2023 is in accordance with the current Integrated Master Test Plan (IMTP).

A. Mission Description and Budget Item Justification

The Missile Defense Agency executes a robust test program that includes flight and ground tests to support both strategic and regional Missile Defense System (MDS) capabilities against medium- and long-range threats. The Sensors elements of the MDS Integrated Master Test Plan are intended to demonstrate the integrated missile defense capabilities under development to ensure the capabilities delivered to the Warfighter are operationally effective, suitable, and survivable. The Sensors Test Program Element specifically includes the planning, execution, and analysis of flight and ground tests, as well as the associated infrastructure to provide data required for Missile Defense technical Capability Declarations.

The Sensors Test program supports integration of radar improvements into the MDS, mid and far-term Discrimination Improvements, and Operational Test and Evaluation of the theater/regional and strategic MDS architecture.

<u>B. Program Change Summary (\$ in Millions)</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023 Base</u>	<u>FY 2023 OCO</u>	<u>FY 2023 Total</u>
Previous President's Budget	64.245	77.428	0.000	-	0.000
Current President's Budget	64.245	77.428	88.326	-	88.326
Total Adjustments	0.000	0.000	88.326	-	88.326
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Missile Defeat and Defense Enhancement	0.000	0.000	0.000	-	0.000
• Other Adjustment	0.000	0.000	88.326	-	88.326

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Missile Defense Agency		Date: April 2022
Appropriation/Budget Activity 0400: Research, Development, Test & Evaluation, Defense-Wide / BA 4: Advanced Component Development & Prototypes (ACD&P)		R-1 Program Element (Number/Name) PE 0604879C / Ballistic Missile Defense Sensor Test
<div>Change Summary Explanation</div> <div>FY 2023 funding increase reflects the fact that the FY 2022 President's Budget request did not include out-year funding.</div>		

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency										Date: April 2022		
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0604879C / Ballistic Missile Defense Sensor Test				Project (Number/Name) MT11 / BMDS Radars Test			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
MT11: BMDS Radars Test	448.632	61.208	74.272	85.119	-	85.119	88.275	95.133	99.441	141.243	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
Note Increase from FY 2022 to FY 2023 is in accordance with the current Integrated Master Test Plan (IMTP).												
A. Mission Description and Budget Item Justification This project provides activities for planning, analysis, and execution of Missile Defense System (MDS) flight test events, including pre- and post-test ground testing such as Digital and Hardware-in-the-Loop (HWIL) System Pre-Mission Tests (SPMTs) and System Post-Flight Reconstruction (SPFR). Sensors Test provides planning, analysis, and execution in accordance with the Ground Test Concept of Operations (CONOPS) supporting the Ground Test level of effort concept for MDS system level ground tests identified in the IMTP. Test infrastructure funding provides for HWIL labs, Mission Operation Center/Mission Support Center (MOC/MSC), and program management required to operate and maintain a flight and ground test capability.												
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)									FY 2021	FY 2022	FY 2023	
Title: Test Resources									50.655	65.569	72.075	
Articles:									-	-	-	
Description: Test Resources efforts include configuration and maintenance of Sensors HWILs for use in ground test execution (MDS testing and element interoperability developmental testing) and in MDS flight test execution pre-mission testing, and technical oversight to all MDS system level activities with Sensors participation. It also includes conducting the detailed test event planning and design, integration, and execution for all MDS ground test campaigns. Test Resources provides support for evolving Objective Simulation Framework (OSF) (software upgrades) integration into the MDS HWIL ground test execution and flight test execution. Beginning in FY 2021, it also provides a Level of Effort support to MDS Ground Tests in accordance with the MDS Integrated Master Test Plan (IMTP) and the new Ground Test CONOPS.												
Specific and/or unique accomplishments to each FY are as follows:												
FY 2022 Plans: - SEE ABOVE												
FY 2023 Plans: - SEE ABOVE												
FY 2022 to FY 2023 Increase/Decrease Statement:												

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency									Date: April 2022		
Appropriation/Budget Activity 0400 / 4				R-1 Program Element (Number/Name) PE 0604879C / Ballistic Missile Defense Sensor Test				Project (Number/Name) MT11 / BMDS Radars Test			
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)									FY 2021	FY 2022	FY 2023
Increase from FY 2022 to FY 2023 is in accordance with the current IMTP.											
Title: Flight Test Execution				Articles:					10.553	8.703	13.044
									-	-	-
Description: Flight Test Execution includes test planning, pre-flight analysis, transportation of radars and MOC/MSC, test execution, and post-flight analysis for Sensors' participation in MDS flight tests in accordance with the MDS IMTP.											
Specific and/or unique accomplishments to each FY are as follows:											
FY 2022 Plans: - SEE ABOVE											
FY 2023 Plans: - SEE ABOVE											
FY 2022 to FY 2023 Increase/Decrease Statement: Increase from FY 2022 to FY 2023 is in accordance with the current IMTP.											
Accomplishments/Planned Programs Subtotals									61.208	74.272	85.119
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• 0603884C: Ballistic Missile Defense Sensors	259.605	254.962	231.134	-	231.134	250.028	274.705	276.254	257.575	Continuing	Continuing
• 0603896C: Ballistic Missile Defense Command and Control, Battle Management & Communication	639.027	564.946	589.374	-	589.374	575.883	588.824	612.853	605.801	Continuing	Continuing
• 0603898C: Ballistic Missile Defense Joint Warfighter Support	49.261	50.594	50.269	-	50.269	51.849	55.960	56.488	54.980	Continuing	Continuing
• 0603904C: Missile Defense Integration and Operations Center (MDIOC)	54.026	52.403	49.367	-	49.367	51.744	56.502	57.833	59.006	Continuing	Continuing
• 0603907C: Sea Based X-Band Radar (SBX)	120.063	147.241	164.668	-	164.668	174.934	215.367	198.956	179.622	Continuing	Continuing

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency										Date: April 2022	
Appropriation/Budget Activity 0400 / 4				R-1 Program Element (Number/Name) PE 0604879C / <i>Ballistic Missile Defense Sensor Test</i>				Project (Number/Name) MT11 / <i>BMDs Radars Test</i>			
C. Other Program Funding Summary (\$ in Millions)											
			<u>FY 2023</u>	<u>FY 2023</u>	<u>FY 2023</u>					<u>Cost To</u>	
Line Item	FY 2021	FY 2022	Base	OCO	Total	FY 2024	FY 2025	FY 2026	FY 2027	Complete	Total Cost
• 0603914C: <i>Ballistic Missile Defense Test</i>	364.994	389.156	367.824	-	367.824	363.963	421.261	476.991	490.176	Continuing	Continuing
• 0604672C: <i>Homeland Defense Radar-Hawaii</i>	133.000	75.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	208.000
• 0604873C: <i>Long Range Discrimination Radar (LRDR)</i>	135.088	133.335	75.120	-	75.120	103.451	95.712	71.715	76.316	Continuing	Continuing
Remarks											
D. Acquisition Strategy											
Test & Evaluation projects use multiple existing development and MDS test contracts depending on the system(s) involved in the testing.											

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0604879C / Ballistic Missile Defense Sensor Test				Project (Number/Name) MT11 / BMDS Radars Test					
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	N/A
Remarks N/A															
Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Test Resources - AN/TPY-2, SBX, UEWR & CD OSF Integration & Infrastructure, Sys Test Lab	C/CPAF	Raytheon : MA	80.402	30.819	Nov 2020	37.393	Nov 2021	41.543	Nov 2022	-		41.543	Continuing	Continuing	Continuing
Test Resources - Civilians/Travel	Allot	MDA : AL/VA	4.435	5.332	Oct 2020	4.415	Oct 2021	4.582	Oct 2022	-		4.582	Continuing	Continuing	Continuing
Test Resources - Communications Development - OGA	MIPR	Secretary of the Air Force (SAF) : NCR	1.516	0.000		0.000		0.000		-		0.000	0.000	1.516	0.000
Test Resources - Communications and Networks	C/CPAF	JACOBS TECHNOLOGY INC. : CO	0.000	3.059	Sep 2021	0.000		0.000		-		0.000	0.000	3.059	0.000
Test Resources - Contract Support Services	C/CPFF	Various : Various	3.668	3.408	Oct 2020	3.682	Oct 2021	0.000		-		0.000	0.000	10.758	0.000
Test Resources - Contract Support Services - Test Support	C/CPFF	MP SOLUTIONS, LLC : Various	0.000	0.000		0.000		4.191	Nov 2022	-		4.191	Continuing	Continuing	Continuing
Test Resources - Cyber Win10 Implementation - MDDC Lab Analysis Infrastructure	C/IDIQ	Analytical Services, Inc. : AL	0.825	0.000		0.000		0.000		-		0.000	0.000	0.825	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0604879C / Ballistic Missile Defense Sensor Test				Project (Number/Name) MT11 / BMDs Radars Test					
Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Test Resources - Cybersecurity - BGTC and SBIRS	C/IDIQ	Northrop Grumman Space & Mission System : CO	1.600	0.000		0.000		0.000		-		0.000	0.000	1.600	0.000
Test Resources - Cybersecurity - Tactical Communication Environment Segment (TCES)	MIPR	DOD - USN - NAVAL INFORMATION WARFARE SYSTEMS COMMAND (NAVWAR) : CA	0.190	0.000		0.000		0.000		-		0.000	0.000	0.190	0.000
Test Resources - General Infrastructure and OGA Support	Various	Various : AL, NM	3.293	3.935	Nov 2020	6.983	Nov 2021	8.095	Nov 2022	-		8.095	Continuing	Continuing	Continuing
Test Resources - LRDR OSF Integration & Infrastructure, Sys Test Lab	C/CPFF	Lockheed Martin : NJ	3.561	4.102	Nov 2020	13.096	Nov 2021	13.664	Nov 2022	-		13.664	Continuing	Continuing	Continuing
Test Resources - UEWR SSF Integration & Infrastructure, Sys Test Lab	C/FPIF	deciBel : AL	14.655	0.000		0.000		0.000		-		0.000	0.000	14.655	0.000
Flight Test Execution - AN/TPY-2, SBX UEWR & CD MDS Level Testing	C/CPAF	Raytheon : MA	127.023	3.327	Mar 2021	3.284	Nov 2021	12.264	Nov 2022	-		12.264	Continuing	Continuing	Continuing
Flight Test Execution - Agency Level Testing Support	C/CPAF	L-3 Communications : AL	17.000	0.000		0.000		0.000		-		0.000	0.000	17.000	0.000
Flight Test Execution - FT Security, Site Activation & Deployments MDS Level Testing	Various	Various : AI, CO, HI, Wake Island	41.278	1.846	Aug 2021	0.000		0.387	Nov 2022	-		0.387	Continuing	Continuing	Continuing
Flight Test Execution - LRDR MDS Level Testing	SS/TBD	Lockheed Martin : NJ	4.988	5.380	Sep 2021	5.419	Nov 2021	0.000		-		0.000	0.000	15.787	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0604879C / Ballistic Missile Defense Sensor Test				Project (Number/Name) MT11 / BMDS Radars Test					
Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Flight Test Execution - OGA Sensor Research & Development	MIPR	Secretary of the Air Force : NCR	4.500	0.000		0.000		0.000		-		0.000	0.000	4.500	0.000
Flight Test Execution - System-Level Post Flight Reconstruction (SPFR)	MIPR	CCDC AVMC : AL	2.736	0.000		0.000		0.393	Nov 2022	-		0.393	Continuing	Continuing	Continuing
Flight Test Execution - UEWR/CD MDS Level Testing	C/FPIF	deciBel : AL	1.152	0.000		0.000		0.000		-		0.000	0.000	1.152	0.000
Ground Test Execution - AN/TPY-2, SBX, UEWR/CD MDS Level Testing	C/CPAF	Raytheon : MA	125.324	0.000		0.000		0.000		-		0.000	0.000	125.324	0.000
Ground Test Execution - Long Range Discrimination MDS Level Testing	C/CPFF	Lockheed Martin : NJ	10.486	0.000		0.000		0.000		-		0.000	0.000	10.486	0.000
Subtotal			448.632	61.208		74.272		85.119		-		85.119	Continuing	Continuing	N/A
Remarks N/A															
Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	N/A
Remarks N/A															
			Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			448.632	61.208		74.272		85.119		-		85.119	Continuing	Continuing	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency							Date: April 2022			
Appropriation/Budget Activity 0400 / 4				R-1 Program Element (Number/Name) PE 0604879C / Ballistic Missile Defense Sensor Test			Project (Number/Name) MT11 / BMDS Radars Test			
	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract	
Remarks Award Dates reflect date of first obligation. Additional obligations may incrementally occur throughout the year.										

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Missile Defense Agency										Date: April 2022									
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0604879C / Ballistic Missile Defense Sensor Test					Project (Number/Name) MT11 / BMDS Radars Test									
Significant Event Complete ▲ Significant Event Planned △		Milestone Decision Complete ★ Milestone Decision Planned ☆		Element Test Complete ◆ Element Test Planned ◇		System Level Test Complete ● System Level Test Planned ○				Complete Activity ◆ Planned Activity ◇									
					FY 2021		FY 2022		FY 2023		FY 2024		FY 2025		FY 2026		FY 2027		
FTM-44 (AEGIS 5.1, DT Intercept Flight Test)					▲														
GTI-21 Sprint 1 (JEON) TH 4.0 (MDS Ground Test)						◆	◆	◆											
TH CTV-01 (LTPO, DT Interceptor Only Flight Test)								▲											
SM CTV-04 (AEGIS 5.1, DT Interceptor Only Flight Test)								▲											
GTI-ISR (21) (MDS Ground Test)								◆											
FTX-43 (OTHER, DT Tracking Exercise Flight Test)								▲											
SICO -09-1										◇									
SICO-09-2										◇									
FTT-21 (TH, DT Intercept Flight Test)								△											
GTI-08a (N/I) (MDS Ground Test)									◇										
FTX-26 (OT) (SN, OT Target Only Flight Test)									△										
GTI-09 Sprint 1 (E/C) (MDS Ground Test)									◇										
SICO-8a-1 (MDS Ground Test)									◇										
FTX-45									△										
GTD-08a (N/I) (MDS Ground Test)										◇									
GTI-09 Sprint 2 (E/C) (MDS Ground Test)										◇									
SICO-09-3 Ground Test										◇									
SICO-08a-02										◇									
FTT-25 (TH, DT/OT Intercept Flight Test)											△								
SICO 9-4 Ground Test											◇								
GTI-08b (N/I)												◇							
GTI-ISR (23) (MDS Ground Test)												◇							
FTG-12 (GM, DT/OT Intercept Flight Test)												△							
GTI-ASI (24) (MDS Ground Test)													◇						

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Missile Defense Agency										Date: April 2022																			
Appropriation/Budget Activity 0400 / 4										R-1 Program Element (Number/Name) PE 0604879C / Ballistic Missile Defense Sensor Test										Project (Number/Name) MT11 / BMDS Radars Test									
Significant Event Complete ▲ Significant Event Planned △					Milestone Decision Complete ★ Milestone Decision Planned ☆					Element Test Complete ◆ Element Test Planned ◇					System Level Test Complete ● System Level Test Planned ○					Complete Activity ◆ Planned Activity ◇									
										FY 2021		FY 2022		FY 2023		FY 2024		FY 2025		FY 2026		FY 2027							
FTX-28 E2 (TH, DT/OT Tracking Exercise Flight Test)																													
FTX-28 E1 (TH, DT/OT Tracking Exercise Flight Test)																													
FTX-28 E3 (TH, DT/OT Tracking Exercise Flight Test)																													
GTI-13 Sprint 1 (N/I) (MDS Ground Test)																		◆											
GTI-13 Sprint 2 (N/I) (MDS Ground Test)																			◆										
GTI-ISR (25) (MDS Ground Test)																			◆										
GTI-12 Sprint 1 (E/C) (MDS Ground Test)																				◆									
GTD-13 (N/I) (MDS Ground Test)																				◆									
GTI-12 Sprint 2 (E/C) (MDS Ground Test)																				◆									
GTD-10 (E/C) (MDS Ground Test)																					◆								
GTI-10 (E/C) (MDS Ground Test)																					◆								
GTD-12 (E/C) (MDS Ground Test)																					◆								
GTI-ASI (26) (MDS Ground Test)																						◆							
TH CTV-03 (TH, DT Interceptor Only Flight Test)																						△							
GTI-ISR (27) (MDS Ground Test)																							◆						
GTI-14 (N/I) Sprint 2 (MDS Ground Test)																							◆						
FTG-16 (GM, DT Intercept Flight Test)																							△						
GTI-15 Sprint 1 (E/C) (MDS Ground Test)																							◆						
FTT-22 (TH, DT/OT Intercept Flight Test)																							△						
FTG-17 (GM, DT/OT Intercept Flight Test)																							△						
GTD-14 (N/I) (MDS Ground Test)																							◆						

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Missile Defense Agency			Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604879C / <i>Ballistic Missile Defense Sensor Test</i>	Project (Number/Name) MT11 / <i>BMDs Radars Test</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
FTM-44 (AEGIS 5.1, DT Intercept Flight Test)	1	2021	1	2021
GTI-21 Sprint 1 (JEON) TH 4.0 (MDS Ground Test)	2	2021	4	2021
TH CTV-01 (LTPO, DT Interceptor Only Flight Test)	4	2021	4	2021
SM CTV-04 (AEGIS 5.1, DT Interceptor Only Flight Test)	4	2021	4	2021
GTI-ISR (21) (MDS Ground Test)	1	2022	1	2022
FTX-43 (OTHER, DT Tracking Exercise Flight Test)	1	2022	1	2022
SICO -09-1	1	2023	1	2023
SICO-09-2	1	2023	1	2023
FTT-21 (TH, DT Intercept Flight Test)	2	2022	2	2022
GTI-08a (N/I) (MDS Ground Test)	3	2022	3	2022
FTX-26 (OT) (SN, OT Target Only Flight Test)	4	2022	4	2022
GTI-09 Sprint 1 (E/C) (MDS Ground Test)	4	2022	4	2022
SICO-8a-1 (MDS Ground Test)	4	2022	4	2022
FTX-45	4	2022	4	2022
GTD-08a (N/I) (MDS Ground Test)	1	2023	1	2023
GTI-09 Sprint 2 (E/C) (MDS Ground Test)	2	2023	2	2023
SICO-09-3 Ground Test	2	2023	2	2023
SICO-08a-02	2	2023	2	2023
FTT-25 (TH, DT/OT Intercept Flight Test)	3	2023	3	2023
SICO 9-4 Ground Test	3	2023	3	2023
GTI-08b (N/I)	4	2023	4	2023
GTI-ISR (23) (MDS Ground Test)	4	2023	4	2023

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Missile Defense Agency			Date: April 2022	
Appropriation/Budget Activity	R-1 Program Element (Number/Name)		Project (Number/Name)	
0400 / 4	PE 0604879C / Ballistic Missile Defense Sensor Test		MT11 / BMDS Radars Test	
Events	Start		End	
	Quarter	Year	Quarter	Year
FTG-12 (GM, DT/OT Intercept Flight Test)	4	2023	4	2023
GTI-ASI (24) (MDS Ground Test)	2	2024	2	2024
FTX-28 E2 (TH, DT/OT Tracking Exercise Flight Test)	2	2024	2	2024
FTX-28 E1 (TH, DT/OT Tracking Exercise Flight Test)	2	2024	2	2024
FTX-28 E3 (TH, DT/OT Tracking Exercise Flight Test)	2	2024	2	2024
GTI-13 Sprint 1 (N/I) (MDS Ground Test)	1	2025	1	2025
GTI-13 Sprint 2 (N/I) (MDS Ground Test)	3	2025	3	2025
GTI-ISR (25) (MDS Ground Test)	2	2025	2	2025
GTI-12 Sprint 1 (E/C) (MDS Ground Test)	3	2025	3	2025
GTD-13 (N/I) (MDS Ground Test)	4	2025	4	2025
GTI-12 Sprint 2 (E/C) (MDS Ground Test)	1	2026	1	2026
GTD-10 (E/C) (MDS Ground Test)	2	2026	2	2026
GTI-10 (E/C) (MDS Ground Test)	1	2026	1	2026
GTD-12 (E/C) (MDS Ground Test)	2	2026	2	2026
GTI-ASI (26) (MDS Ground Test)	3	2026	3	2026
TH CTV-03 (TH, DT Interceptor Only Flight Test)	4	2026	4	2026
GTI-ISR (27) (MDS Ground Test)	4	2027	4	2027
GTI-14 (N/I) Sprint 2 (MDS Ground Test)	2	2027	2	2027
FTG-16 (GM, DT Intercept Flight Test)	2	2027	2	2027
GTI-15 Sprint 1 (E/C) (MDS Ground Test)	3	2027	3	2027
FTT-22 (TH, DT/OT Intercept Flight Test)	3	2027	3	2027
FTG-17 (GM, DT/OT Intercept Flight Test)	4	2027	4	2027
GTD-14 (N/I) (MDS Ground Test)	4	2027	4	2027

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency										Date: April 2022		
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0604879C / Ballistic Missile Defense Se nsor Test				Project (Number/Name) MD40 / Program Wide Support			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
MD40: Program Wide Support	21.146	3.037	3.156	3.207	-	3.207	3.220	3.013	3.569	4.567	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Program Wide Support (PWS) is allocated on a pro-rata basis across multiple Agency PEs each fiscal year based on the total Agency budget, and therefore fluctuates per PE by fiscal year.

A. Mission Description and Budget Item Justification

PWS contains non-headquarters management costs in support of MDA functions and activities across the entire MDS. These functions include Government Civilians and Contract Support Services. This effort provides integrity and oversight of the MDS as well as supports MDA in the development and evaluation of technologies that will respond to the changing threat. Additionally, PWS includes personnel to support global deployments performing deployment site preparation and activation, and provides facility capabilities for MDA Executing Agent locations worldwide. Other MDA wide costs include: physical and technical security; civilian drug testing; audit readiness; the Science, Technology, Engineering, and Mathematics (STEM) program; legal services and settlements; travel and agency training; office, equipment, vehicle, and warehouse leases; utilities and base operations across multiple geographic locations; commercial and ancillary facility services; management of all facility aspects regardless of lifecycle stage; supplies and maintenance; compliance with statutory environmental requirements; data and unified communications support; materiel and readiness and central property management of equipment; Facilities Sustainment, Restoration and Modernization (FSRM) program, (formerly Real Property Maintenance) to keep the Department's inventory of facilities in good working order; and similar operating expenses. PWS is allocated on a pro-rata basis across most Agency PEs and therefore fluctuates per PE by fiscal year based on the total Agency budget in that fiscal year.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2021	FY 2022	FY 2023
Title: Program Wide Support	3.037	3.156	3.207
Articles:	-	-	-
Description: PWS contains non-headquarters management costs in support of MDA functions and activities across the entire MDS. These functions include Government Civilians and Contract Support Services. This effort provides integrity and oversight of the MDS as well as supports MDA in the development and evaluation of technologies that will respond to the changing threat. Additionally, PWS includes personnel to support global deployments performing deployment site preparation and activation, and provides facility capabilities for MDA Executing Agent locations worldwide. Other MDA wide costs include: physical and technical security; civilian drug testing; audit readiness; the Science, Technology, Engineering, and Mathematics (STEM) program; legal services and settlements; travel and agency training; office, equipment, vehicle, and warehouse leases; utilities and base operations across multiple geographic locations; commercial and ancillary facility services; management of all facility aspects regardless of lifecycle stage; supplies and maintenance; compliance with statutory environmental requirements; data and unified communications support; materiel and readiness and central property management of equipment; Facilities Sustainment,			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency		Date: April 2022	
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604879C / <i>Ballistic Missile Defense Sensor Test</i>	Project (Number/Name) MD40 / <i>Program Wide Support</i>	
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2021	FY 2022
<p>Restoration and Modernization (FSRM) program, (formerly Real Property Maintenance) to keep the Department's inventory of facilities in good working order; and similar operating expenses. PWS is allocated on a pro-rata basis across most Agency PEs and therefore fluctuates per PE by fiscal year based on the total Agency budget in that fiscal year.</p> <p><i>FY 2022 Plans:</i> - SEE ABOVE.</p> <p><i>FY 2023 Plans:</i> - SEE ABOVE.</p> <p><i>FY 2022 to FY 2023 Increase/Decrease Statement:</i> N/A</p>			
Accomplishments/Planned Programs Subtotals		3.037	3.156
C. Other Program Funding Summary (\$ in Millions)			
N/A			
Remarks			
D. Acquisition Strategy			
N/A			

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0604879C / <i>Ballistic Missile Defense Sensor Test</i>						Project (Number/Name) MD40 / <i>Program Wide Support</i>			
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Wide Support - Agency Operations Management	C/CPFF	SYSTEMS ENGINEERING INC : AL	2.259	0.092	Jul 2021	0.112	Apr 2022	0.625	Dec 2022	-		0.625	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations and Support Services	C/CPFF	YORKTOWN SYSTEMS GROUP, INC. : Multi: AL, VA	18.887	2.945	Jul 2021	3.044	Apr 2022	2.582	Dec 2022	-		2.582	Continuing	Continuing	Continuing
Subtotal			21.146	3.037		3.156		3.207		-		3.207	Continuing	Continuing	N/A
Remarks N/A															
			Prior Years	FY 2021	FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract	
Project Cost Totals			21.146	3.037		3.156		3.207		-		3.207	Continuing	Continuing	N/A
Remarks Award Date reflects date of first obligation. Additional obligations may incrementally occur throughout the year.															

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Missile Defense Agency														Date: April 2022																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
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Significant Event Complete ▲ Significant Event Planned △					Milestone Decision Complete ★ Milestone Decision Planned ☆					Element Test Complete ◆ Element Test Planned ◇					System Level Test Complete ● System Level Test Planned ○					Complete Activity ◆ Planned Activity ◇																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Missile Defense Agency			Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604879C / Ballistic Missile Defense Sensor Test	Project (Number/Name) MD40 / Program Wide Support	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
MD40 Program-Wide Support	1	2021	4	2027

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Missile Defense Agency										Date: April 2022		
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 0604880C I Land Based SM-3 (LBSM3)							
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
Total Program Element	1,224.969	52.804	43.158	27.678	-	27.678	26.896	26.021	26.842	27.385	Continuing	Continuing
MD68: AEGIS Ashore	1,173.930	49.545	39.594	25.448	-	25.448	24.716	23.891	24.569	25.060	Continuing	Continuing
MC68: Cyber Operations	7.990	1.010	0.944	1.225	-	1.225	1.233	1.241	1.265	1.290	Continuing	Continuing
MD40: Program-Wide Support	43.049	2.249	2.620	1.005	-	1.005	0.947	0.889	1.008	1.035	Continuing	Continuing
Program MDAP/MAIS Code: 362												
Note Decrease from FY 2022 to FY 2023 reflects the following: - Continued program maturation of Site Activation activities as Poland construction nears completion and the Integrated Electrical Security System (IESS) becomes fully operational - Nearing completion of Aegis Combat System component upgrades and improvements at the Aegis Ashore Missile Defense Test Complex (AAMDTC)												
A. Mission Description and Budget Item Justification This program supports development of the Land-Based Standard Missile-3 (LBSM3) capability, Aegis Ashore. On 17 September 2009, the President announced an overarching plan to provide regional missile defense to U.S. deployed forces, allies, and partners in Europe called the European Phased Adaptive Approach (EPAA). The EPAA policy specifically defines a timeline to deploy a mix of afloat and land-based Ballistic Missile Defense (BMD) capabilities. Aegis Ashore represents one of these land-based capabilities. The U.S. can also build on current efforts to pursue Phased Adaptive Approaches (PAAs) in the Asia Pacific and the Middle East regions. The PAA tailors U.S. BMD capabilities to specific theater needs enhancing integrated regional missile defenses to protect defended assets against medium, intermediate, and ultimately intercontinental range ballistic missiles. Aegis Ashore is a key component of EPAA Phases II (Romania) and III (Poland) and provides Aegis BMD capability against short to intermediate-range ballistic missiles in an ashore configuration. Aegis Ashore provides sophisticated engagement strategies and can adapt to threat updates while also being deployed/redeployed worldwide where needed to provide persistent coverage for the Geographic Combatant Commanders. Aegis Ashore re-hosts the required BMD components of a U.S. Navy Destroyer, including: SPY-1 Radio Direction and Ranging (Radar); Vertical Launch System (VLS), Computing Infrastructure; Command Control; Communications; Computers and Intelligence (C4I) Systems; and Operator Consoles. This program element will continue to modernize, develop, and test Aegis Ashore capability improvements at the AAMDTC in Hawaii for implementation at operational sites.												

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Missile Defense Agency				Date: April 2022	
Appropriation/Budget Activity		R-1 Program Element (Number/Name)			
0400: Research, Development, Test & Evaluation, Defense-Wide / BA 4: Advanced Component Development & Prototypes (ACD&P)		PE 0604880C / Land Based SM-3 (LBSM3)			
B. Program Change Summary (\$ in Millions)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Previous President's Budget	56.628	43.158	0.000	-	0.000
Current President's Budget	52.804	43.158	27.678	-	27.678
Total Adjustments	-3.824	0.000	27.678	-	27.678
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	-1.424	0.000			
• Missile Defeat and Defense Enhancement	0.000	0.000	0.000	-	0.000
• Other Adjustment	-2.400	0.000	27.678	-	27.678
Change Summary Explanation					
FY 2023 funding increase reflects the fact that the FY 2022 President's Budget request did not include out-year funding.					

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency										Date: April 2022		
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0604880C / Land Based SM-3 (LBSM3)				Project (Number/Name) MD68 / AEGIS Ashore			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
MD68: AEGIS Ashore	1,173.930	49.545	39.594	25.448	-	25.448	24.716	23.891	24.569	25.060	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Decrease from FY 2022 to FY 2023 reflects the following:

- Continued program maturation for Site Activation activities as Poland construction nears completion and the Integrated Electrical Security System (IESS) becomes fully operational
- Nearing completion of Aegis Combat System component upgrades and improvements at the AAMDTC

A. Mission Description and Budget Item Justification

Deployed sites, referred to as Aegis Ashore Missile Defense Systems (AAMDS), will be modified to support future computer programs and missile variants in step with the U.S. Navy's Destroyer Modernization Plan. MDA is responsible for maintaining and modernizing the test center at the Pacific Missile Range Facility (PMRF), while the U.S. Navy is responsible for maintaining and modernizing all deployed Aegis Ashore sites. The initial AAMDS deployed to Romania in 2015 employing Aegis BMD 5.0 CU (Capabilities Upgrade) and SM-3 Block IB. A second AAMDS will deploy to Poland and is scheduled to become operational in FY 2022. These sites provide an Aegis Ashore exo-atmospheric defense against short to intermediate-range ballistic missile threats in the later stages of flight. If the threat dictates, additional systems can be purchased and deployed globally.

Research and Development efforts include design of modifications to adapt the Aegis Weapon System for land-based use, modernization in pace with the U.S. Navy's Destroyer Modernization Plan, development and testing of Aegis Ashore capability improvements at the AAMDTC in Hawaii, and modifications, as required, to enhance co-existence with Broadband Wireless Access systems in the European theater.

In support of EPAA Phase III, Aegis Ashore integrates the Aegis BMD 5.1 and Standard Missile (SM-3) Block IIA capabilities into the Aegis Ashore sites. MDA will provide all upgrades to BMD capability, BMD specific mission equipment, and integration with existing Missile Defense System (MDS) nodes for all Aegis Ashore sites.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2021	FY 2022	FY 2023
Title: Aegis Weapon System Development	35.921	22.107	20.230
Articles:	-	-	-
Description: Operate, maintain and upgrade the AAMDTC at the PMRF in Hawaii. Develop and test Aegis Ballistic Missile Defense (BMD) capability improvements, and support advanced radar and combat system studies and engineering analysis to achieve compliance with the MDA's High Altitude Electromagnetic Pulse (HEMP) Technical Performance Measure requirement and subsequent Defense Threat Reduction Agency (DTRA)/ United States Strategic Command/ European Command (EUCOM) certification.			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency			Date: April 2022		
Appropriation/Budget Activity 0400 / 4		R-1 Program Element (Number/Name) PE 0604880C / Land Based SM-3 (LBSM3)	Project (Number/Name) MD68 / AEGIS Ashore		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)			FY 2021	FY 2022	FY 2023
<p>Recurring Accomplishments:</p> <ul style="list-style-type: none">- Determine the minimum hardware refresh of element components and spares that are projected to be removed from the production to ensure the test capability at AAMDTC remains current with the U.S Navy's Destroyer Modernization efforts- Provide system engineering, technical, and logistics support for the AAMDS facility and tactical elements to ensure appropriate system adaptation, readiness, availability, and effectiveness- Modernize the AAMDTC Weapons System, C4I, VLS, and other equipment to align with the U.S. Navy's Destroyer Modernization Plan and ensure the test site configuration is ready to support MDS testing- Maintain Aegis Ashore Technical Data Package with modernization implementation to include drawings and installation plans for U.S. Navy use in implementation at operational sites <p>Specific and/or unique accomplishments to each FY are as follows:</p> <p>FY 2022 Plans:</p> <p>- SEE ABOVE</p> <p>FY 2023 Plans:</p> <p>-SEE ABOVE</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement:</p> <p>N/A</p>					
<p>Title: Site Activation</p> <p align="right">Articles:</p> <p>Description: Provide site design, security; temporary facilities; utilities; administrative communications equipment and services; infrastructure modifications; generator and commercial power; leased vehicles; material handling equipment; generator fuel; supplies, barriers; guard shacks; temporary lighting; transportation of materials and equipment; translators; and emerging requirements as site activation progresses and until sites are transferred to the Navy.</p> <p>Recurring Accomplishments include:</p> <ul style="list-style-type: none">- Provide temporary site activation facilities, base operations support, utilities, administrative communications, on-site material handling equipment services, and equipment installation- Fuel for facility commissioning activities, backup generators, and on-site vehicle support- Technical support to facilitate processing facility change proposals and construction modifications- Post-award technical services (structural, mechanical, and electrical) to ensure quality standards and construction schedule is met- Provide HEMP validation and verification testing of the Aegis Ashore facilities <p>FY 2022 Plans:</p>			13.624 -	17.487 -	5.218 -

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency										Date: April 2022		
Appropriation/Budget Activity 0400 / 4				R-1 Program Element (Number/Name) PE 0604880C / Land Based SM-3 (LBSM3)				Project (Number/Name) MD68 / AEGIS Ashore				
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)										FY 2021	FY 2022	FY 2023
- SEE ABOVE.												
FY 2023 Plans: -SEE ABOVE												
FY 2022 to FY 2023 Increase/Decrease Statement: Decrease from FY 2022 to FY 2023 reflects continued program maturation of Site Activation activities as Poland construction nears completion and the Integrated Electrical Security System (IESS) becomes fully operational												
Accomplishments/Planned Programs Subtotals										49.545	39.594	25.448
C. Other Program Funding Summary (\$ in Millions)												
Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost	
• 0208866C MD09: Aegis BMD O&M	79.913	68.293	69.071	-	69.071	70.303	75.240	87.513	91.726	Continuing	Continuing	
• 0208866C MD09: Aegis BMD Procurement	353.896	334.621	402.235	-	402.235	378.685	362.834	496.857	506.794	Continuing	Continuing	
• 0208866C MD73: Aegis Ashore Phase III Procurement	34.629	25.866	30.056	-	30.056	2.390	0.976	0.000	0.000	0.000	93.917	
• 0208866C MD90: Aegis BMD Hardware and Software	104.241	81.791	78.181	-	78.181	115.776	116.026	61.748	32.695	Continuing	Continuing	
• 0603892C: AEGIS BMD	861.809	639.549	600.072	-	600.072	658.798	574.014	570.018	580.496	Continuing	Continuing	
• 0604878C: Aegis BMD Test	71.481	111.206	182.776	-	182.776	173.492	159.125	203.851	187.494	Continuing	Continuing	
Remarks												
D. Acquisition Strategy												
The Aegis Ashore Engineering Agent (AAEA) is responsible for the design, development, integration and test of the Aegis Weapons System capability into a reconstitutable deckhouse. The AAEA will also support Aegis Ashore deployment to Romania.												
The Mission Support program office is utilizing Naval Facilities Engineering Command (NAVFAC) and U. S. Corps of Engineers Europe District (Core of Engineers North Atlantic Union) CENAU to award and administer contracts for base operating support, commercial power, temporary site activation facilities, and integrated electronic security systems for Romania and Poland sites.												

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0604880C / Land Based SM-3 (LBSM3)				Project (Number/Name) MD68 / AEGIS Ashore					
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Aegis Weapon System Development - AWS Development-AWS Development-SSC PAC Pearl Harbor	MIPR	Naval Warfare Systems Center (NSWC)/(SSC-PAC) : HI	4.336	0.026	Nov 2020	0.000		1.616	Nov 2022	-		1.616	Continuing	Continuing	Continuing
Aegis Weapon System Development - AWS Development-NAVFAC	MIPR	NAVFAC : HI	7.819	2.287	Nov 2020	2.978	Nov 2021	2.772	Nov 2022	-		2.772	Continuing	Continuing	Continuing
Aegis Weapon System Development - AWS Development-NAVSEA-MD68	MIPR	NAVSEA-LM/BAE, SPAWAR, NSWC CD : San Diego, CA; Baltimore, MD; Minneapolis, MN	15.020	5.279	Mar 2021	0.210	Nov 2021	0.000		-		0.000	0.000	20.509	0.000
Aegis Weapon System Development - AWS Development-NSWC DD-MD68	MIPR	NSWC Dahlgren : Dahlgren, VA	49.949	2.145	Oct 2020	1.100	Nov 2021	2.274	Nov 2022	-		2.274	Continuing	Continuing	Continuing
Aegis Weapon System Development - AWS Development-NSWC PHD-MD68	MIPR	NSWC PHD, NSWC, DOI, Aegis Techrep : CA, NJ, ID, MD, IN	45.156	2.080	Nov 2020	1.200	Nov 2021	1.808	Nov 2022	-		1.808	Continuing	Continuing	Continuing
Aegis Weapon System Development - AWS Development-PMRF - MD68	MIPR	PMRF : Hawaii	18.042	1.472	Nov 2020	1.800	Nov 2021	1.185	Nov 2022	-		1.185	Continuing	Continuing	Continuing
Aegis Weapon System Development - AWS Development-SPAWAR-MD68	MIPR	NIWC PAC : San Diego,CA	51.024	0.343	Nov 2020	1.695	Nov 2021	0.598	Nov 2022	-		0.598	Continuing	Continuing	Continuing
Aegis Weapon System Development - Aegis Weapon System Development - AWS Development-NSWC Crane	MIPR	NSWC Crane : IN	0.000	0.047	Nov 2020	0.300	Nov 2021	0.172	Nov 2022	-		0.172	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0604880C / Land Based SM-3 (LBSM3)				Project (Number/Name) MD68 / AEGIS Ashore					
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Aegis Weapon System Development - Aegis Weapon System Development - Aegis Weapon System Development - MD68-MDA	SS/CPFF	MDA Kupono : HI	0.000	0.000		1.734	Nov 2021	1.728	Nov 2022	-		1.728	Continuing	Continuing	Continuing
Aegis Weapon System Development - Aegis Weapon System Development - MD68-	SS/CPFF	MDA Lockheed Martin : Moorestown, NJ	37.842	20.483	Nov 2020	8.302	Nov 2021	5.313	Nov 2022	-		5.313	Continuing	Continuing	Continuing
Aegis Weapon System Development - Aegis Weapon System Development — AWS Development- NSWC-Philadelphia	MIPR	NSWC Philadelphia : PA	0.000	0.249	Mar 2021	0.382	Nov 2021	0.163	Nov 2022	-		0.163	Continuing	Continuing	Continuing
Aegis Weapon System Development - Aegis Weapon System Development – Restoration & Modernization- MD68	Various	Various : Various	0.000	0.498	Nov 2020	1.296	Nov 2021	0.464	Nov 2022	-		0.464	Continuing	Continuing	Continuing
Aegis Weapon System Development - Aegis Weapon System Development- AWS Development- Various MD68	Various	Various : CECOM/ MITRE, JHU/APL, MIT/LL, DOI	837.719	1.012	Nov 2020	1.110	Nov 2021	2.137	Nov 2022	-		2.137	Continuing	Continuing	Continuing
Aegis Weapon System Development - Aegis Weapon System Development-Aegis Weapon System Development-MD68	Allot	MDA : VA	1.076	0.000		0.000		0.000		-		0.000	0.000	1.076	0.000
Site Activation - DTRA support to construction in Romania and Poland	MIPR	DTRA : Ft. Belvoir, VA	4.726	0.840	Nov 2020	0.566	Nov 2021	0.000		-		0.000	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0604880C / Land Based SM-3 (LBSM3)				Project (Number/Name) MD68 / AEGIS Ashore					
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Site Activation - Poland Base Operating Support	MIPR	NAVFAC : Poland	14.725	3.933	Nov 2020	7.025	Nov 2021	5.218	Nov 2022	-		5.218	Continuing	Continuing	Continuing
Site Activation - Poland Commercial and Temporary Utilities	MIPR	NAVFAC : Poland	2.768	0.433	Nov 2020	2.643	Nov 2021	0.000		-		0.000	Continuing	Continuing	Continuing
Site Activation - Poland Fuel	MIPR	DLA : Fort Belvoir, Virginia	0.336	0.887	Nov 2020	0.243	Oct 2021	0.000		-		0.000	Continuing	Continuing	Continuing
Site Activation - Romania/ Poland Security Guards / Escorts	C/FFP	Chenega Infinity : Chantilly, VA	1.081	1.697	Nov 2020	1.873	Nov 2021	0.000		-		0.000	Continuing	Continuing	Continuing
Site Activation - Site Activation – Transportation of Aegis Weapon System	MIPR	SDDC : Scotts AFB, IL	5.905	0.000		0.513	Nov 2021	0.000		-		0.000	Continuing	Continuing	Continuing
Site Activation - Site Activation- IESS Support	MIPR	USAF LCMC Wright Patterson AFB : OH	0.145	0.315	Nov 2020	0.000		0.000		-		0.000	0.000	0.460	0.000
Site Activation - Site Activation- Poland Admin Communications	MIPR	DISA : Scott AFB, IL	2.922	0.286	Nov 2020	0.640	Nov 2021	0.000		-		0.000	Continuing	Continuing	Continuing
Site Activation - Site Activation- Site Activation Poland Navy Leases/ Material Handling Services	MIPR	NAVFAC : Naples Italy	1.324	1.834	Mar 2021	0.000		0.000		-		0.000	0.000	3.158	0.000
Site Activation - Site Activation-UACE-Guam	MIPR	DOD - USA - ENGINEERING AND SUPPORT CENTER, HUNTSVILLE (HNC) : AL	0.000	0.482	May 2021	0.000		0.000		-		0.000	0.000	0.482	0.000
Site Activation - Site Activation-USACE-Guam	MIPR	DOD - USA - ENGINEERING AND SUPPORT CENTER, HUNTSVILLE (HNC) : AL	0.000	0.030	May 2021	0.000		0.000		-		0.000	0.000	0.030	0.000
Site Activation - Site Activation-Various	Various	Various : Various	64.220	0.153	Mar 2021	2.241	Dec 2021	0.000		-		0.000	0.000	66.614	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity						R-1 Program Element (Number/Name)				Project (Number/Name)					
0400 / 4						PE 0604880C / Land Based SM-3 (LBSM3)				MD68 / AEGIS Ashore					
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Site Activation - USACE in-house support in Poland	MIPR	CEHNC : Huntsville, AL	3.738	0.550	Nov 2020	0.501	Nov 2021	0.000		-		0.000	0.000	4.789	0.000
Site Activation - USACE support in Poland	MIPR	CENAU : Poland	4.057	2.184	Nov 2020	1.242	Nov 2021	0.000		-		0.000	0.000	7.483	0.000
Subtotal			1,173.930	49.545		39.594		25.448		-		25.448	Continuing	Continuing	N/A
Remarks															
N/A															
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	N/A
Remarks															
N/A															
Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	N/A
Remarks															
N/A															
Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0604880C / Land Based SM-3 (LBSM3)				Project (Number/Name) MD68 / AEGIS Ashore					
Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Remarks N/A															
			Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			1,173.930	49.545		39.594		25.448		-		25.448	Continuing	Continuing	N/A
Remarks Funding in the All Prior Years column represents a summary of Prior Years Total Costs for inactive contracts and MIPRs on the R-3. Award Date reflects date of first obligation. Additional obligations may incrementally occur throughout the year.															

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Missile Defense Agency

Date: April 2022

Appropriation/Budget Activity				R-1 Program Element (Number/Name)												Project (Number/Name)											
0400 / 4				PE 0604880C / Land Based SM-3 (LBSM3)												MD68 / AEGIS Ashore											
Significant Event Complete ▲				Milestone Decision Complete ★				Element Test Complete ◆				System Level Test Complete ●				Complete Activity ◆											
Significant Event Planned △				Milestone Decision Planned ☆				Element Test Planned ◇				System Level Test Planned ○				Planned Activity ◇											
AAMDTC Upgrades				◇◇◇◇				◇◇◇◇				◇◇◇◇				◇◇◇◇				◇◇◇◇				◇◇◇◇			
Integrated Master Test Plan (IMTP)				◇◇◇◇				◇◇◇◇				◇◇◇◇				◇◇◇◇				◇◇◇◇				◇◇◇◇			
Facility Support for NAVEUR Exercise								◆																			
Poland Beneficial Occupancy Date (BOD)												◇															
Poland Construction Complete												◇															
EPAA Phase III Technical Capability Declaration (TCD)												◇															

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Missile Defense Agency			Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604880C / <i>Land Based SM-3 (LBSM3)</i>	Project (Number/Name) MD68 / <i>AEGIS Ashore</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
AAMDTC Upgrades	1	2021	4	2027
Integrated Master Test Plan (IMTP)	1	2021	4	2027
Facility Support for NAVEUR Exercise	3	2021	3	2021
Poland Beneficial Occupancy Date (BOD)	4	2022	4	2022
Poland Construction Complete	1	2023	1	2023
EPAA Phase III Technical Capability Declaration (TCD)	2	2023	2	2023

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency										Date: April 2022		
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0604880C / Land Based SM-3 (LBSM3)				Project (Number/Name) MC68 / Cyber Operations			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
MC68: Cyber Operations	7.990	1.010	0.944	1.225	-	1.225	1.233	1.241	1.265	1.290	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Increase from FY 2022 to FY 2023 provides the following:

- Surface hardening and enhanced boundary protection to include backup and Replication software acquisition and licensing
- Development and maintenance of security plans, to include all required authorization documentation per requirements for all DoD Information Systems
- Cybersecurity Compliance Testing to maintain compliance requirements and testing of applicable requirements to meet Federal Information Security Management Act (FISMA) and DoD reporting criteria

These efforts reflect current Program requirements as a result of maturation

A. Mission Description and Budget Item Justification

Sustain Missile Defense Agency (MDA) DoD Information Assurance Certification and Accreditation Program (DIACAP) and Controls Validation Testing (CVT) activities, analysis of validation results, risk assessments and reviews of proposed Program Manager/Information Assurance Manager (PM/IAM) Plans of Action and Milestones (POA&Ms) for MDA Aegis Ballistic Missile Defense (BMD) mission systems. It maintains the Certification and Accreditation (C&A) data repository, capturing the DIACAP documentation (artifacts, validation results, and Information Assurance Risk Assessment results, and Designated Approving Authority (DAA) accreditation decisions) on all MDA Information Systems.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2021	FY 2022	FY 2023
Title: Network / System Certification and Accreditation (C&A)	1.010	0.944	1.225
Articles:	-	-	-
Description: Monitor and track cybersecurity mitigation detailed in Information Technology Security Guidance. Activities include preparation of C&A documentation and accreditation recommendations to the MDA Senior Information Assurance Officer (SIAO)/ Certification Authority (CA) and DAA. Independent Verification and Validation (IV&V) team actions ensure the availability, integrity, authentication, confidentiality and non-repudiation of the MDA mission, test and administrative systems. Activities in the Project are necessary to comply with FISMA. Recurring Accomplishments: <ul style="list-style-type: none"> - Provide Cybersecurity engineering and architecture requirements planning for Aegis BMD systems - Coordinate the development and implementation of Aegis BMD Risk Management Framework (RMF) accreditation packages - Conduct regular Controls Validation Testing (CVT) of Aegis BMD systems and provide a Risk Assessment Report (RAR) to mitigate cybersecurity deficiencies 			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency		Date: April 2022	
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604880C / <i>Land Based SM-3 (LBSM3)</i>	Project (Number/Name) MC68 / <i>Cyber Operations</i>	
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2021	FY 2022
<ul style="list-style-type: none"> - Conduct annual cybersecurity reviews on the Aegis BMD systems to assess compliance in implementing and maintaining RMF controls - Implement HW/SW to conduct continuous daily monitoring - Conduct monthly reviews of systems in eMass - Provide daily management of eMass <p>Specific and/or unique accomplishments to each FY are as follows:</p> <p>FY 2022 Plans:</p> <ul style="list-style-type: none"> - SEE ABOVE <p>FY 2023 Plans:</p> <ul style="list-style-type: none"> - SEE ABOVE <p>FY 2022 to FY 2023 Increase/Decrease Statement:</p> <p>Increase from FY 2022 to FY 2023 provides the following:</p> <ul style="list-style-type: none"> - Surface hardening and enhanced boundary protection to include backup and Replication software acquisition and licensing - Development and maintenance of security plans, to include all required authorization documentation per requirements for all DoD Information Systems - Cybersecurity Compliance Testing to maintain compliance requirements and testing of applicable requirements to meet FISMA and DoD reporting criteria 			
Accomplishments/Planned Programs Subtotals		1.010	0.944
C. Other Program Funding Summary (\$ in Millions)			
N/A			
Remarks			
D. Acquisition Strategy			
The Program Management Office utilizes the U.S. Navy Centers of Excellence to administer contracts for cyber operations, assessments, and mitigations.			

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0604880C / Land Based SM-3 (LBSM3)				Project (Number/Name) MC68 / Cyber Operations					
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Network / System Certification and Accreditation (C&A) - Cyber Operations	MIPR	PMRF : HI	0.252	0.000		0.147	Nov 2021	0.150	Nov 2022	-		0.150	Continuing	Continuing	Continuing
Network / System Certification and Accreditation (C&A) - Lockheed Martin	C/CPFF	Lockheed Martin : Moorestown, NJ	0.048	0.000		0.000		0.000		-		0.000	0.000	0.048	0.000
Network / System Certification and Accreditation (C&A) - NAVSEA	MIPR	NAVSEA : Washington, DC	1.843	0.000		0.000		0.000		-		0.000	0.000	1.843	0.000
Network / System Certification and Accreditation (C&A) - NAVWAR	MIPR	DOD - USN - NAVAL INFORMATION WARFARE SYSTEMS COMMAND (NAVWAR) : CA	4.057	0.292	Nov 2020	0.674	Nov 2021	0.939	Nov 2022	-		0.939	Continuing	Continuing	Continuing
Network / System Certification and Accreditation (C&A) - NSWC Corona	MIPR	NSWC Corona : CA	0.250	0.000		0.000		0.000		-		0.000	0.000	0.250	0.000
Network / System Certification and Accreditation (C&A) - NSWC Philadelphia	MIPR	DOD - USN - NAVAL SURFACE WARFARE CENTER (NSWC) PHILADELPHIA DIVISION (NSWCPD) : PA	1.540	0.718	Nov 2020	0.123	Nov 2021	0.136	Nov 2022	-		0.136	Continuing	Continuing	Continuing
Subtotal			7.990	1.010		0.944		1.225		-		1.225	Continuing	Continuing	N/A
Remarks N/A															

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency											Date: April 2022		
Appropriation/Budget Activity					R-1 Program Element (Number/Name)				Project (Number/Name)				
0400 / 4					PE 0604880C / Land Based SM-3 (LBSM3)				MC68 / Cyber Operations				
	Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	7.990	1.010		0.944		1.225		-		1.225	Continuing	Continuing	N/A

Remarks
Award Dates reflect date of first obligation. Additional obligations may incrementally occur throughout the year.

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Missile Defense Agency														Date: April 2022																							
Appropriation/Budget Activity 0400 / 4										R-1 Program Element (Number/Name) PE 0604880C / Land Based SM-3 (LBSM3)										Project (Number/Name) MC68 / Cyber Operations																	
Significant Event Complete ▲					Milestone Decision Complete ★					Element Test Complete ◆					System Level Test Complete ●					Complete Activity ◆																	
Significant Event Planned △					Milestone Decision Planned ☆					Element Test Planned ◇					System Level Test Planned ○					Planned Activity ◇																	
										FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
Cyber Operations										◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Missile Defense Agency			Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604880C / Land Based SM-3 (LBSM3)	Project (Number/Name) MC68 / Cyber Operations	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Cyber Operations	1	2021	4	2027

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency										Date: April 2022		
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0604880C / Land Based SM-3 (LBSM3)				Project (Number/Name) MD40 / Program-Wide Support			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
MD40: Program-Wide Support	43.049	2.249	2.620	1.005	-	1.005	0.947	0.889	1.008	1.035	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Program Wide Support (PWS) is allocated on a pro-rata basis across multiple Agency PEs each fiscal year based on the total Agency budget, and therefore fluctuates per PE by fiscal year.

A. Mission Description and Budget Item Justification

PWS contains non-headquarters management costs in support of MDA functions and activities across the entire MDS. These functions include Government Civilians and Contract Support Services. This effort provides integrity and oversight of the MDS as well as supports MDA in the development and evaluation of technologies that will respond to the changing threat. Additionally, PWS includes personnel to support global deployments performing deployment site preparation and activation, and provides facility capabilities for MDA Executing Agent locations worldwide. Other MDA wide costs include: physical and technical security; civilian drug testing; audit readiness; the Science, Technology, Engineering, and Mathematics (STEM) program; legal services and settlements; travel and agency training; office, equipment, vehicle, and warehouse leases; utilities and base operations across multiple geographic locations; commercial and ancillary facility services; management of all facility aspects regardless of lifecycle stage; supplies and maintenance; compliance with statutory environmental requirements; data and unified communications support; materiel and readiness and central property management of equipment; Facilities Sustainment, Restoration and Modernization (FSRM) program (formerly Real Property Maintenance) to keep the Department's inventory of facilities in good working order; and similar operating expenses. PWS is allocated on a pro-rata basis across most Agency PEs and therefore fluctuates per PE by fiscal year based on the total Agency budget in that fiscal year.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2021	FY 2022	FY 2023
Title: Program Wide Support	2.249	2.620	1.005
Articles:	-	-	-
Description: PWS contains non-headquarters management costs in support of MDA functions and activities across the entire MDS. These functions include Government Civilians and Contract Support Services. This effort provides integrity and oversight of the MDS as well as supports MDA in the development and evaluation of technologies that will respond to the changing threat. Additionally, PWS includes personnel to support global deployments performing deployment site preparation and activation, and provides facility capabilities for MDA Executing Agent locations worldwide. Other MDA wide costs include: physical and technical security; civilian drug testing; audit readiness; the STEM program; legal services and settlements; travel and agency training; office, equipment, vehicle, and warehouse leases; utilities and base operations across multiple geographic locations; commercial and ancillary facility services; management of all facility aspects regardless of lifecycle stage; supplies and maintenance; compliance with statutory environmental requirements; data and unified communications support; materiel and readiness and central property management of equipment; the FSRM program (formerly Real Property Maintenance) to keep the Department's			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency		Date: April 2022	
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604880C / <i>Land Based SM-3 (LBSM3)</i>	Project (Number/Name) MD40 / <i>Program-Wide Support</i>	
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2021	FY 2022
inventory of facilities in good working order; and similar operating expenses. PWS is allocated on a pro-rata basis across most Agency PEs and therefore fluctuates per PE by fiscal year based on the total Agency budget in that fiscal year.			
FY 2022 Plans: - SEE ABOVE.			
FY 2023 Plans: - SEE ABOVE.			
FY 2022 to FY 2023 Increase/Decrease Statement: Decrease from FY 2022 to FY 2023 reflects the PWS allocation on a pro-rata basis across multiple Agency PE's each fiscal year based on the total Agency budget, and therefore fluctuates per PE by fiscal year.			
Accomplishments/Planned Programs Subtotals		2.249	2.620
C. Other Program Funding Summary (\$ in Millions)			
N/A			
Remarks			
D. Acquisition Strategy			
N/A			

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0604880C / Land Based SM-3 (LBSM3)				Project (Number/Name) MD40 / Program-Wide Support					
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Wide Support - Agency Operations Management	Various	Various: Multi : AL, CA, CO, VA	2.219	0.067	Jul 2021	0.055	Apr 2022	0.000		-		0.000	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations and Support Services	C/CPFF	CHENEGA : AL	24.902	2.182	Jul 2021	2.565	Nov 2021	1.005	Nov 2022	-		1.005	Continuing	Continuing	Continuing
Program Wide Support - Prior year no longer funded in the FYDP	Various	Various : Various	15.928	0.000		0.000		0.000		-		0.000	0.000	15.928	0.000
Subtotal			43.049	2.249		2.620		1.005		-		1.005	Continuing	Continuing	N/A
Remarks N/A															
			Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			43.049	2.249		2.620		1.005		-		1.005	Continuing	Continuing	N/A
Remarks Award Date reflects date of first obligation. Additional obligations may incrementally occur throughout the year.															

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PE 0604880C: *Land Based SM-3 (LBSM3)*
Missile Defense Agency

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Missile Defense Agency			Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604880C / Land Based SM-3 (LBSM3)	Project (Number/Name) MD40 / Program-Wide Support	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
MD40 Program-Wide Support	1	2021	4	2027

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Missile Defense Agency										Date: April 2022		
Appropriation/Budget Activity					R-1 Program Element (Number/Name)							
0400: Research, Development, Test & Evaluation, Defense-Wide I BA 4: Advanced Component Development & Prototypes (ACD&P)					PE 0604887C I Ballistic Missile Defense Midcourse Defense Segment Test							
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
Total Program Element	448.798	67.071	61.424	84.075	-	84.075	73.920	68.490	95.223	191.476	Continuing	Continuing
MT08: Midcourse Test	433.177	64.407	59.503	80.114	-	80.114	71.565	66.320	92.022	185.371	Continuing	Continuing
MD40: Program Wide Support	15.621	2.664	1.921	3.961	-	3.961	2.355	2.170	3.201	6.105	Continuing	Continuing
Program MDAP/MAIS Code: 362												
Note												
The increase from FY 2022 to FY 2023 is in accordance with the current Missile Defense System (MDS) Integrated Master Test Plan (IMTP). In addition, FY 2023 includes an increase that enables smooth transition for flight, ground, and cyber testing from the Development & Sustainment Contract to the System Integration, Test, and Readiness contract and will end once transition is complete.												
A. Mission Description and Budget Item Justification												
Ballistic Missile Defense Midcourse Defense Segment (BMDS) Test provides flight, ground, and cyber testing of Ground Based Midcourse Defense (GMD) functionality to demonstrate Homeland Defense capabilities against allocated threats. The GMD Element is tested in an integrated environment with MDS sensors; Command and Control, Battle Management, and Communications; Warfighters; and national collection assets to assess the ability to defend the United States and its territories against ballistic missiles.												
Primary activities include GMD Flight Test Execution, Ground Test Execution, Cyber Test Execution, Resources, and Program Operations. BMDS Test provides day-to-day operations of the GMD Test program to include engineering support for test planning, execution, and post-event reconstruction. GMD flight tests provide the opportunity to test actual hardware and to demonstrate MDS Element interoperability under operationally realistic conditions. GMD ground tests are executed both in the Hardware-in-the-Loop (HWIL) lab environment and in the field, and provide performance assessments for GMD fielding decisions. GMD cyber tests are executed both in the HWIL lab environment and in the field, and provide GMD cyber, operational resilience, and system survivability assessments. GMD Test Resources provides the infrastructure, laboratories, and prime contractor program management to support the GMD Test program. Program Operations provides for government management and support of the GMD Test program.												

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Missile Defense Agency	Date: April 2022
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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 0604887C / <i>Ballistic Missile Defense Midcourse Defense Segment Test</i>
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B. Program Change Summary (\$ in Millions)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Previous President's Budget	67.071	61.424	0.000	-	0.000
Current President's Budget	67.071	61.424	84.075	-	84.075
Total Adjustments	0.000	0.000	84.075	-	84.075
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Missile Defeat and Defense Enhancement	0.000	0.000	0.000	-	0.000
• Other Adjustment	0.000	0.000	84.075	-	84.075

Change Summary Explanation

FY 2023 funding increase reflects the fact that the FY 2022 President's Budget request did not include out-year funding.

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency										Date: April 2022		
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0604887C / Ballistic Missile Defense Mi dcourse Defense Segment Test				Project (Number/Name) MT08 / Midcourse Test			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
MT08: Midcourse Test	433.177	64.407	59.503	80.114	-	80.114	71.565	66.320	92.022	185.371	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

The increase from FY 2022 to FY 2023 is in accordance with the current Missile Defense System Integrated Master Test Plan (IMTP) including FTG-12. In addition, FY 2023 includes an increase that enables smooth transition for flight, ground, and cyber testing from the Development & Sustainment Contract (DSC) to the System Integration, Test, & Readiness (SITR) contract and will end once transition is complete.

A. Mission Description and Budget Item Justification

Ballistic Missile Defense Midcourse Defense Segment (BMDS) Test provides flight, ground, and cyber testing of Ground Based Midcourse Defense (GMD) functionality to demonstrate Homeland Defense capabilities against allocated threats. The GMD Element is tested in an integrated environment with MDS sensors; Command and Control, Battle Management, and Communications; Warfighters; and national collection assets to assess the ability to defend the United States and its territories against ballistic missiles.

Primary activities include GMD Flight Test Execution, Ground Test Execution, Cyber Test Execution, Resources, and Program Operations. BMDS Test provides day-to-day operations of the GMD Test program to include engineering support for test planning, execution, and post-event reconstruction. GMD flight tests provide the opportunity to test actual hardware and to demonstrate MDS Element interoperability under operationally realistic conditions. GMD ground tests are executed both in the Hardware-in-the-Loop (HWIL) lab environment and in the field, and provide performance assessments for GMD fielding decisions. GMD cyber tests are executed both in the HWIL lab environment and in the field, and provide GMD cyber, operational resilience, and system survivability assessments. GMD Test Resources provides the infrastructure, laboratories, and prime contractor program management to support the GMD Test program. Program Operations provides for government management and support of the GMD Test program.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2021	FY 2022	FY 2023
Title: Resources	36.025	19.583	19.272
Articles:	-	-	-
Description: Provides day-to-day operations of the GMD Test program to include engineering support for test planning, execution, and post-event reconstruction.			
Recurring efforts include:			
-Provide GMD System Test Laboratory environments to support hardware and software testing prior to entry into MDS level tests			
-Provide infrastructure and support for execution of tests requested by the Warfighter to enhance doctrine and Tactics, Techniques and Procedures (TTP), and tests of opportunity presented by real world events and MDS/external test activities			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency		Date: April 2022		
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604887C / Ballistic Missile Defense Midcourse Defense Segment Test	Project (Number/Name) MT08 / Midcourse Test		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2021	FY 2022	FY 2023
<p>-Provides test infrastructure and coordination of flight test range support from Vandenberg Space Force Base (VSFB), California, for all range activities, engineering, operators, and Ground Based Interceptor (GBI) transportation</p> <p>-Provides command and control and situational awareness for the GMD test events at the Missile Defense Agency (MDA) Integration and Operations Center (MDIOC) in Colorado Springs, Colorado and the Readiness and Control Facility in Ft. Greely, Alaska</p> <p>-Provides test communication plans, test communication control, satellite communication bandwidth, test network certification, and accreditation for GMD tests to integrate the range in VSFB, California, MDIOC in Colorado Springs, Colorado, Ft. Greely, Alaska, and Pacific Missile Range Facility (PMRF) in Hawaii</p> <p>-Provides engineering, operations, and maintenance of the integrated System Test Labs in Huntsville, Alabama, to conduct MDS flight test pre-mission risk reduction and MDS level ground testing for fielding Warfighter capabilities that defend the Homeland</p> <p>-Provides operations and maintenance and equipment upgrades of the Prime Consolidated Integration Lab (PCIL) in Huntsville, Alabama to support flight test pre-mission risk reduction and post-flight reconstruction</p> <p>-Provides PCIL Confidence Testing for models and simulations used for evaluation of performance of GMD Homeland Defense capabilities</p> <p>-Provides equipment upgrades at VSFB and the MDIOC for test support systems</p> <p>Specific and/or unique accomplishments to each FY are as follows:</p> <p>FY 2022 Plans:</p> <p>-Provide the infrastructure and support for post flight reconstruction and post flight analysis for the GM BVT-03, GT-08 MDS ground tests, and cybersecurity tests for data collection to support performance evaluation of GMD Increment 6 homeland defense capabilities</p> <p>FY 2023 Plans:</p> <p>-Provide the infrastructure and support for FTG-12, MDS ground tests, and cyber test execution and data collection to support performance evaluation of GMD Increment 6 Homeland Defense capabilities</p> <p>-Provide prime contract program management of the SITR contract test activities and enable smooth transition for flight, ground, and cyber testing from the DSC to the SITR contract.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement:</p> <p>N/A</p>				
Title: Flight Test Execution		7.221	7.249	48.110
Articles:		-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency		Date: April 2022	
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604887C / <i>Ballistic Missile Defense Midcourse Defense Segment Test</i>	Project (Number/Name) MT08 / <i>Midcourse Test</i>	
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2021	FY 2022
<p>Description: Flight tests demonstrate the capabilities and/or phenomenology that cannot be adequately tested or obtained during ground testing. Flight tests also provide opportunities to test actual hardware and to demonstrate MDS Element interoperability under operationally realistic conditions. This accomplishment area provides the Industry and Government personnel for planning, integration, execution, and analysis for MDS Homeland Defense flight tests.</p> <p>Specific and/or unique accomplishments to each FY are as follows:</p> <p>FY 2022 Plans:</p> <ul style="list-style-type: none"> -Conduct post flight reconstruction and post-mission analysis for GM BVT-03. This flight test mission demonstrates the 2- or 3- Stage selectable boost vehicle software capability that provides additional engagement battlespace to the warfighter. This test will utilize a previously fielded Configuration 1 (C1) Booster with a Mass Modal Unit launched from VSFB, California. -Conduct initial planning for Flight Test GMD (FTG)-12. This flight test mission demonstrate MDS Increment 6B.2 and Increment 6C/7 Homeland Defense functionality upgrades in a GMD intercept flight test using a GBI with a 2-/3-Stage Selectable C2 Booster and a Capability Enhancement II (CE-II) Block 1 Exo-Atmospheric Kill Vehicle (EKV) in an engagement of an Intermediate Range Ballistic Missile (IRBM) with Countermeasures (CMs) launched from VSFB, California. -Support planning, integration and execution for Flight Test Other (FTX)-26 using the GMD Fire Control (GFC). This is a non-intercept operational flight test demonstrating Long Range Discrimination Radar capabilities in MDS Phased Implementation Plan Increment 6B.1. <p>FY 2023 Plans:</p> <ul style="list-style-type: none"> -Conduct execution of FTG-12. This flight test mission demonstrates MDS Increment 6B Homeland Defense functionality upgrades in a GMD intercept flight test using a GBI with a 2-/3-Stage Selectable Configuration 2 (C2) Booster and a CE-II Block 1 EKV in an engagement of an IRBM with CMs launched from VSFB, California. <p>FY 2022 to FY 2023 Increase/Decrease Statement:</p> <p>The increase from FY 2022 to FY 2023 is in accordance with the current IMTP, including FTG-12.</p>			
<p>Title: Ground Test Execution</p> <p align="right">Articles:</p> <p>Description: Ground tests demonstrate and validate Warfighter TTPs and provide performance assessments for fielding decisions. Ground tests are executed both in the Hardware-in-the-loop (HWIL) lab and in the field. HWIL lab tests integrate and assess MDS level performance based on new Element capabilities. Ground tests in the field use existing fielded Element assets and tactical communication networks, to integrate, assess and demonstrate the Element capabilities. Cyber tests provide cyber resiliency capabilities and vulnerabilities assessments. This accomplishment area provides the Industry and Government personnel for planning, integration, execution, and analysis for MDS Homeland Defense ground and cyber tests.</p>		10.259 -	24.113 -
		3.899 -	

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency		Date: April 2022		
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604887C / Ballistic Missile Defense Midcourse Defense Segment Test	Project (Number/Name) MT08 / Midcourse Test		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2021	FY 2022	FY 2023
Specific and/or unique accomplishments to each FY are as follows: FY 2022 Plans: -Conduct pre-mission analysis, integration and execution and post-mission analysis for Cybersecurity Test events to support MDS weapon system fielding and operational acceptance -Conduct pre-mission analysis, integration and execution and post-mission analysis of GTI-08a (N/I) for Operational Assessment (OA) of performance for Inc 6B.1 Operational Capability. This event provides data to support fielding for the MDS Inc 6B.1 capability which includes EKV 11 with improved discrimination capability and Space-based Kill Assessment (SKA) -Conduct pre-mission analysis of GTD-08a (N/I) for OA of performance for Inc 6B.1 Operational Capability. This event provides data to support fielding for the MDS Inc 6B.1 capability which includes EKV 11 with improved discrimination capability and SKA -Support and participate in the MDA transition to the new IMTP future ground test Concept of Operations (CONOPs) approach. This approach supports more agile fielding as components of the MDS are ready to integrate and test than conducting a single major test event when all MDS components are ready FY 2023 Plans: -Conduct pre-mission analysis, integration, execution and post-mission analysis for Cyber Test events to support MDS weapon system fielding and operational acceptance -Conduct pre-mission analysis, integration and execution and post-mission analysis of GTI-08b (N/I) for Operational Assessment (OA) of performance for Increment 6B.2 Operational Capability. This event provides data to support fielding for the MDS Increment 6B.2 capability which includes EKV 11 with improved discrimination capability and Space-based Kill Assessment (SKA) -Conduct pre-mission analysis of GTD-08b (N/I) for OA of performance for Increment 6B.2 Operational Capability. This event provides data to support fielding for the MDS Increment 6B.2 capability which includes EKV 11 with improved discrimination capability and SKA -Support and participate in the continued MDA transition to the new IMTP future ground test CONOPs approach. This approach supports more agile fielding, as components of the MDS are ready to integrate and test, than conducting a single major test event when all MDS components are ready FY 2022 to FY 2023 Increase/Decrease Statement: The decrease from FY 2022 to FY 2023 is in accordance with the current IMTP.				
Title: Program Operations Articles: Description: Program Operations provides for Government management of the GMD Test program. This effort includes program and business management support activities, financial management, cost and schedule performance analyses, cost estimation		10.902 -	8.558 -	8.833 -

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency										Date: April 2022		
Appropriation/Budget Activity 0400 / 4				R-1 Program Element (Number/Name) PE 0604887C / <i>Ballistic Missile Defense Midcourse Defense Segment Test</i>				Project (Number/Name) MT08 / <i>Midcourse Test</i>				
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each) and analyses, configuration management, and integration. It also includes activities to provide critical program status and decision quality data and GMD test program compliance with internal and external direction, policies, and regulations to deliver critical capability within a consistent and disciplined process and technical and testing oversight, quality/safety/mission assurance, integrated logistics support, and government manpower and infrastructure to test the GMD system and components.										FY 2021	FY 2022	FY 2023
FY 2022 Plans: - SEE ABOVE.												
FY 2023 Plans: - SEE ABOVE												
FY 2022 to FY 2023 Increase/Decrease Statement: N/A												
Accomplishments/Planned Programs Subtotals										64.407	59.503	80.114
C. Other Program Funding Summary (\$ in Millions)												
Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost	
• 0208866C: MD08: <i>GMD Procurement</i>	150.000	0.000	11.300	-	11.300	0.000	18.403	42.725	48.866	Continuing	Continuing	
• 0208866C: MD08: <i>Midcourse Defense O&M</i>	148.741	156.623	185.564	-	185.564	199.248	204.864	188.486	186.647	Continuing	Continuing	
• 0603882C: <i>Ballistic Missile Defense Midcourse Defense Segment</i>	1,195.853	724.028	667.524	-	667.524	870.817	802.617	781.973	765.733	Continuing	Continuing	
• 0604874C: <i>Improved Homeland Defense Interceptors</i>	843.899	884.125	1,833.357	-	1,833.357	2,104.382	2,232.025	1,448.632	1,358.561	Continuing	Continuing	
Remarks												
D. Acquisition Strategy The GMD program will continue to follow testing, development, and evolutionary acquisition through incremental development. The Agency acquisition strategy ensures GMD components are upgraded to improve both GMD Component performance and GMD Element performance in order to retain the proven GMD contribution to the integrated MDS. This acquisition approach reduces obsolescence risk, provides opportunities for incremental capability improvements, and allows decision makers to make informed trades between cost, schedule, and performance while exploring improved operational and technological capabilities.												

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency		Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604887C / <i>Ballistic Missile Defense Midcourse Defense Segment Test</i>	Project (Number/Name) MT08 / <i>Midcourse Test</i>
<p>GMD awarded a competitive DSC on December 30, 2011. This contract included development, fielding, test, systems engineering, integration, and configuration management; equipment manufacturing and upgrade; training, operations, and sustainment of the GMD Element and associated support facilities. On January 31, 2018, the DSC Extension was awarded to the Boeing Company with a period of performance through 1Q FY 2024. The DSC Extension includes supporting test, engineering, software, and performance based logistics scope. The DSC structure breaks out major efforts into separate Contract Line Item Numbers with individual incentives for management insight, accounting, and property accountability.</p> <p>The current DSC prime contractor is responsible for the entirety of the GMD scope through delivery of MDS Increment 6B. GMD's current DSC period of performance ends in December 2023 for general scope with minimal development and program oversight contract line items remaining open past December 2023 to allow the prime contractor to complete the delivery of MDS Increment 6B in 2024. Boeing executes the DSC with four major subcontractors: Northrop Grumman Mission Systems, Northrop Grumman Innovation Solutions, Raytheon Missile Systems, and Vigor, and many other minor subcontractors.</p> <p>The GMD Future Acquisition Strategy will satisfy future GMD Element requirements beyond DSCs support, and will initiate and execute concurrently while the DSC scope is completing.</p> <p>GMD Future Acquisition Strategy: MDA plans to competitively award a single SITR contract to provide, along with the Technical Direction Agent, a synergistic approach in executing the GMD Element-level engineering, integration, test, and readiness of the GMD Weapon System. The SITR contractor is charged with being the Government's technical partner for day-to-day operation and sustainment of the GMD Weapon System alongside the United States Northern Command Warfighters. While the Government maintains overall authority, the SITR contractor will assume a technical role responsible for ensuring overall GMD integration including physical and logical integration of the GMD Components, GMD Element, and MDA enterprise level integration, planning and execution of all necessary testing to verify and validate overall requirements compliance.</p> <p>MDA plans to competitively award a single GMD Weapon System (GWS) contract to provide design, development, production, product level testing, sustainment planning, and deployment of new capabilities for the Weapon System. The GWS contractor will be responsible for developing weapon system solutions, including fire control and communication systems improvements, required to update the legacy system to remain effective while Next Generation Interceptor (NGI) is under development, as well as, preparing for the seamless introduction of NGI and other future MDS capabilities. The GWS contract will update the system interface for the addition of NGIs to the fleet, provide the Warfighter capability to operate the GWS with a mixed fleet of GBIs and NGIs, and identify and develop solutions for message exchanges between GWS and in-flight kill vehicles. All of this must be accomplished while maintaining a robust cyber defense network capable of detecting and defending against current and future cybersecurity threats.</p> <p>MDA has awarded/plans to award sole source contracts to the GMDs GBI in-service fleet (ISF) original equipment manufacturers to perform service life extensions and maintain the existing fleet, execute repairs, and develop software. These contracts are intended primarily to ensure fleet viability until replacement interceptors (NGI) are fielded. ISF is constrained to the legacy interceptor fleet and its component boosters and kill vehicles. The Boost Vehicle Sustainment Contract was awarded to Northrop Grumman in September 2021. The EKV Sustainment Contract is planned for award in 2Q FY 2022. The GBI Integration and Test Contract is planned for award in 1Q FY2024.</p>		

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency		Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604887C / <i>Ballistic Missile Defense Midcourse Defense Segment Test</i>	Project (Number/Name) MT08 / <i>Midcourse Test</i>
<p>MDA competitively awarded two best value contracts on March 24, 2021 for the development of NGI and plans to maintain competition through the Critical Design Review in FY 2025 to reduce technical risk, drive industry behavior(s) through retention of a competitive environment throughout early design development activities, secure competitive production pricing, and support the Department's ability to field a system capable of negating the expanded threat.</p> <p>GMD Increment 6C, 10, and 11 will be executed with the SITR and GWS contracts. Both contracts are expected to be awarded NLT 4Q FY 2022.</p> <p>GMD has implemented a robust Program Board structure allowing more Government insight and decisions into the technical baseline and has changed business processes for greater Government involvement in program decisions. In addition, GMD utilizes Government laboratory modeling and simulation and analysis capabilities to augment the current DSC efforts. These efforts utilize existing MDA and Other Government Agency competitively awarded contracts with the COLSA Corporation, VSBF, CA, MDIOC, U.S. Army Combat Capabilities Development Command Aviation & Missile Center (formerly known as U.S. Army Aviation and Missile Research, Development and Engineering Center), and Pacific Missile Range Facility in Hawaii.</p>		

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0604887C / <i>Ballistic Missile Defense Midcourse Defense Segment Test</i>						Project (Number/Name) MT08 / <i>Midcourse Test</i>			
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Resources - Prime Infrastructure Support, Labs, and Communications - Sitr	C/TBD	TBD : TBD	0.000	0.000		0.000		0.680	Nov 2022	-		0.680	Continuing	Continuing	Continuing
Program Operations - Civilian Travel (MDA)	Allot	MDA : AL	0.000	0.261	Oct 2020	0.125	Oct 2021	0.268	Oct 2022	-		0.268	Continuing	Continuing	Continuing
Program Operations - Contract Support Services	C/CPFF	Various AL/AK / : CA/CO/VA	22.715	5.849	Oct 2020	0.000		0.000		-		0.000	0.000	28.564	0.000
Program Operations - Government Civilian Salaries	Allot	MDA AL / : VA	19.158	4.792	Oct 2020	3.877	Oct 2021	4.032	Oct 2022	-		4.032	Continuing	Continuing	Continuing
Subtotal			41.873	10.902		4.002		4.980		-		4.980	Continuing	Continuing	N/A
Remarks N/A															
Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Resources - Cyber Security - Advanced Research Center Cyber Support	C/IDIQ	COLSA Corp : AL	4.162	0.000		0.000		0.000		-		0.000	0.000	4.162	0.000
Resources - Cyber Security - NSITE/GT Communications	MIPR	Army CCDC Aviation & Missile Center : AL	0.138	0.000		0.000		0.000		-		0.000	0.000	0.138	0.000
Resources - Cyber Win10 Implementation - MDDC Lab Analysis Infrastructure	C/IDIQ	Analytical Services, In. : AI	1.449	0.000		0.000		0.000		-		0.000	0.000	1.449	0.000
Resources - DT Government Infrastructure Support, Labs, and Communications	MIPR	DOD - USSF - VANDENBERG AIR FORCE BASE	0.000	12.080	Nov 2020	0.000		0.000		-		0.000	0.000	12.080	12.080

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0604887C / <i>Ballistic Missile Defense Mi dcourse Defense Segment Test</i>				Project (Number/Name) MT08 / <i>Midcourse Test</i>					
Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
		(VANDENBERG AFB) : CA													
Resources - Engineering & Analysis - Industry Support	C/CPAF	Boeing : AL	4.221	0.000		0.000		0.000		-		0.000	0.000	4.221	0.000
Resources - Engineering & Analysis - OGA Support	MIPR	Army CCDC Aviation & Missile Center : AL	4.098	0.000		0.000		0.000		-		0.000	0.000	4.098	0.000
Resources - GM Government Infrastructure Support, Labs, and Communications - CCDC	MIPR	USA CCDC AVIATION AND MISSILE CENTE : AL	0.000	0.000		0.000		6.429	Nov 2022	-		6.429	Continuing	Continuing	Continuing
Resources - GM Government Infrastructure Support, Labs, and Communications - VSFB	MIPR	Vandenberg AFB : TBD	0.000	0.000		0.000		2.043	Jan 2023	-		2.043	Continuing	Continuing	Continuing
Resources - GM Government Infrastructure Support, Labs, and Communications - Various	MIPR	Various : CA/AL/CO/ AK/HI	42.727	11.402	Nov 2020	6.440	Nov 2021	0.000		-		0.000	0.000	60.569	0.000
Resources - Prime Infrastructure Support, Labs, and Communications	C/CPAF	Boeing : AL/AK/AZ/ CA/CO/OR/TX/VA	52.594	12.543	Nov 2020	13.143	Nov 2021	0.000		-		0.000	0.000	78.280	0.000
Resources - Prime Infrastructure Support, Labs, and Communications - SITR	C/TBD	TBD : TBD	0.000	0.000		0.000		10.120	Nov 2022	-		10.120	Continuing	Continuing	Continuing
Flight Test Execution - Range, Resources, and Engineering - ANALYTICAL SERVICES, INC.	C/CPAF	ANALYTICAL SERVICES, INC. : AL	0.000	0.000		0.000		1.033	Nov 2022	-		1.033	Continuing	Continuing	Continuing
Flight Test Execution - Range, Resources, and Engineering - Army Space	MIPR	Army Space and Missile Defense Command (USASMDC) : AL	0.000	0.000		0.000		2.273	Jan 2023	-		2.273	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0604887C / Ballistic Missile Defense Mi dcourse Defense Segment Test				Project (Number/Name) MT08 / Midcourse Test					
Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
and Missile Defense Command (USASMDC)															
Flight Test Execution - Range, Resources, and Engineering - Department of Transportation (DOT)	MIPR	DOT - DEPARTMENT OF TRANSPORTATION (DOT) : Various	0.000	0.000		0.000		7.966	Jan 2023	-		7.966	Continuing	Continuing	Continuing
Flight Test Execution - Range, Resources, and Engineering - L-3 COMMUNICATIONS CORPORATION	C/CPAF	L-3 COMMUNICATIONS CORPORATION : Various	0.000	0.000		0.000		1.556	Nov 2022	-		1.556	Continuing	Continuing	Continuing
Flight Test Execution - Range, Resources, and Engineering - Naval Air Warfare Center (NAWC)/ Pax River	MIPR	DOD - USN - NAVAL AIR WARFARE CENTER AIRCRAFT DIVISION (NAWCAD), PAX RIVER : MD	0.000	0.000		0.000		1.489	Jan 2023	-		1.489	Continuing	Continuing	Continuing
Flight Test Execution - Range, Resources, and Engineering - Range, Resources, and Engineering - Various	Various	Various : Various	0.000	0.000		0.000		1.217	Nov 2022	-		1.217	Continuing	Continuing	Continuing
Flight Test Execution - Range, Resources, and Engineering - VSFB	MIPR	Vandenberg AFB : CA	0.000	0.000		0.000		5.576	Jan 2023	-		5.576	Continuing	Continuing	Continuing
Flight Test Execution - Range, Resources, and Engineering - Various	MIPR	VAFB/PMRF, LLL, MIT, Sandia, Northrop Grumman, L3, Analytical Serv, NAWC, NRL, NSWC, CCDC, USASMDC, Dept of Transp Maritime Admin : AL, AK, CA, CO, HI, NM, MD	74.031	3.221	Nov 2020	0.000		0.000		-		0.000	0.000	77.252	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0604887C / Ballistic Missile Defense Mi dcourse Defense Segment Test				Project (Number/Name) MT08 / Midcourse Test					
Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Flight Test Execution - Range, Resources, and Engineering- White Sands Missile Range (WSMR)	MIPR	DOD - USA - WHITE SANDS MISSILE RANGE (WSMR) : NM	0.000	0.000		0.000		1.223	Jan 2023	-		1.223	Continuing	Continuing	Continuing
Flight Test Execution - Test Planning, Test Execution, and Silo Refurbishment	C/CPAF	BOEING : AL/AK/AZ/ CA/CO/OR/TX/VA/ TBD	139.785	4.000	Nov 2020	7.249	Nov 2021	25.777	Nov 2022	-		25.777	Continuing	Continuing	Continuing
Ground Test Execution - Cybersecurity Testing	C/CPFF	Boeing : AL, AK, AZ, CA, CO, OR, TX, VA	25.426	0.903	Nov 2020	10.440	Nov 2021	3.268	Nov 2022	-		3.268	Continuing	Continuing	Continuing
Ground Test Execution - Ground Test Sprints	C/CPFF	Boeing : AL, AK, AZ, CA, CO, OR, TX, VA	1.000	6.559	Nov 2020	13.673	Nov 2021	0.631	Nov 2022	-		0.631	Continuing	Continuing	Continuing
Ground Test Execution - Ground Test-04 Campaign	C/CPAF	Boeing : AL/AK/AZ/ CA/CO/TX/VA	3.355	0.000		0.000		0.000		-		0.000	0.000	3.355	0.000
Ground Test Execution - Ground Test-06 Campaign	C/CPAF	Boeing : AL/AK/AZ/ CA/CO/TX/VA	8.163	0.000		0.000		0.000		-		0.000	0.000	8.163	0.000
Ground Test Execution - Ground Test-07 Campaign	C/CPAF	Boeing : AL/AK/AZ/ CA/CO/TX/VA	25.648	0.000		0.000		0.000		-		0.000	0.000	25.648	0.000
Ground Test Execution - Ground Test-08 Campaign	C/CPAF	Boeing : AL/AK/AZ/ CA/CO/TX/VA	4.507	2.797	Nov 2020	0.000		0.000		-		0.000	0.000	7.304	0.000
Subtotal			391.304	53.505		50.945		70.601		-		70.601	Continuing	Continuing	N/A
Remarks N/A															
Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Operations - Contract Support Services - MILLENNIUM	C/CPIF	MILLENNIUM CORPORATION : AL	0.000	0.000		4.556	Oct 2021	4.533	Nov 2022	-		4.533	Continuing	Continuing	Continuing
Subtotal			0.000	0.000		4.556		4.533		-		4.533	Continuing	Continuing	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022		
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0604887C / <i>Ballistic Missile Defense Midcourse Defense Segment Test</i>				Project (Number/Name) MT08 / <i>Midcourse Test</i>				

Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Remarks N/A															

	Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	433.177	64.407		59.503		80.114		-		80.114	Continuing	Continuing	N/A

Remarks Award Date reflects date of first obligation. Additional obligations may incrementally occur throughout the year.													
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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Missile Defense Agency										Date: April 2022																
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0604887C / Ballistic Missile Defense Midcourse Defense Segment Test										Project (Number/Name) MT08 / Midcourse Test											
Significant Event Complete ▲ Significant Event Planned △			Milestone Decision Complete ★ Milestone Decision Planned ☆			Element Test Complete ◆ Element Test Planned ◇			System Level Test Complete ● System Level Test Planned ○			Complete Activity ◆ Planned Activity ◇														
					FY 2021		FY 2022		FY 2023		FY 2024		FY 2025		FY 2026		FY 2027									
GM BVT-03 (GM, DT Interceptor Only Flight Test)								▲																		
CVPA-08a (N/I) (BMDS Cybersecurity Test)								○																		
Element Cyber Testing								◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇
AA-08a (N/I) (BMDS Cybersecurity Test)								○																		
GTI-08a (N/I) (MDS Ground Test)									◇																	
CVPA-08b (N/I) (MDS Cybersecurity Test)								○																		
FTX-26 (OT) (SN, OT Target Only Flight Test)										△																
AA-08b (N/I) (MDS Cybersecurity Test)								○																		
GTD-08a (N/I) (MDS Ground Test)										◇																
FTG-12 (GM, DT/OT Intercept Flight Test)												△														
GTI-08b (N/I)											◇															
GTD-08b (N/I)												◇														
GTI-13 Sprint 1 (N/I) (MDS Ground Test)													◇													
CVPA-13 (N/I) (MDS Cybersecurity Test)													○													
GTI-13 Sprint 2 (N/I) (MDS Ground Test)														◇												
GTD-13 (N/I) (MDS Ground Test)															◇											
AA-13 (N/I) (MDS Cybersecurity Test)															△											
GTI-14 Sprint 1 (N/I)																	◇									
CVPA-14 (N/I) (MDS Cybersecurity Test)																	◇	◇								
FTG-16 (GM, DT Intercept Flight Test)																				△						
GTI-14 (N/I) Sprint 2 (MDS Ground Test)																				◇						
AA-14 (N/I) (MDS Ground Test)																						◇				
FTG-17 (GM, DT/OT Intercept Flight Test)																								△		
GTD-14 (N/I) (MDS Ground Test)																								◇		

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Missile Defense Agency			Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604887C / <i>Ballistic Missile Defense Midcourse Defense Segment Test</i>	Project (Number/Name) MT08 / <i>Midcourse Test</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
GM BVT-03 (GM, DT Interceptor Only Flight Test)	4	2021	4	2021
CVPA-08a (N/I) (BMDS Cybersecurity Test)	1	2022	1	2022
Element Cyber Testing	1	2022	4	2028
AA-08a (N/I) (BMDS Cybersecurity Test)	2	2022	2	2022
GTI-08a (N/I) (MDS Ground Test)	3	2022	3	2022
CVPA-08b (N/I) (MDS Cybersecurity Test)	3	2022	3	2022
FTX-26 (OT) (SN, OT Target Only Flight Test)	4	2022	4	2022
AA-08b (N/I) (MDS Cybersecurity Test)	4	2022	4	2022
GTD-08a (N/I) (MDS Ground Test)	1	2023	1	2023
FTG-12 (GM, DT/OT Intercept Flight Test)	4	2023	4	2023
GTI-08b (N/I)	4	2023	4	2023
GTD-08b (N/I)	2	2024	2	2024
GTI-13 Sprint 1 (N/I) (MDS Ground Test)	1	2025	1	2025
CVPA-13 (N/I) (MDS Cybersecurity Test)	1	2025	1	2025
GTI-13 Sprint 2 (N/I) (MDS Ground Test)	3	2025	3	2025
GTD-13 (N/I) (MDS Ground Test)	4	2025	4	2025
AA-13 (N/I) (MDS Cybersecurity Test)	4	2025	4	2025
GTI-14 Sprint 1 (N/I)	4	2026	4	2026
CVPA-14 (N/I) (MDS Cybersecurity Test)	4	2026	1	2027
FTG-16 (GM, DT Intercept Flight Test)	2	2027	2	2027
GTI-14 (N/I) Sprint 2 (MDS Ground Test)	2	2027	2	2027
AA-14 (N/I) (MDS Ground Test)	3	2027	3	2027

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Missile Defense Agency				Date: April 2022	
Appropriation/Budget Activity 0400 / 4		R-1 Program Element (Number/Name) PE 0604887C / Ballistic Missile Defense Midcourse Defense Segment Test		Project (Number/Name) MT08 / Midcourse Test	
		Start		End	
Events		Quarter	Year	Quarter	Year
FTG-17 (GM, DT/OT Intercept Flight Test)		4	2027	4	2027
GTD-14 (N/I) (MDS Ground Test)		4	2027	4	2027

Note

The impacts of Ground Test Replan are not shown and will be adjudicated and reflected in future budgets.

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency										Date: April 2022		
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0604887C / Ballistic Missile Defense Mi dcourse Defense Segment Test				Project (Number/Name) MD40 / Program Wide Support			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
MD40: Program Wide Support	15.621	2.664	1.921	3.961	-	3.961	2.355	2.170	3.201	6.105	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Program Wide Support (PWS) is allocated on a pro-rata basis across multiple Agency Program Elements (PEs) each fiscal year based on the total Agency budget, and therefore fluctuates per PE by fiscal year.

A. Mission Description and Budget Item Justification

PWS contains non-headquarters management costs in support of the Missile Defense Agency (MDA) functions and activities across the entire Missile Defense System (MDS). These functions include Government Civilians and Contract Support Services. This effort provides integrity and oversight of the MDS as well as supports MDA in the development and evaluation of technologies that will respond to the changing threat. Additionally, PWS includes personnel to support global deployments performing deployment site preparation and activation, and provides facility capabilities for MDA Executing Agent locations worldwide. Other MDA wide costs include: physical and technical security; civilian drug testing; audit readiness; the Science, Technology, Engineering, and Mathematics (STEM) program; legal services and settlements; travel and agency training; office, equipment, vehicle, and warehouse leases; utilities and base operations across multiple geographic locations; commercial and ancillary facility services; management of all facility aspects regardless of lifecycle stage; supplies and maintenance; compliance with statutory environmental requirements; data and unified communications support; materiel and readiness and central property management of equipment; Facilities Sustainment, Restoration and Modernization (FSRM) program (formerly Real Property Maintenance) to keep the Department's inventory of facilities in good working order; and similar operating expenses. PWS is allocated on a pro-rata basis across most Agency PEs and therefore fluctuates per PE by fiscal year based on the total Agency budget in that fiscal year.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2021	FY 2022	FY 2023
Title: Program Wide Support	2.664	1.921	3.961
Articles:	-	-	-
Description: PWS contains non-headquarters management costs in support of MDA functions and activities across the entire MDS. These functions include Government Civilians and Contract Support Services. This effort provides integrity and oversight of the MDS as well as supports MDA in the development and evaluation of technologies that will respond to the changing threat. Additionally, PWS includes personnel to support global deployments performing deployment site preparation and activation, and provides facility capabilities for MDA Executing Agent locations worldwide. Other MDA wide costs include: physical and technical security; civilian drug testing; audit readiness; the STEM program; legal services and settlements; travel and agency training; office, equipment, vehicle, and warehouse leases; utilities and base operations across multiple geographic locations; commercial and ancillary facility services; management of all facility aspects regardless of lifecycle stage; supplies and maintenance; compliance with statutory environmental requirements; data and unified communications support; materiel and readiness and central property management of equipment; the FSRM program (formerly Real Property Maintenance) to keep the Department's			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency		Date: April 2022	
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604887C / <i>Ballistic Missile Defense Midcourse Defense Segment Test</i>	Project (Number/Name) MD40 / <i>Program Wide Support</i>	
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2021	FY 2022
inventory of facilities in good working order; and similar operating expenses. PWS is allocated on a pro-rata basis across most Agency PEs and therefore fluctuates per PE by fiscal year based on the total Agency budget in that fiscal year.			
FY 2022 Plans: - SEE ABOVE.			
FY 2023 Plans: - SEE ABOVE.			
FY 2022 to FY 2023 Increase/Decrease Statement: Increase from FY 2022 to FY 2023 provides the PWS allocation on a pro-rata basis across multiple Agency PEs each fiscal year based on the total Agency budget, and therefore fluctuates per PE by fiscal year.			
Accomplishments/Planned Programs Subtotals		2.664	1.921
C. Other Program Funding Summary (\$ in Millions) N/A			
Remarks			
D. Acquisition Strategy N/A			

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0604887C / <i>Ballistic Missile Defense Midcourse Defense Segment Test</i>						Project (Number/Name) MD40 / <i>Program Wide Support</i>			
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Wide Support - Agency Operations MITRE	FFRDC	MITRE Corporation : AL	1.330	0.706	Dec 2020	0.700	Dec 2021	2.705	Nov 2022	-		2.705	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations User Services	Reqn	Various : AL	4.781	1.796	Oct 2020	1.078	Nov 2021	0.928	Nov 2022	-		0.928	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations and Support Other Agency Services (MIPRs)	MIPR	Various : Multi: AL, VA	0.032	0.082	Oct 2020	0.065	Nov 2021	0.000		-		0.000	0.000	0.179	0.000
Program Wide Support - Agency Operations and Support Services	C/CPFF	SYSTEMS ENGINEERING INC : AL	6.045	0.050	Oct 2020	0.050	Nov 2021	0.328	Nov 2022	-		0.328	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations Management	Various	Various : Multi: AL, VA, Aust, Japan	0.386	0.030	Jul 2021	0.028	Apr 2022	0.000		-		0.000	0.000	0.444	0.000
Program Wide Support - Prior year no longer funded in the FYDP	Various	Various : Various	3.047	0.000		0.000		0.000		-		0.000	3.047	6.094	0.000
Subtotal			15.621	2.664		1.921		3.961		-		3.961	Continuing	Continuing	N/A
Remarks N/A															
			Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			15.621	2.664		1.921		3.961		-		3.961	Continuing	Continuing	N/A
Remarks Award Date reflects date of first obligation. Additional obligations may incrementally occur throughout the year.															

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Missile Defense Agency														Date: April 2022																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Missile Defense Agency			Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604887C / Ballistic Missile Defense Midcourse Defense Segment Test	Project (Number/Name) MD40 / Program Wide Support	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
MD40 Program-Wide Support	1	2021	4	2027

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Missile Defense Agency										Date: April 2022		
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 0202057C I Safety Program Management							
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
Total Program Element	-	0.000	2.323	2.417	-	2.417	2.477	2.531	2.579	2.630	Continuing	Continuing
MDSH: Safety Program Management	-	0.000	2.323	2.417	-	2.417	2.477	2.531	2.579	2.630	Continuing	Continuing
Program MDAP/MAIS Code: 362												
Note N/A												
A. Mission Description and Budget Item Justification MDA Occupational Safety and Health (OSH) establishes the program plans, policy, responsibilities, and guidelines for compliance with statutory, regulatory, and Department of Defense (DoD) policy/program directives. It also establishes MDA OSH programs designed for the protection of human resources through accident prevention; protection of MDA systems, property, and equipment; and the compliance with appropriate statutes, regulations, Executive Orders, and DoD policies. OSH develops and ensures implementation of safety requirements, mitigates safety risks to the lowest practical level, and ensures a safe workplace for all MDA employees and contractors by implementing a Safety and Occupational Health program.												
B. Program Change Summary (\$ in Millions)				FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total				
Previous President's Budget				0.000	2.323	0.000	-	0.000				
Current President's Budget				0.000	2.323	2.417	-	2.417				
Total Adjustments				0.000	0.000	2.417	-	2.417				
• Congressional General Reductions				0.000	0.000							
• Congressional Directed Reductions				0.000	0.000							
• Congressional Rescissions				0.000	0.000							
• Congressional Adds				0.000	0.000							
• Congressional Directed Transfers				0.000	0.000							
• Reprogrammings				0.000	0.000							
• SBIR/STTR Transfer				0.000	0.000							
• Missile Defeat and Defense Enhancement				0.000	0.000	0.000	-	0.000				
• Other Adjustment				0.000	0.000	2.417	-	2.417				
Change Summary Explanation FY 2023 funding increase reflects the fact that the FY 2022 President's Budget request did not include out-year funding.												

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency										Date: April 2022		
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0202057C / Safety Program Management				Project (Number/Name) MDSH / Safety Program Management			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
MDSH: Safety Program Management	-	0.000	2.323	2.417	-	2.417	2.477	2.531	2.579	2.630	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

The Occupational Safety and Health program element was established in FY 2022; funding was realigned from Program Elements: 0603882C, BMD Midcourse Defense, 0603884C, BMD Sensors, 0603890C, BMD Enabling Programs, and 0603892C BMD Aegis.

A. Mission Description and Budget Item Justification

MDA Occupational Safety and Health (OSH) establishes the program plans, policy, responsibilities, and guidelines for compliance with statutory, regulatory, and Department of Defense (DoD) policy/program directives. It also establishes MDA OSH programs designed for the protection of human resources through accident prevention; protection of MDA systems, property, and equipment; and the compliance with appropriate statutes, regulations, Executive Orders, and DoD policies. OSH develops and ensures implementation of safety requirements, mitigates safety risks to the lowest practical level, and ensures a safe workplace for all MDA employees and contractors by implementing a Safety and Occupational Health program.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2021	FY 2022	FY 2023
Title: Safety Program Management	0.000	2.323	2.417
Articles:	-	-	-
<p>Description: The Occupational Safety and Health program ensures that all employees are provided a safe and healthful workplace through an aggressive initiative of workplace inspections, audits, and accident investigation processes.</p> <p>The unique accomplishments to each FY are as follows:</p> <p>FY 2022 Plans: SEE ABOVE</p> <p>FY 2023 Plans: SEE ABOVE</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: N/A</p>			
Accomplishments/Planned Programs Subtotals	0.000	2.323	2.417

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency		Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0202057C / Safety Program Management	Project (Number/Name) MDSH / Safety Program Management
C. Other Program Funding Summary (\$ in Millions) N/A		
Remarks		
D. Acquisition Strategy N/A		

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0202057C / Safety Program Management						Project (Number/Name) MDSH / Safety Program Management			
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Safety Program Management - Safety & Occupational Health	C/CPFF	ARES CORPORATION : HI, and VA	0.000	0.000		0.986	Nov 2021	1.021	Nov 2022	-		1.021	Continuing	Continuing	Continuing
Subtotal			0.000	0.000		0.986		1.021		-		1.021	Continuing	Continuing	N/A
Remarks N/A															
Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Safety Program Management - Safety Management (MDA Civ)	Allot	MDA : AL, AK, CA	0.000	0.000		1.079	Oct 2021	1.119	Oct 2022	-		1.119	Continuing	Continuing	Continuing
Safety Program Management - Safety Operations SLA	C/CPIF	NETWORK MANAGEMENT RESOURCES, INC. : Various	0.000	0.000		0.128	Jun 2022	0.145	Mar 2023	-		0.145	Continuing	Continuing	Continuing
Safety Program Management - Safety Operations travel	Allot	MDA : AL, AK, CA	0.000	0.000		0.130	Nov 2021	0.132	Nov 2022	-		0.132	Continuing	Continuing	Continuing
Subtotal			0.000	0.000		1.337		1.396		-		1.396	Continuing	Continuing	N/A
Remarks N/A															
			Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			0.000	0.000		2.323		2.417		-		2.417	Continuing	Continuing	N/A
Remarks Award Dates reflect date of first obligation. Additional obligations may incrementally occur throughout the year.															

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Missile Defense Agency																Date: April 2022																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Missile Defense Agency		Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0202057C / Safety Program Management	Project (Number/Name) MDSH / Safety Program Management

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Safety & Occupational Health	1	2022	4	2027

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Missile Defense Agency										Date: April 2022		
Appropriation/Budget Activity					R-1 Program Element (Number/Name)							
0400: Research, Development, Test & Evaluation, Defense-Wide I BA 4: Advanced Component Development & Prototypes (ACD&P)					PE 0305103C I Cyber Security Initiative							
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
Total Program Element	16.776	1.122	1.142	1.165	-	1.165	1.207	1.236	1.262	1.287	Continuing	Continuing
MDCS: Cyber Security Initiative	16.776	1.122	1.142	1.165	-	1.165	1.207	1.236	1.262	1.287	Continuing	Continuing
Program MDAP/MAIS Code: 362												
Note												
N/A												
A. Mission Description and Budget Item Justification												
The Missile Defense Agency (MDA) Counterintelligence (CI) Division conducts CI in Cyberspace activities pursuant to Department of Defense (DoD) Directive DoDD 5240.02 (Counterintelligence) and DoD Instruction S-5240.23 (CI Activities in Cyberspace) to identify, disrupt, neutralize and mitigate foreign intelligence services and international terrorist organizations, hereafter referred to as foreign entities, to act in observable or exploitable ways. To this end, the MDA CI Division conducts activities to detect, neutralize and mitigate foreign entity-directed malicious and insider threat activities targeting MDA administrative and Missile Defense fire control networks and mobile devices.												
B. Program Change Summary (\$ in Millions)				FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total				
Previous President's Budget				1.148	1.142	0.000	-	0.000				
Current President's Budget				1.122	1.142	1.165	-	1.165				
Total Adjustments				-0.026	0.000	1.165	-	1.165				
• Congressional General Reductions				0.000	0.000							
• Congressional Directed Reductions				0.000	0.000							
• Congressional Rescissions				0.000	0.000							
• Congressional Adds				0.000	0.000							
• Congressional Directed Transfers				0.000	0.000							
• Reprogrammings				0.000	0.000							
• SBIR/STTR Transfer				-0.026	0.000							
• Missile Defeat and Defense Enhancement				0.000	0.000	0.000	-	0.000				
• Other Adjustment				0.000	0.000	1.165	-	1.165				
Change Summary Explanation												
FY 2023 funding increase reflects the fact that the FY 2022 President's Budget request did not include out-year funding.												

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency										Date: April 2022		
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0305103C / <i>Cyber Security Initiative</i>				Project (Number/Name) MDCS / <i>Cyber Security Initiative</i>			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
MDCS: <i>Cyber Security Initiative</i>	16.776	1.122	1.142	1.165	-	1.165	1.207	1.236	1.262	1.287	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

N/A

A. Mission Description and Budget Item Justification

The DoD Counterintelligence in Cyberspace (CIC) mission initiative is externally funded and falls under the functional and fiscal management of the Director, Defense Intelligence Agency (DIA). The MDA Counterintelligence (CI) Division conducts defensive CIC activities pursuant to DoD Directive DoDD 5240.02 (Counterintelligence), DoD Instruction S-5240.23 (CI Activities in Cyberspace) and DoD Instruction 5240.26 (Countering Espionage, International Terrorism, and the CI Insider Threat), and an MDA Annex within an annual DIA-approved Implementation Plan.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2021	FY 2022	FY 2023
Title: DoD CI in Cyberspace Initiative	1.122	1.142	1.165
Articles:	-	-	-
<p>Description: This activity detects, identifies, neutralizes and mitigates malicious activities directed by foreign entities that target MDA cyber assets. The following actions are required on a continuing basis to accomplish the DoD CI in Cyberspace Initiative:</p> <ul style="list-style-type: none"> -- Collaborate with the MDA Computer Emergency Response Team (CERT) to detect, neutralize and mitigate potential foreign entity directed malicious and insider threat activities targeting MDA administrative and fire control networks, and mobility devices -- Conduct CI Preliminary Inquiries into potential foreign entity directed malicious or insider threat activities and refers suspected incidents or events to the Federal Bureau of Investigation (FBI) or military department CI organizations for further investigation -- Conduct CI forensics analysis of MDA computer network activity logs to identify potential indicators of foreign entity directed malicious, insider threat or computer network attack/exploitation activities targeting MDA information -- Coordinate with national and DoD level intelligence, CI and law enforcement agencies to identify foreign entity cyber actor intrusion sets and the tactics, techniques and procedures used to target MDA and its Cleared Defense Contractor computer networks -- Coordinate with MDA cleared defense contractors that have been compromised by foreign intelligence entities to capture and triage exfiltrated MDA related data, allowing MDA engineering teams to perform proper damage assessments -- Provide required initial and periodic training to ensure the MDA workforce is kept apprised of foreign entity threats to DoD personnel, facilities, information, activities, and information technology systems -- Protect MDA Sensitive Compartmented Information Facility (SCIF) and Special Access Program (SAP) areas from cellular/ wireless device monitoring -- Provide support to the MDA Counter Insider Threat program 			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency			Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0305103C / <i>Cyber Security Initiative</i>	Project (Number/Name) MDCS / <i>Cyber Security Initiative</i>	

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023
Specific and/or unique accomplishments to each FY are as follows: <i>FY 2022 Plans:</i> - SEE ABOVE. <i>FY 2023 Plans:</i> - SEE ABOVE. <i>FY 2022 to FY 2023 Increase/Decrease Statement:</i> N/A			
Accomplishments/Planned Programs Subtotals	1.122	1.142	1.165

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

<u>Line Item</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u> <u>Base</u>	<u>FY 2023</u> <u>OCO</u>	<u>FY 2023</u> <u>Total</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• 0603890C: <i>BMD</i> <i>Enabling Programs</i>	607.167	623.644	591.847	-	591.847	613.589	625.761	635.633	640.374	Continuing	Continuing

Remarks

D. Acquisition Strategy

This project leverages expertise in the intelligence community, counterintelligence community, and information assurance community, including the Military Services, Federally Funded Research and Development Centers (FFRDCs), University Affiliated Research Centers (UARC)s, and industry.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0305103C / Cyber Security Initiative				Project (Number/Name) MDCS / Cyber Security Initiative					
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
DoD CI in Cyberspace Initiative - CI in Cyberspace	Allot	MDA : VA	1.069	0.250	Oct 2020	0.156	Oct 2021	0.163	Oct 2022	-		0.163	Continuing	Continuing	Continuing
DoD CI in Cyberspace Initiative - Counterintelligence	C/CPFF	TEAMS : VA, AL	4.857	0.307	Dec 2020	0.838	Nov 2021	0.857	Nov 2022	-		0.857	Continuing	Continuing	Continuing
DoD CI in Cyberspace Initiative - Cybersecurity Upgrades at Cheyenne Mountain	C/CPIF	Lockheed Martin : CO	10.000	0.000		0.000		0.000		-		0.000	0.000	10.000	0.000
DoD CI in Cyberspace Initiative - Technical Surveillance & Countermeasures	MIPR	USA-TAO : Ft. Detrick, MD	0.850	0.565	Dec 2020	0.148	Nov 2021	0.145	Nov 2022	-		0.145	Continuing	Continuing	Continuing
Subtotal			16.776	1.122		1.142		1.165		-		1.165	Continuing	Continuing	N/A
Remarks N/A															
			Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			16.776	1.122		1.142		1.165		-		1.165	Continuing	Continuing	N/A
Remarks Award Dates reflect date of first obligation. Additional obligations may incrementally occur throughout the year.															

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Missile Defense Agency														Date: April 2022																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
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MDCS Cyber Security Initiative										◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Missile Defense Agency		Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0305103C / <i>Cyber Security Initiative</i>	Project (Number/Name) MDCS / <i>Cyber Security Initiative</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
MDCS Cyber Security Initiative	1	2021	4	2027

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Missile Defense Agency	Date: April 2022
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Appropriation/Budget Activity	R-1 Program Element (Number/Name)											
0400: <i>Research, Development, Test & Evaluation, Defense-Wide / BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	PE 1206893C / <i>Space Tracking and Surveillance System</i>											
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
Total Program Element	106.591	33.356	15.176	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	155.123
MD12: <i>Space Tracking and Surveillance System (STSS)</i>	95.295	31.271	14.437	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	141.003
MC12: <i>Cyber Operations</i>	6.496	0.729	0.156	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	7.381
MD40: <i>Program-Wide Support</i>	4.800	1.356	0.583	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	6.739

Program MDAP/MAIS Code: 362

Note

Decrease from FY 2022 to FY 2023 reflects the decision to passivate the Space Tracking and Surveillance System (STSS) satellites by 3rd quarter FY 2022 due to end of service life assessment.

A. Mission Description and Budget Item Justification

The two Space Tracking and Surveillance System (STSS) satellites launched in 2009 provide an on-orbit capability to validate remote sensor fire control integration to inform design and operation of the Missile Defense Agency (MDA) space-layer capabilities. MDA uses STSS data to characterize contribution of space data into the Missile Defense System (MDS) and to provide sensor measurements and background data supporting trade studies and analyses for MDA space-layer options for both Homeland and Regional Defense.

STSS continues to provide risk reduction for MDA space capabilities, models, algorithms, interface definitions, communications architectures, and performance across threat object acquisition, tracking, complex target signatures, discrimination, and multi-mission support. STSS also informs the MDS Concept of Operations, timelines, and performance requirements for remote space sensor cuing for ballistic missile engagements, expanding battle space for weapon systems such as Aegis Ballistic Missile Defense (BMD).

The STSS program demonstrates the functions and interfaces required for space data delivery to the MDS, validating the data quality necessary for interceptors to launch and/or engage on STSS sensor data. The two STSS satellites are operated from the ground station processing center at the Missile Defense Space Center (MDSC). The STSS satellites demonstrate MDA space-layer capabilities and reduce risk for future systems (e.g., Hypersonic and Ballistic Tracking Space Sensor) by viewing high-value Targets of Opportunity and participating in MDS flight tests. Though the STSS satellites are operating beyond their life expectancy, MDA continues STSS operations due to the continued contributions to the MDS mission. Based on annual health and status assessment of the STSS satellites, a decision to passivate the STSS satellites in FY 2022 was made. This decision enables a safe conclusion and continued stewardship of space for the extremely successful STSS program which demonstrated the necessity of on-orbit detection and tracking capability for the MDS.

The MDSC provides MDA's only centralized collaboration and integration environment that leverages existing Overhead Persistent Infrared (OPIR) enterprise integration in support of MDS research and development test, and sensor operations. The MDSC capabilities and infrastructure support flight tests, operational concept and

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Missile Defense Agency	Date: April 2022
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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 1206893C <i>I Space Tracking and Surveillance System</i>
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prototype development, technology demonstrations, experiments, and algorithm development within a multi-security, collaborative environment to integrate and exploit national space asset data. The MDSC also conducts studies and experiments with MDA assets such as the Spacebased Kill Assessment (SKA), and STSS, as well as other agencies' assets.

B. Program Change Summary (\$ in Millions)	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023 Base</u>	<u>FY 2023 OCO</u>	<u>FY 2023 Total</u>
Previous President's Budget	34.144	15.176	0.000	-	0.000
Current President's Budget	33.356	15.176	0.000	-	0.000
Total Adjustments	-0.788	0.000	0.000	-	0.000
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	-0.788	0.000			
• Missile Defeat and Defense Enhancement	0.000	0.000	0.000	-	0.000
• Other Adjustment	0.000	0.000	0.000	-	0.000

Change Summary Explanation

N/A

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency										Date: April 2022		
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 1206893C / Space Tracking and Surveillance System				Project (Number/Name) MD12 / Space Tracking and Surveillance System (STSS)			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
MD12: Space Tracking and Surveillance System (STSS)	95.295	31.271	14.437	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	141.003
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

The decrease from FY 2022 to FY 2023 reflects the decision to passivate the STSS satellites by 3rd quarter FY 2022 due to end of service life assessment. Residual funding is transferred to PE 1206895C, Budget Project MD42, to support continued development of the Hypersonic and Ballistic Tracking Space Sensor (HBTSS) program.

A. Mission Description and Budget Item Justification

Two Space Tracking and Surveillance System (STSS) satellites provide a low earth orbit sensor capability with visible and infrared sensors for integrated testing with other Missile Defense System (MDS) elements. STSS demonstrates space-based capabilities including persistent tracking and integrated MDS discrimination improvements. These two satellites provide valuable risk reduction for acquisition, tracking, complex scenes, and discrimination functionality to include stereo data fusion, cuing radars over-the-horizon, and over-the-horizon fire control.

The on-orbit sensors collect invaluable background, scene, and target signature data to support the Missile Defense Agency (MDA) space-layer and other weapon sensor development trade studies. STSS activities provide information for integration of space-based missile tracking (midcourse phase); remote sensor and weapons cuing via Command and Control, Battle Management and Communications (C2BMC); features and discrimination; and hit/impact point assessments. STSS enables early capability assessment to address Warfighter need for highly available early missile tracking from space, providing an operationally suitable means of global persistent surveillance and engagement. Capabilities being assessed for MDA space-layer capabilities include detecting and acquiring missiles; tracking missiles and their deployed objects; performing autonomous acquisition-to-track handover within a satellite; performing tracking handover to a satellite from a ground cue; performing uplink and downlink of mission, health, and status data both directly and via crosslink between two satellites; reporting missile and intercept event to close the fire-control loop; filtering reports to C2BMC; and providing near real-time object data to external users. STSS support to other mission areas improves definition for Enterprise system approaches.

The Missile Defense Space Center (MDSC) provides capabilities and infrastructure to support space operations, integration, and testing with the MDS. It provides a multi-level security environment for sensor data management and integration across space and terrestrial sensor data activities. MDSC experiments leverage DoD and national security space capabilities. MDSC activities support analyses, demonstration, and integration of space sensor capabilities into developmental and operational MDA elements. MDSC enables the development of advanced technology and algorithms including fusion of multiple sensor types (radar, overhead persistent infrared, electro-optical, and other emerging sensor technologies). It also supports mission integration of space-based missile tracking, sensor and weapons cuing via C2BMC, features and discrimination, kill, and impact point assessments into the MDS and other non-MDA mission areas, including Space Situational Awareness and battle space characterization.

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency		Date: April 2022		
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 1206893C / Space Tracking and Surveillance System	Project (Number/Name) MD12 / Space Tracking and Surveillance System (STSS)		
Lessons learned and data gathered from the STSS demonstration satellites program provide valuable information for MDA space-layer modeling and simulation activities in assessing the capability provided by Overhead Persistent Infrared sensors.				
Based on annual health and status assessment of the STSS satellites, a decision to passivate the STSS satellites in FY 2022 was made. This decision enables a safe conclusion and continued stewardship of space for the extremely successful STSS program which demonstrated the necessity of on-orbit detection and tracking capability for the MDS.				
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2021	FY 2022	FY 2023
Title: Demonstration Satellites		31.271	14.437	0.000
Articles:		-	-	-
Description: The Space Tracking and Surveillance System (STSS) demonstration satellites collect and deliver critical space and missile characterization data used to design and inform the Missile Defense System (MDS) and space-layer capabilities. The Missile Defense Space Center (MDSC) facilities and activities are required for safe STSS satellite operations and sustainment. STSS activities include: - Perform risk reduction for MDA tracking and surveillance initiatives and Overhead Persistent Infrared (OPIR) Enterprise integration and demonstrations across OPIR cuing, Joint Tasking Operations, and data utility - Collect data to support joint OPIR mission utility assessments across Space Situational Awareness and Battle Space Awareness missions to include integration, analyses, and studies to confirm data sharing capabilities - Participate in Integrated Master Test Plan events - Conduct satellite testing to demonstrate critical space capabilities, including: -- Ability to support MDS integrated discrimination efforts -- Ability to support Hit/Kill assessment from space -- Ability to cue MDS sensors from space -- Ability to provide precision cue to MDS sensors - Perform satellite functionality testing and calibration as part of the satellite operations - Conduct missile tracking experiments as identified in the test specific sections - Provide Space Operations Command Space Situational Awareness support MDSC efforts related to STSS include: - Analyze space radiation environment and its influence on MDA space system performance - Analyze space-based sensor data from STSS and OPIR observations, both individually and combined, to identify phenomenology and techniques to aid tracking and discrimination architectures - Provide data for concept studies and analyses for alternative sensor payload configurations - Sustain MDSC resources for all participant activities, including data, voice, and/or video communications, and support MDA cybersecurity directives				

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency									Date: April 2022		
Appropriation/Budget Activity 0400 / 4				R-1 Program Element (Number/Name) PE 1206893C / Space Tracking and Surveillance System				Project (Number/Name) MD12 / Space Tracking and Surveillance System (STSS)			
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)									FY 2021	FY 2022	FY 2023
<div>- Document requirements and perform tracking, design, implementation, and verification necessary for the MDSC facility</div> <div>- Implement ongoing and emerging cybersecurity requirements</div> <div>Specific and/or unique accomplishments to each Fiscal Year (FY) are as follows:</div> <div>FY 2022 Plans:</div> <div>- Perform activities required for safe passivation of the two STSS satellites</div> <div>- Conduct contract close-out activities</div> <div>FY 2023 Plans:</div> <div>No funding is requested in this Program Element beginning in FY 2023.</div> <div>FY 2022 to FY 2023 Increase/Decrease Statement:</div> <div>Decrease from FY 2022 to FY 2023 reflects decision to passivate the STSS satellites in FY 2022, bringing the program to a conclusion.</div>											
Accomplishments/Planned Programs Subtotals									31.271	14.437	0.000
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• 0603882C: Ballistic Missile Defense Midcourse Defense Segment	1,195.853	724.028	667.524	-	667.524	870.817	802.617	781.973	765.733	Continuing	Continuing
• 0603884C: Ballistic Missile Defense Sensors	259.605	254.962	231.134	-	231.134	250.028	274.705	276.254	257.575	Continuing	Continuing
• 0603890C: BMD Enabling Programs	607.167	623.644	591.847	-	591.847	613.589	625.761	635.633	640.374	Continuing	Continuing
• 0603892C: AEGIS BMD	861.809	639.549	600.072	-	600.072	658.798	574.014	570.018	580.496	Continuing	Continuing
• 0603896C: Ballistic Missile Defense Command and Control, Battle Management & Communication	639.027	564.946	589.374	-	589.374	575.883	588.824	612.853	605.801	Continuing	Continuing
• 0603904C: Missile Defense Integration and Operations Center (MDIOC)	54.026	52.403	49.367	-	49.367	51.744	56.502	57.833	59.006	Continuing	Continuing

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency								Date: April 2022			
Appropriation/Budget Activity 0400 / 4				R-1 Program Element (Number/Name) PE 1206893C / <i>Space Tracking and Surveillance System</i>				Project (Number/Name) MD12 / <i>Space Tracking and Surveillance System (STSS)</i>			

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

Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• 0603914C: <i>Ballistic Missile Defense Test</i>	364.994	389.156	367.824	-	367.824	363.963	421.261	476.991	490.176	Continuing	Continuing
• 0603915C: <i>Ballistic Missile Defense Targets</i>	534.348	560.478	559.513	-	559.513	555.341	623.995	628.146	632.072	Continuing	Continuing
• 1206895C: <i>Ballistic Missile Defense System Space Programs</i>	161.267	292.811	129.957	-	129.957	120.392	124.652	48.055	49.029	Continuing	Continuing

Remarks

D. Acquisition Strategy

The STSS demonstration satellites program follows MDA's capability-based acquisition strategy that emphasizes testing, incremental development, and evolutionary acquisition. The STSS effort utilizes a single prime contractor, Northrop Grumman Aerospace Systems (NGAS) with the subcontractor Raytheon providing the sensor payload. This contract implements MDA's capability-based acquisition strategy by using existing satellite hardware as a low risk opportunity, building upon the lessons learned from previous development efforts, and establishing a series of planned enhancements to bring added capability to the MDS.

MDSC efforts will be acquired on the Specialized Warfighter Development Contract and Integrated Research and Development for Enterprise Solutions vehicles. These contracts are responsible for integrating Research, Development, Test and Evaluation, operations support, and resource and infrastructure management for the MDSC.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency **Date:** April 2022

Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 1206893C / <i>Space Tracking and Surveillance System</i>	Project (Number/Name) MD12 / <i>Space Tracking and Surveillance System (STSS)</i>
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Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Demonstration Satellites - Capability Based R&D	SS/CPAF	NGAS : Redondo Beach, CA, Schriever AFB, CO	61.928	19.248	Nov 2020	6.750	Nov 2021	0.000		-		0.000	0.000	87.926	69.409
Demonstration Satellites - STSS Support to Missile Defense Space Center (MDSC)	C/CPFF	Northrop Grumman/ Jacobs Engineering : Schriever AFB, CO	9.381	4.176	Nov 2020	0.000		0.000		-		0.000	0.000	13.557	13.554
Demonstration Satellites - Systems Engineering	FFRDC	Aerospace : Los Angeles, CA	1.568	0.000		0.000		0.000		-		0.000	0.000	1.568	1.568
Subtotal			72.877	23.424		6.750		0.000		-		0.000	0.000	103.051	N/A

Remarks

All efforts listed above are a continuation of Program Element (PE) 0603893C, MD12

Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Demonstration Satellites - Contract Support Services (CSS)	C/Various	Various : AL, CO	8.230	2.719	Nov 2020	3.111	Dec 2021	0.000		-		0.000	0.000	14.060	14.413
Demonstration Satellites - IT User Services	C/CPAF	Northrop Grumman/ Jacobs Engineering : AL, AK, CA, CO, HI, NM, VA	1.840	0.635	Dec 2020	0.636	Dec 2021	0.000		-		0.000	0.000	3.111	3.127
Demonstration Satellites - MDA Civilian	Allot	MDA : AL, CO	7.824	3.613	Oct 2020	3.567	Oct 2021	0.000		-		0.000	0.000	15.004	14.869
Demonstration Satellites - Other Government Agency (OGA) Civilian	MIPR	SMC : Schriever AFB, CO	0.492	0.000		0.000		0.000		-		0.000	0.000	0.492	0.492
Demonstration Satellites - Program Mission Support	Various	Various : Various	2.856	0.505	Nov 2020	0.033	Nov 2021	0.000		-		0.000	0.000	3.394	32.353

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 1206893C / <i>Space Tracking and Surveillance System</i>						Project (Number/Name) MD12 / <i>Space Tracking and Surveillance System (STSS)</i>			
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Demonstration Satellites - UARC	C/CPFF	Utah University, Space Dynamics Laboratory : CO, VA	1.176	0.375	Nov 2020	0.340	Nov 2021	0.000		-		0.000	0.000	1.891	1.856
Subtotal			22.418	7.847		7.687		0.000		-		0.000	0.000	37.952	N/A
Remarks All efforts listed above are a continuation of PE 0603893C, MD12															
			Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			95.295	31.271		14.437		0.000		-		0.000	0.000	141.003	N/A
Remarks Award Date reflects date of first obligation. Additional obligations may incrementally occur throughout the year.															

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Missile Defense Agency										Date: April 2022											
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 1206893C / Space Tracking and Surveillance System					Project (Number/Name) MD12 / Space Tracking and Surveillance System (STSS)											
Significant Event Complete ▲		Milestone Decision Complete ★		Element Test Complete ◆		System Level Test Complete ●		Complete Activity ◆													
Significant Event Planned △		Milestone Decision Planned ☆		Element Test Planned ◇		System Level Test Planned ○		Planned Activity ◇													
					FY 2021		FY 2022		FY 2023		FY 2024		FY 2025		FY 2026		FY 2027				
STSS Demonstration Satellites-MDS Flight Tests/Targets of Opportunity - 1Q2021					▲																
STSS Demonstration Satellites On-Orbit Operations - 1Q2021-4Q2021					◆	◆	◆	◆													
MIS Operations - 1Q2021-4Q2021					◆	◆	◆	◆													
Mission Planning, Tasking and Analysis - 1Q2021-4Q2021					◆	◆	◆	◆													
MDSC TIL Operations - 1Q2021-4Q2021					◆	◆	◆	◆													
STSS Demonstration Satellites-MDS Flight Tests/Targets of Opportunity - 2Q2021						▲															
STSS Demonstration Satellites-MDS Flight Tests/Targets of Opportunity - 3Q2021							▲														
STSS Demonstration Satellites-MDS Flight Tests/Targets of Opportunity - 4Q2021								▲													
Satellite Passivation/Contract Completion									◇	◇	◇	◇									

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Missile Defense Agency			Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 1206893C / <i>Space Tracking and Surveillance System</i>	Project (Number/Name) MD12 / <i>Space Tracking and Surveillance System (STSS)</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
STSS Demonstration Satellites-MDS Flight Tests/Targets of Opportunity - 1Q2021	1	2021	1	2021
STSS Demonstration Satellites On-Orbit Operations - 1Q2021-4Q2021	1	2021	4	2021
MIS Operations - 1Q2021-4Q2021	1	2021	4	2021
Mission Planning, Tasking and Analysis - 1Q2021-4Q2021	1	2021	4	2021
MDSC TIL Operations - 1Q2021-4Q2021	1	2021	4	2021
STSS Demonstration Satellites-MDS Flight Tests/Targets of Opportunity - 2Q2021	2	2021	2	2021
STSS Demonstration Satellites-MDS Flight Tests/Targets of Opportunity - 3Q2021	3	2021	3	2021
STSS Demonstration Satellites-MDS Flight Tests/Targets of Opportunity - 4Q2021	4	2021	4	2021
Satellite Passivation/Contract Completion	1	2022	4	2022

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency										Date: April 2022		
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 1206893C / Space Tracking and Surveillance System				Project (Number/Name) MC12 / Cyber Operations			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
MC12: Cyber Operations	6.496	0.729	0.156	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	7.381
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
Note Decrease reflects decision to passivate the STSS satellites in FY 2022, bringing the program to a conclusion. MDA civilian oversight of cyber activities will continue in PE 1206895C, Budget Project MC33.												
A. Mission Description and Budget Item Justification Space Tracking and Surveillance System (STSS) Cyber Operations sustain the Missile Defense Agency (MDA) Risk Management Framework (RMF) and Security Controls Assessments (SCA)/Controls Validation Testing (CVT) activities, analysis of validation results, risk assessments and reviews of proposed Program Manager/Information System Security Manager (PM/ISSM) Plans of Action and Milestones (POA&Ms) for MDA STSS mission systems. Activities in this Project are necessary to comply with the Federal Information Security Management Act (FISMA).												
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)									FY 2021	FY 2022	FY 2023	
Title: Network / System Certification and Accreditation (C&A) Articles: Description: This activity maintains the Assessment and Authorization (A&A) and C&A data repository, capturing the RMF documentation (artifacts, validation results, and Information Assurance Risk Assessment results, and Designated Approving Authority (DAA) accreditation decisions) and POA&Ms on all MDA information systems. This activity prepares and submits C&A documentation and accreditation recommendations to the MDA Chief Information Officer (CIO) /Certification Authority and the DAA. Independent Verification and Validation team actions ensure the availability, integrity, authentication, confidentiality, and non-repudiation of MDA mission, test, and administrative systems. Recurring accomplishments include the following: - Monitor and track cybersecurity and mitigations detailed in Information Technology security POA&Ms - Conduct cybersecurity design, engineering, and architecture planning for STSS information technology systems - Plan and test the cybersecurity controls for STSS and MDSC systems - Conduct SCA testing continuous monitoring of STSS and MDSC mission systems and provide POA&Ms to mitigate cybersecurity vulnerabilities Specific and/or unique accomplishments to each Fiscal Year (FY) are as follows: FY 2022 Plans:									0.729	0.156	0.000	
									-	-	-	

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency		Date: April 2022	
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 1206893C / <i>Space Tracking and Surveillance System</i>	Project (Number/Name) MC12 / <i>Cyber Operations</i>	
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2021	FY 2022
- Support STSS passivation activities <i>FY 2023 Plans:</i> No funding is requested in this Program Element beginning in FY 2023. <i>FY 2022 to FY 2023 Increase/Decrease Statement:</i> Decrease from FY 2022 to FY 2023 reflects decision to passivate the STSS satellites in FY 2022, bringing the program to a conclusion. MDA civilian oversight of cyber activities will continue in PE 1206895C, Budget Project MC33.			
Accomplishments/Planned Programs Subtotals		0.729	0.156
C. Other Program Funding Summary (\$ in Millions)			
N/A			
Remarks			
D. Acquisition Strategy			
N/A			

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 1206893C / Space Tracking and Surveillance System				Project (Number/Name) MC12 / Cyber Operations					
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Network / System Certification and Accreditation (C&A) - Civ Cyber Labor	Allot	MDA : Schriever AFB	0.533	0.194	Oct 2020	0.156	Oct 2021	0.000		-		0.000	0.000	0.883	0.860
Network / System Certification and Accreditation (C&A) - Contractor Support	C/Various	Various : AL, CO	1.496	0.535	Nov 2020	0.000		0.000		-		0.000	0.000	2.031	2.069
Network / System Certification and Accreditation (C&A) - Cross Domain Upgrade	C/CPFF	Jacobs : Schriever AFB, CO	0.019	0.000		0.000		0.000		-		0.000	0.000	0.019	0.019
Network / System Certification and Accreditation (C&A) - Information Assurance	C/CPAF	NGAS : Schriever AFB, CO/Redondo Beach, CA	4.448	0.000		0.000		0.000		-		0.000	0.000	4.448	4.448
Subtotal			6.496	0.729		0.156		0.000		-		0.000	0.000	7.381	N/A
Remarks N/A															
			Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			6.496	0.729		0.156		0.000		-		0.000	0.000	7.381	N/A
Remarks Award Date reflects date of first obligation. Additional obligations may incrementally occur throughout the year.															

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PE 1206893C: *Space Tracking and Surveillance System*
Missile Defense Agency

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Missile Defense Agency			Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 1206893C / Space Tracking and Surveillance System	Project (Number/Name) MC12 / Cyber Operations	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
MC12 Cyber Operations Planned	1	2021	4	2022

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency										Date: April 2022		
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 1206893C / Space Tracking and Surveillance System				Project (Number/Name) MD40 / Program-Wide Support			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
MD40: Program-Wide Support	4.800	1.356	0.583	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	6.739
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Decrease from FY 2022 to FY 2023 reflects the Program Wide Support (PWS) allocation on a pro-rata basis across multiple Agency PEs each fiscal year based on the total Agency budget, and therefore fluctuates per PE by fiscal year.

A. Mission Description and Budget Item Justification

PWS contains non-headquarters management costs in support of MDA functions and activities across the entire MDS. These functions include Government Civilians and Contract Support Services. This effort provides integrity and oversight of the MDS as well as supports MDA in the development and evaluation of technologies that will respond to the changing threat. Additionally, PWS includes personnel to support global deployments performing deployment site preparation and activation, and provides facility capabilities for MDA Executing Agent locations worldwide. Other MDA wide costs include: physical and technical security; civilian drug testing; audit readiness; the Science, Technology, Engineering, and Mathematics (STEM) program; legal services and settlements; travel and agency training; office, equipment, vehicle, and warehouse leases; utilities and base operations across multiple geographic locations; commercial and ancillary facility services; management of all facility aspects regardless of lifecycle stage; supplies and maintenance; compliance with statutory environmental requirements; data and unified communications support; materiel and readiness and central property management of equipment; Facilities Sustainment, Restoration and Modernization (FSRM) program, (formerly Real Property Maintenance) to keep the Department's inventory of facilities in good working order; and similar operating expenses. PWS is allocated on a pro-rata basis across most Agency PEs and therefore fluctuates per PE by fiscal year based on the total Agency budget in that fiscal year.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2021	FY 2022	FY 2023
Title: Program Wide Support	1.356	0.583	0.000
Articles:	-	-	-
Description: PWS contains non-headquarters management costs in support of MDA functions and activities across the entire MDS. These functions include Government Civilians and Contract Support Services. This effort provides integrity and oversight of the MDS as well as supports MDA in the development and evaluation of technologies that will respond to the changing threat. Additionally, PWS includes personnel to support global deployments performing deployment site preparation and activation, and provides facility capabilities for MDA Executing Agent locations worldwide. Other MDA wide costs include: physical and technical security; civilian drug testing; audit readiness; the Science, Technology, Engineering, and Mathematics (STEM) program; legal services and settlements; travel and agency training; office, equipment, vehicle, and warehouse leases; utilities and base operations across multiple geographic locations; commercial and ancillary facility services; management of all facility aspects regardless of lifecycle stage; supplies and maintenance; compliance with statutory environmental requirements; data and unified communications support; materiel and readiness and central property management of equipment; Facilities Sustainment,			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency		Date: April 2022	
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 1206893C / <i>Space Tracking and Surveillance System</i>	Project (Number/Name) MD40 / <i>Program-Wide Support</i>	
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2021	FY 2022
<p>Restoration and Modernization (FSRM) program, (formerly Real Property Maintenance) to keep the Department's inventory of facilities in good working order; and similar operating expenses. PWS is allocated on a pro-rata basis across most Agency PEs and therefore fluctuates per PE by fiscal year based on the total Agency budget in that fiscal year.</p> <p>FY 2022 Plans: - SEE ABOVE.</p> <p>FY 2023 Plans: No funding is requested in this Program Element beginning in FY 2023.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: Decrease from FY 2022 to FY 2023 reflects the PWS allocation on a pro-rata basis across multiple Agency PE's each fiscal year based on the total Agency budget, and therefore fluctuates per PE by fiscal year.</p>			
Accomplishments/Planned Programs Subtotals		1.356	0.583
C. Other Program Funding Summary (\$ in Millions)			
N/A			
Remarks			
D. Acquisition Strategy			
N/A			

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 1206893C / Space Tracking and Surveillance System				Project (Number/Name) MD40 / Program-Wide Support					
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Wide Support - Agency Operations and Support Services	C/CPAF	Northrop Grumman : CO	4.095	1.315	Nov 2020	0.557	Nov 2021	0.000		-		0.000	0.000	5.967	0.000
Program Wide Support - Agency Operations Management	C/CPAF	Various Multi: AL, CA, CO, : VA	0.486	0.041	Jul 2021	0.026	Apr 2022	0.000		-		0.000	0.000	0.553	0.000
Program Wide Support - Prior year no longer funded in the FYDP	Various	Various : Various	0.219	0.000		0.000		0.000		-		0.000	0.000	0.219	0.000
Subtotal			4.800	1.356		0.583		0.000		-		0.000	0.000	6.739	N/A
Remarks N/A															
			Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			4.800	1.356		0.583		0.000		-		0.000	0.000	6.739	N/A
Remarks Award Date reflects date of first obligation. Additional obligations may incrementally occur throughout the year.															

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Missile Defense Agency							Date: April 2022										
Appropriation/Budget Activity 0400 / 4				R-1 Program Element (Number/Name) PE 1206893C / Space Tracking and Surveillance System				Project (Number/Name) MD40 / Program-Wide Support									
Significant Event Complete ▲		Milestone Decision Complete ★		Element Test Complete ◆		System Level Test Complete ●		Complete Activity ◆									
Significant Event Planned △		Milestone Decision Planned ☆		Element Test Planned ◇		System Level Test Planned ○		Planned Activity ◇									
				FY 2021		FY 2022		FY 2023		FY 2024		FY 2025		FY 2026		FY 2027	
MD40 Program-Wide Support				◇◇◇◇		◇◇◇◇											

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Missile Defense Agency			Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 1206893C / <i>Space Tracking and Surveillance System</i>	Project (Number/Name) MD40 / <i>Program-Wide Support</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
MD40 Program-Wide Support	1	2021	4	2022

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Missile Defense Agency										Date: April 2022		
Appropriation/Budget Activity					R-1 Program Element (Number/Name)							
0400: Research, Development, Test & Evaluation, Defense-Wide I BA 4: Advanced Component Development & Prototypes (ACD&P)					PE 1206895C I Ballistic Missile Defense System Space Programs							
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
Total Program Element	207.916	161.267	292.811	129.957	-	129.957	120.392	124.652	48.055	49.029	Continuing	Continuing
MD33: MD Space Exp Center (MDSEC)	86.277	29.617	30.066	34.512	-	34.512	40.139	42.823	40.715	41.888	Continuing	Continuing
MD42: Hypersonic & Ballistic Tracking Space Sensor (HBTSS) Prototyping	108.139	130.000	256.222	89.220	-	89.220	74.328	75.827	3.755	3.470	Continuing	Continuing
MC33: MD Space Exp Center (MDSEC)	10.839	0.376	1.358	1.506	-	1.506	1.688	1.741	1.780	1.817	Continuing	Continuing
MD40: Program-Wide Support	2.661	1.274	5.165	4.719	-	4.719	4.237	4.261	1.805	1.854	Continuing	Continuing
Program MDAP/MAIS Code: 362												
Note												
Decrease from FY 2022 to FY 2023 reflects completion of Launch Vehicle procurement and satellite (bus and payload) development.												
A. Mission Description and Budget Item Justification												
Spacebased Kill Assessment (SKA): The SKA project will deliver hit and kill assessment from space. Missile Defense Agency (MDA) Missile Defense System (MDS) intercept testing experience provided a solid understanding of kill assessment physics to enable exploration of this critical capability. SKA incorporates Government Accountability Office (GAO) recommendations to examine the operational feasibility of disaggregating large satellites and to provide data for the business case for shared versus dedicated satellite control, including the ground antenna networks. The favorable cost and schedule performance on SKA is also consistent with the GAO's assessment of commercially hosted payload programs. The SKA experiment utilizes a network of small Infrared sensors integrated onto commercial host satellites that while on orbit observe missile defense intercepts and deliver hit and kill assessment declarations to the MDS. After successful participation in MDS Flight Tests in FY 2019, the MDA began transition of SKA to an operational element of the MDS.												
Hypersonic and Ballistic Tracking Space Sensor (HBTSS): HBTSS will demonstrate a schedule-focused, cost-constrained capability to detect and track hypersonic threats and boosting conventional ballistic missiles. The key characteristic of HBTSS that sets it apart from other Overhead Persistent Infrared (OPIR) sensors is the requirement to provide fire-control quality tracking data. This information will be handed off to the MDS hypersonic weapons systems to allow long range engagement of the threat and the enhanced tracking accuracy through missile burn out will provide the warfighter increased missile defense weapons systems engagement capability and higher accuracy impact predictions. The requirement for fire-control data necessitates that HBTSS be a highly sensitive, low-latency, high quality of service system. MDA is collaborating with the U.S. Space Force, under the leadership of the Chief of Space Operations, and the Space Development Agency to demonstrate HBTSS as a potential element within the larger Unified OPIR Enterprise Architecture.												

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Missile Defense Agency	Date: April 2022
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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 1206895C / <i>Ballistic Missile Defense System Space Programs</i>
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Space Applications for Missile Defense (SAMD): SAMD consolidates MDA resources (including those efforts previously planned in PE 1206893C) to provide strategic planning, program integration, contracting, acquisition, engineering, financial management, and program assessments for development and acquisition of space applications.

This PE also funds Cybersecurity efforts necessary to support BMDS Space Programs.

B. Program Change Summary (\$ in Millions)	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023 Base</u>	<u>FY 2023 OCO</u>	<u>FY 2023 Total</u>
Previous President's Budget	162.068	292.811	0.000	-	0.000
Current President's Budget	161.267	292.811	129.957	-	129.957
Total Adjustments	-0.801	0.000	129.957	-	129.957
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	-0.801	0.000			
• Missile Defeat and Defense Enhancement	0.000	0.000	0.000	-	0.000
• Other Adjustment	0.000	0.000	129.957	-	129.957

Change Summary Explanation

FY 2023 funding increase reflects the fact that the FY 2022 President's Budget request did not include out-year funding.

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency										Date: April 2022		
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 1206895C / Ballistic Missile Defense System Space Programs				Project (Number/Name) MD33 / MD Space Exp Center (MDSEC)			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
MD33: MD Space Exp Center (MDSEC)	86.277	29.617	30.066	34.512	-	34.512	40.139	42.823	40.715	41.888	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Increase in FY 2023 provides for stand-up of Space Applications for Missile Defense in support of the Space Sensors enterprise.

A. Mission Description and Budget Item Justification

The Spacebased Kill Assessment (SKA) system is composed of two segments: a space segment and a ground segment.

The space segment is composed of a network of small infrared sensors (sensors, processor cards and cabling), each mated to a different satellite. The total number of sensors and their network placement are specifically tailored for the hit and kill assessment missions. The space segment includes key design features to improve its resiliency.

The ground segment monitors the health and status of the on-orbit sensors, commands the sensors to perform the hit and kill assessment mission, and analyzes the data to make a hit/kill assessment determination for the Missile Defense System (MDS). The ground segment also includes the equipment necessary for communications security and information assurance. The Missile Defense Space Center provides the critical infrastructure for SKA data, routing SKA data between the commercial payload integrator and the multi-mission Missile Defense Space Enterprise Architecture (MDSEA). The operational command and control center for SKA, the Payload Operations Center, will support MDS Post Intercept Assessment (PIA) capabilities.

Beginning in FY 2023, Budget Project MD33 will also fund Space Applications for Missile Defense (SAMD). SAMD is a consolidation of functional elements of Missile Defense Agency (MDA) Contractor Support Services (CSS), Federally Funded Research and Development Center (FFRDC)/University Affiliated Research Center (UARC), and Civilian manpower into a single entity that provides acquisition, financial, and technical support across the MDA Space Sensors enterprise. This represents a continuation of efforts previously funded in PE 1206893C.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2021	FY 2022	FY 2023
Title: Spacebased Kill Assessment	29.617	30.066	26.502
Articles:	-	-	-
Description: The Spacebased Kill Assessment (SKA) project is designed to deliver hit and kill assessment for Homeland Defense.			
It includes:			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency		Date: April 2022	
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 1206895C / <i>Ballistic Missile Defense System Space Programs</i>	Project (Number/Name) MD33 / <i>MD Space Exp Center (MDSEC)</i>	
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2021	FY 2022
<ul style="list-style-type: none"> - SKA sensor-host satellite integration and testing - On-orbit operations by experimenting and participating in MDS ground and flight tests - Integration of SKA into the MDS operational baseline - Integration of SKA messages into PIA module for delivery to the Warfighter - Development of hit and kill assessment algorithms required to add SKA to the operational MDS - Supporting engineering trade studies and concept evaluations for current and future space-based sensors <p>Specific and/or unique accomplishments to each Fiscal Year (FY) are as follows:</p> <p>FY 2022 Plans:</p> <ul style="list-style-type: none"> - Complete development of the operational hit assessment software code - Continue developing kill assessment and ground test hit assessment algorithms and threat models - Continue to finalize integration of the SKA messages into the MDS operational interface in support of adding SKA capability to the operational all-domain MDS <p>FY 2023 Plans:</p> <ul style="list-style-type: none"> - Continues integration of SKA into the MDS Operational Capability Baseline through the Increment 6B.2 campaign <p>FY 2022 to FY 2023 Increase/Decrease Statement: Decrease from FY 2022 to FY 2023 reflects completion of integration efforts in support of Increment 6B.2 campaign</p>			
<p>Title: Space Applications for Missile Defense</p> <p align="right">Articles:</p> <p>Description: SAMD provides strategic planning, program integration, contracting, acquisition, engineering, financial management, and program assessments for development and acquisition of space applications</p> <p>Recurring activities include:</p> <ul style="list-style-type: none"> - Build, develop and acquire Space Applications to support the 10 Steps to Ballistic Missile Intercept - Integration of space data with the MDS to enhance system capabilities - Coordination with U.S. Space Force on development of Missile Defense space-based capabilities - Provide technical and business management support activities to provide critical program status and decision quality data - Participate in the Space Engineering Review Board - Integration of Space capabilities with the MDS - Integration of space assets within MDA's Integrated Master Test Plan - Develop and evaluate future Space Application concepts 		0.000 -	0.000 -
			8.010 -

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency		Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 1206895C / <i>Ballistic Missile Defense System Space Programs</i>	Project (Number/Name) MD33 / <i>MD Space Exp Center (MDSEC)</i>

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023
FY 2022 Plans: N/A			
FY 2023 Plans: SEE ABOVE			
FY 2022 to FY 2023 Increase/Decrease Statement: Increase from FY 2022 to FY 2023 provides for continued funding of functional elements of MDA Space Sensors CSS, FFRDC/ UARC, and civilian manpower into single entity supporting development of Space Applications for missile defense previously funded in PE 1206893C.			
Accomplishments/Planned Programs Subtotals	29.617	30.066	34.512

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

<u>Line Item</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023 Base</u>	<u>FY 2023 OCO</u>	<u>FY 2023 Total</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• 0603882C: <i>Ballistic Missile Defense Midcourse Defense Segment</i>	1,195.853	724.028	667.524	-	667.524	870.817	802.617	781.973	765.733	Continuing	Continuing
• 0603884C: <i>Ballistic Missile Defense Sensors</i>	259.605	254.962	231.134	-	231.134	250.028	274.705	276.254	257.575	Continuing	Continuing
• 0603892C: <i>AEGIS BMD</i>	861.809	639.549	600.072	-	600.072	658.798	574.014	570.018	580.496	Continuing	Continuing
• 0603896C: <i>Ballistic Missile Defense Command and Control, Battle Management & Communication</i>	639.027	564.946	589.374	-	589.374	575.883	588.824	612.853	605.801	Continuing	Continuing
• 0603904C: <i>Missile Defense Integration and Operations Center (MDIOC)</i>	54.026	52.403	49.367	-	49.367	51.744	56.502	57.833	59.006	Continuing	Continuing
• 0603914C: <i>Ballistic Missile Defense Test</i>	364.994	389.156	367.824	-	367.824	363.963	421.261	476.991	490.176	Continuing	Continuing
• 0603915C: <i>Ballistic Missile Defense Targets</i>	534.348	560.478	559.513	-	559.513	555.341	623.995	628.146	632.072	Continuing	Continuing
• 1206893C: <i>Space Tracking and Surveillance System</i>	33.356	15.176	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	48.532

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency							Date: April 2022		
Appropriation/Budget Activity 0400 / 4			R-1 Program Element (Number/Name) PE 1206895C / <i>Ballistic Missile Defense System Space Programs</i>				Project (Number/Name) MD33 / <i>MD Space Exp Center (MDSEC)</i>		

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

<u>Line Item</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u> <u>Base</u>	<u>FY 2023</u> <u>OCO</u>	<u>FY 2023</u> <u>Total</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
Remarks											

D. Acquisition Strategy

SKA leverages experience that the Johns Hopkins University Applied Physics Laboratory (JHU/APL) has with its extensive history of performing kill assessment activities and conducting experiments associated with the Aegis BMD program. JHU/APL is the developer of the SKA experiment and its primary subcontractor was responsible for payload integration and hosting accommodations using a firm fixed price contract to contain costs. The SKA experiment uses a commercial satellite program as the platform host for a DOD payload, taking full advantage of a multi-billion dollar space and ground system that already exists.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 1206895C / Ballistic Missile Defense Sy stem Space Programs				Project (Number/Name) MD33 / MD Space Exp Center (MDSEC)					
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Spacebased Kill Assessment - Development and Experimentation	C/CPFF	JHU/APL : MD	38.234	9.129	Nov 2020	11.145	Nov 2021	12.202	Nov 2022	-		12.202	Continuing	Continuing	Continuing
Spacebased Kill Assessment - Experimental Ops Team	C/CPFF	JHU/APL : MD	2.138	1.072	Nov 2020	0.000		0.000		-		0.000	0.000	3.210	3.210
Spacebased Kill Assessment - Incremental Capability Operations	C/CPFF	Various : CO	0.000	0.000		8.279	Nov 2021	7.894	Nov 2022	-		7.894	Continuing	Continuing	Continuing
Spacebased Kill Assessment - Integrate SKA into MDS Comms Network	C/CPIF	Jacobs Engineering : CO	0.259	0.000		0.000		0.000		-		0.000	0.000	0.259	0.259
Spacebased Kill Assessment - MDSC Support	C/CPAF	Northrop Grumman : CO	0.598	0.000		0.000		0.000		-		0.000	0.000	0.598	0.598
Spacebased Kill Assessment - Software Assurance	MIPR	DEVCOM : AL	0.000	0.000		0.788	Dec 2021	0.811	Dec 2022	-		0.811	Continuing	Continuing	Continuing
Spacebased Kill Assessment - Transition To Ops (Mission Systems)	C/Various	Various : MDA CO, AL	7.606	8.815	Nov 2020	0.000		0.000		-		0.000	0.000	16.421	12.638
Spacebased Kill Assessment - Transition to Ops (Developer)	C/CPFF	JHU/APL : Laurel, MD	4.917	7.674	Nov 2020	7.135	Nov 2021	1.891	Nov 2022	-		1.891	Continuing	Continuing	Continuing
Space Sensor Layer (SSL) - Space Sensor Layer (SSL) - Ground Segment	C/CPIF	Jacobs : Schriever AFB	3.798	0.000		0.000		0.000		-		0.000	0.000	3.798	3.798
Space Sensor Layer (SSL) - Space Sensor Layer (SSL) - Space Prototype Concept Activity	MIPR	SMC SpEC OTA : Various	7.207	0.000		0.000		0.000		-		0.000	0.000	7.207	7.207
Subtotal			64.757	26.690		27.347		22.798		-		22.798	Continuing	Continuing	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 1206895C / <i>Ballistic Missile Defense System Space Programs</i>						Project (Number/Name) MD33 / <i>MD Space Exp Center (MDSEC)</i>			
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Remarks N/A															
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Spacebased Kill Assessment - Contract Support Services (CSS)	C/Various	Various : CO, VA	1.518	1.304	Nov 2020	1.500	Nov 2021	1.455	Nov 2022	-		1.455	Continuing	Continuing	Continuing
Spacebased Kill Assessment - FFRDC/ UARC	Various	Various : CO, AL, MD, VA, CA	2.441	1.001	Nov 2020	0.867	Nov 2021	0.988	Nov 2022	-		0.988	Continuing	Continuing	Continuing
Spacebased Kill Assessment - IT User Services	C/CPIF	JACOBS TECHNOLOGY INC. : Various	0.100	0.053	Nov 2020	0.054	Dec 2021	0.697	Nov 2022	-		0.697	Continuing	Continuing	Continuing
Spacebased Kill Assessment - MDA Civilian	Allot	MDA : VA	0.671	0.220	Oct 2020	0.156	Oct 2021	0.161	Oct 2022	-		0.161	Continuing	Continuing	Continuing
Spacebased Kill Assessment - Program Mission Support	C/Various	Various : CO, AL, MD, VA	0.295	0.349	Oct 2020	0.142	Nov 2021	0.403	Nov 2022	-		0.403	Continuing	Continuing	Continuing
Space Applications for Missile Defense - CSS - Engineering Support	C/TBD	TBD : Various	0.000	0.000		0.000		2.991	Nov 2022	-		2.991	Continuing	Continuing	Continuing
Space Applications for Missile Defense - Contractor Support Services (CSS)	C/Various	Various : Various	0.000	0.000		0.000		0.842	Nov 2022	-		0.842	Continuing	Continuing	Continuing
Space Applications for Missile Defense - MDA Civilian	Allot	MDA : Various	0.000	0.000		0.000		3.710	Oct 2022	-		3.710	Continuing	Continuing	Continuing
Space Sensor Layer (SSL) - Space Sensor Layer	C/CPFF	Various : CO, AL	4.805	0.000		0.000		0.000		-		0.000	0.000	4.805	4.805

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 1206895C / Ballistic Missile Defense System Space Programs				Project (Number/Name) MD33 / MD Space Exp Center (MDSEC)					
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
(SSL) - Contract Support Services (CSS)															
Space Sensor Layer (SSL) - Space Sensor Layer (SSL) - FFRDC	MIPR	Various : CA, CO, NM, VA	6.766	0.000		0.000		0.000		-		0.000	0.000	6.766	6.766
Space Sensor Layer (SSL) - Space Sensor Layer (SSL) - MDA Civilian	Allot	MDA : CO, AL	0.744	0.000		0.000		0.000		-		0.000	0.000	0.744	0.744
Space Sensor Layer (SSL) - Space Sensor Layer (SSL) - Program Mission Support	C/Various	Various : CO, AL, VA	0.978	0.000		0.000		0.000		-		0.000	0.000	0.978	0.978
Space Sensor Layer (SSL) - Space Sensor Layer (SSL) - UARC	C/CPFF	Various : UT, MD	3.202	0.000		0.000		0.000		-		0.000	0.000	3.202	3.202
Space Applications for Missile Defense - UARC	C/CPIF	SDL (Space Dynamics Lab) : UT	0.000	0.000		0.000		0.467	Nov 2022	-		0.467	Continuing	Continuing	Continuing
Subtotal			21.520	2.927		2.719		11.714		-		11.714	Continuing	Continuing	N/A
Remarks															
N/A															
			Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			86.277	29.617		30.066		34.512		-		34.512	Continuing	Continuing	N/A
Remarks															
Award Date reflects date of first obligation. Additional obligations may incrementally occur throughout the year.															

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Missile Defense Agency										Date: April 2022									
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 1206895C / Ballistic Missile Defense System Space Programs					Project (Number/Name) MD33 / MD Space Exp Center (MDSEC)									
Significant Event Complete ▲ Significant Event Planned △		Milestone Decision Complete ★ Milestone Decision Planned ☆		Element Test Complete ◆ Element Test Planned ◇		System Level Test Complete ● System Level Test Planned ○				Complete Activity ◆ Planned Activity ◇									
					FY 2021		FY 2022		FY 2023		FY 2024		FY 2025		FY 2026		FY 2027		
FTM-44 (AEGIS 5.1, DT Intercept Flight Test)					▲														
SKA/PIA Experimentation - 1Q2021-4Q2021					◆	◆	◆	◆											
MDS Integration Planned					◇	◇	◇	◇	◇	◇	◇	◇							
SKA/PIA Experimentation - 1Q2022-4Q2022								◇	◇	◇	◇								
FTT-21 (TH, DT Intercept Flight Test)								△											
FTX-26 (OT) (SN, OT Target Only Flight Test)									△										
SKA/PIA Operations/Experimentation - 1Q FY 2023 - 4Q FY 2023										◇	◇	◇	◇						
GTI-08b (N/I)												◇							
FTG-12 (GM, DT/OT Intercept Flight Test)												△							
GTI-08b Sprint 1 (N/I) (MDS Ground Test)												◇							
SKA/PIA Operations/Experimentation - 1Q FY 2024 - 4Q FY 2024												◇	◇	◇	◇				
FTM-43 (AEGIS 5.1, DT/OT Intercept Flight Test)												△							
GTD-08b (N/I)												◇							
FTM-37 (AEGIS 5.1, DT/OT Intercept Flight Test)												△							
GTI-13 Sprint 1 (N/I) (MDS Ground Test)													◇						
SKA/PIA Operations/Experimentation - 1Q FY 2025 - 4Q FY 2025													◇	◇	◇	◇			
GTI-13 Sprint 2 (N/I) (MDS Ground Test)														◇					
FTM-30 (AEGIS 5.1, DT/OT Intercept Flight Test)															△				
GTD-13 (N/I) (MDS Ground Test)															◇				
SKA/PIA Operations/Experimentation - 1Q FY 2026 - 4Q FY 2026																◇	◇	◇	
GTI-14 Sprint 1 (N/I)																	◇		
GTI-14 (N/I) Sprint 2 (MDS Ground Test)																		◇	
SKA/PIA Operations/Experimentation - 1Q FY 2027 - 4Q FY 2027																	◇	◇	
GTD-14 (N/I) (MDS Ground Test)																		◇	

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Missile Defense Agency			Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 1206895C / <i>Ballistic Missile Defense System Space Programs</i>	Project (Number/Name) MD33 / <i>MD Space Exp Center (MDSEC)</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
FTM-44 (AEGIS 5.1, DT Intercept Flight Test)	1	2021	1	2021
SKA/PIA Experimentation - 1Q2021-4Q2021	1	2021	4	2021
MDS Integration Planned	1	2021	4	2023
SKA/PIA Experimentation - 1Q2022-4Q2022	1	2022	4	2022
FTT-21 (TH, DT Intercept Flight Test)	2	2022	2	2022
FTX-26 (OT) (SN, OT Target Only Flight Test)	4	2022	4	2022
SKA/PIA Operations/Experimentation - 1Q FY 2023 - 4Q FY 2023	1	2023	4	2023
GTI-08b (N/I)	4	2023	4	2023
FTG-12 (GM, DT/OT Intercept Flight Test)	4	2023	4	2023
GTI-08b Sprint 1 (N/I) (MDS Ground Test)	1	2024	1	2024
SKA/PIA Operations/Experimentation - 1Q FY 2024 - 4Q FY 2024	1	2024	4	2024
FTM-43 (AEGIS 5.1, DT/OT Intercept Flight Test)	2	2024	2	2024
GTD-08b (N/I)	2	2024	2	2024
FTM-37 (AEGIS 5.1, DT/OT Intercept Flight Test)	3	2024	3	2024
GTI-13 Sprint 1 (N/I) (MDS Ground Test)	1	2025	1	2025
SKA/PIA Operations/Experimentation - 1Q FY 2025 - 4Q FY 2025	1	2025	4	2025
GTI-13 Sprint 2 (N/I) (MDS Ground Test)	3	2025	3	2025
FTM-30 (AEGIS 5.1, DT/OT Intercept Flight Test)	4	2025	4	2025
GTD-13 (N/I) (MDS Ground Test)	4	2025	4	2025
SKA/PIA Operations/Experimentation - 1Q FY 2026 - 4Q FY 2026	1	2026	4	2026
GTI-14 Sprint 1 (N/I)	4	2026	4	2026
GTI-14 (N/I) Sprint 2 (MDS Ground Test)	2	2027	2	2027

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Missile Defense Agency			Date: April 2022	
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 1206895C / Ballistic Missile Defense System Space Programs		Project (Number/Name) MD33 / MD Space Exp Center (MDSEC)	
	Start		End	
Events	Quarter	Year	Quarter	Year
SKA/PIA Operations/Experimentation - 1Q FY 2027 - 4Q FY 2027	1	2027	4	2027
GTD-14 (N/I) (MDS Ground Test)	4	2027	4	2027

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency										Date: April 2022		
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 1206895C / Ballistic Missile Defense Sy stem Space Programs				Project (Number/Name) MD42 / Hypersonic & Ballistic Tracking Space Sensor (HBTSS) Prototyping			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
MD42: Hypersonic & Ballistic Tracking Space Sensor (HBTSS) Prototyping	108.139	130.000	256.222	89.220	-	89.220	74.328	75.827	3.755	3.470	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

In FY 2019 Hypersonic and Ballistic Tracking Space Sensor (HBTSS), formerly called the Space Sensor Layer (SSL), was funded in budget project MD37. Beginning in FY 2020, HBTSS is being funded in budget project MD42.

Decrease from FY 2022 to FY 2023 reflects completion of Launch Vehicle procurement and satellite (bus and payload) development.

A. Mission Description and Budget Item Justification

HBTSS will demonstrate a resilient, flexible, and global capability to detect and track hypersonic threats and boosting conventional ballistic missiles. The fire-control quality tracking data will be handed off to the hypersonic weapons systems to allow long range engagement of the threat while enhanced tracking accuracy through missile burn out will provide the warfighting community increased capability in missile defense weapons systems engagement and higher accuracy impact predictions.

The HBTSS priority is to maintain the pace of the development schedule to develop an operational capability to meet the urgent warfighter need to address rapidly developing threats. To meet this priority, HBTSS must use high technology readiness level components, take advantage of existing government capabilities to minimize development, use a management culture that does not slow down the pace of development, and use Other Transaction Authority (OTA) to minimize contracting cycle times. OTAs allow the Government to work with traditional, non-traditional, and new space businesses to identify innovative solutions.

The HBTSS seeks to demonstrate the ability to meet requirements derived from United States Strategic Command Prioritized Capabilities List, the National Defense Authorization Act for Fiscal Year 2019, and the Joint Requirements Oversight Council Capability Development Document for Missile Warning (MW)/Missile Defense (MD) Overhead Persistent Infrared (OPIR).

HBTSS developed target signal-to-clutter algorithms and evaluated them in a Signal-chain Processing Demonstration, providing insight into the constellation architecture, communications approach, and preliminary command and control design aspects. These results informed the development of the HBTSS prototype demonstration space vehicles and demonstrated the ability to detect and track dim targets in a cluttered background along with the sensitivity necessary to support the hypersonic kill chain.

Like other Missile Defense Agency space sensors, HBTSS is planned to integrate with the existing Joint OPIR Ground architecture for mission tasking and data distribution. This OPIR enterprise architecture will be integrated with the terrestrial Missile Defense System (MDS) sensors to improve missile defense architecture capabilities.

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency			Date: April 2022		
Appropriation/Budget Activity 0400 / 4		R-1 Program Element (Number/Name) PE 1206895C / Ballistic Missile Defense System Space Programs	Project (Number/Name) MD42 / Hypersonic & Ballistic Tracking Space Sensor (HBTSS) Prototyping		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)			FY 2021	FY 2022	FY 2023
Title: Hypersonic and Ballistic Tracking Space Sensor (HBTSS)			130.000	256.222	89.220
Articles:			-	-	-
Description: HBTSS is a space-based missile tracking sensor/system program to address warfighter requirements. The goal of this effort is to develop prototype space sensors to: -Detect and track hypersonic threats as well as boosting conventional ballistic missiles -Support MW/MD mission -Support other missions, as capable -Leverage inherent multi-domain capabilities to provide as-capable support to the OPIR Enterprise Recurring activities include: - Constellation analysis and mission management design - Ground Segment Sustainment - HBTSS program management, oversight, and mission support Specific and/or unique accomplishments to each Fiscal Year (FY) are as follows: FY 2022 Plans: - Acquire launch services through SSC to support planned launch date and unique orbital requirements for the MDS mission - Complete spacecraft bus procurement, assembly, integration, and testing - Complete ground system implementation and continue integration and testing in support of Phase IIb - Complete payload(s) development, assembly, integration and test (AI&T) - Initiate Space Vehicle assembly, integration, and test activities - Initiate on-orbit test and calibration support activities FY 2023 Plans: - Complete Space Vehicle assembly, integration, and test activities - Conduct Ground Readiness Reviews and complete ground system integration and testing - Conduct Payload Calibration and Test Reviews - Conduct Pre-ship Reviews and Launch Readiness Reviews in preparation for launch - Launch on-orbit prototype demonstration Space Vehicles - Conduct early orbit test activities and initiate on-orbit testing FY 2022 to FY 2023 Increase/Decrease Statement:					

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency										Date: April 2022		
Appropriation/Budget Activity 0400 / 4				R-1 Program Element (Number/Name) PE 1206895C / Ballistic Missile Defense System Space Programs				Project (Number/Name) MD42 / Hypersonic & Ballistic Tracking Space Sensor (HBTSS) Prototyping				
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)										FY 2021	FY 2022	FY 2023
Decrease from FY 2022 to FY 2023 reflects completion of Launch Vehicle procurement and satellite (bus and payload) development.												
Accomplishments/Planned Programs Subtotals										130.000	256.222	89.220
C. Other Program Funding Summary (\$ in Millions)												
Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost	
• 0603890C: BMD Enabling Programs	607.167	623.644	591.847	-	591.847	613.589	625.761	635.633	640.374	Continuing	Continuing	
• 0603896C: Ballistic Missile Defense Command and Control, Battle Management & Communication	639.027	564.946	589.374	-	589.374	575.883	588.824	612.853	605.801	Continuing	Continuing	
• 0604181C: Hypersonic Defense	267.589	287.796	225.477	-	225.477	108.540	110.220	287.535	449.590	Continuing	Continuing	
• 1206893C: Space Tracking and Surveillance System	33.356	15.176	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	48.532	
Remarks												
D. Acquisition Strategy												
The HBTSS acquisition approach delivers a warfighting capability using a phased approach. Each phase has a limited duration, is capability focused, and allows HBTSS to maintain schedule, reduce risk, and add new technology and capabilities when ready.												

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 1206895C / Ballistic Missile Defense System Space Programs				Project (Number/Name) MD42 / Hypersonic & Ballistic Tracking Space Sensor (HBTSS) Prototyping					
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Hypersonic and Ballistic Tracking Space Sensor (HBTSS) - Component Testing	MIPR	Lawrence Berkley National Lab : Berkley, CA	0.139	0.000		0.000		0.000		-		0.000	0.000	0.139	0.139
Hypersonic and Ballistic Tracking Space Sensor (HBTSS) - Ground Segment	Various	Various : Various	0.000	0.000		0.000		2.320	Nov 2022	-		2.320	Continuing	Continuing	Continuing
Hypersonic and Ballistic Tracking Space Sensor (HBTSS) - Ground Segment - ESL Integration	C/CPAF	NORTHROP GRUMMAN : AL	0.000	0.000		0.000		2.000	Nov 2022	-		2.000	Continuing	Continuing	Continuing
Hypersonic and Ballistic Tracking Space Sensor (HBTSS) - Ground Segment - Network Comms	C/Various	DOD - DEFENSE INFORMATION SYSTEMS AGENCY (DISA) : Various	0.000	0.000		0.000		1.000	Nov 2022	-		1.000	Continuing	Continuing	Continuing
Hypersonic and Ballistic Tracking Space Sensor (HBTSS) - Ground Segment - Sustainment	C/TBD	JACOBS TECHNOLOGY INC. : CO	21.904	16.797	Feb 2021	21.754	Nov 2021	6.348	Nov 2022	-		6.348	Continuing	Continuing	Continuing
Hypersonic and Ballistic Tracking Space Sensor (HBTSS) - Launch Services	MIPR	Space Systems Command : CA	0.000	0.000		110.000	Dec 2021	0.000		-		0.000	0.000	110.000	110.000
Hypersonic and Ballistic Tracking Space Sensor (HBTSS) - Payload Risk Reduction	MIPR	Northrop Grumman : Huntsville, AL	6.269	0.000		0.000		0.000		-		0.000	0.000	6.269	6.269
Hypersonic and Ballistic Tracking Space Sensor (HBTSS) - Phase IIa Team 1	C/FFP	Harris Corporation : Various	3.995	0.000		0.000		0.000		-		0.000	0.000	3.995	3.995
Hypersonic and Ballistic Tracking Space Sensor	C/FFP	Leidos : San Diego, CA	3.995	0.000		0.000		0.000		-		0.000	0.000	3.995	3.995

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 1206895C / Ballistic Missile Defense System Space Programs				Project (Number/Name) MD42 / Hypersonic & Ballistic Tracking Space Sensor (HBTSS) Prototyping					
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
(HBTSS) - Phase IIa Team 2															
Hypersonic and Ballistic Tracking Space Sensor (HBTSS) - Phase IIa Team 3	C/FFP	Northrop Grumman : Los Angeles, CA	4.000	0.000		0.000		0.000		-		0.000	0.000	4.000	4.000
Hypersonic and Ballistic Tracking Space Sensor (HBTSS) - Phase IIa Team 4	C/FFP	Raytheon : Los Angeles, CA	3.959	0.000		0.000		0.000		-		0.000	0.000	3.959	3.959
Hypersonic and Ballistic Tracking Space Sensor (HBTSS) - Phase IIb Team 1	C/FFP	L3 Harris : IN	25.000	46.246	Jan 2021	42.870	Nov 2021	31.414	Nov 2022	-		31.414	Continuing	Continuing	Continuing
Hypersonic and Ballistic Tracking Space Sensor (HBTSS) - Phase IIb Team 2	C/FFP	Northrop Grumman : CA	25.000	64.490	Jan 2021	58.100	Nov 2021	29.914	Nov 2022	-		29.914	Continuing	Continuing	Continuing
Hypersonic and Ballistic Tracking Space Sensor (HBTSS) - Test Campaign Support	C/TBD	TBD : TBD	0.000	0.000		8.000	May 2022	2.000	Nov 2022	-		2.000	Continuing	Continuing	Continuing
Subtotal			94.261	127.533		240.724		74.996		-		74.996	Continuing	Continuing	N/A
Remarks N/A															
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Hypersonic and Ballistic Tracking Space Sensor	MIPR	THE AEROSPACE CORPORATION : CA	0.000	0.000		0.000		3.335	Nov 2022	-		3.335	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 1206895C / <i>Ballistic Missile Defense System Space Programs</i>						Project (Number/Name) MD42 / <i>Hypersonic & Ballistic Tracking Space Sensor (HBTSS) Prototyping</i>			
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
(HBTSS) - FFRDC/UARC - Aerospace															
Hypersonic and Ballistic Tracking Space Sensor (HBTSS) - Acquisition Support - Contract Support Services (CSS)	C/TBD	TBD : CO	0.000	0.000		0.000		1.095	Nov 2022	-		1.095	Continuing	Continuing	Continuing
Hypersonic and Ballistic Tracking Space Sensor (HBTSS) - CSS	C/Various	Various : Various	4.644	0.485	Feb 2021	4.955	Nov 2021	1.134	Nov 2022	-		1.134	Continuing	Continuing	Continuing
Hypersonic and Ballistic Tracking Space Sensor (HBTSS) - Engineering Support - CSS	C/TBD	TBD : Various	0.000	0.000		0.000		2.831	Nov 2022	-		2.831	Continuing	Continuing	Continuing
Hypersonic and Ballistic Tracking Space Sensor (HBTSS) - FFRDC/UARC	Various	Various : Various	8.205	1.167	Jun 2021	8.594	Nov 2021	1.469	Nov 2022	-		1.469	Continuing	Continuing	Continuing
Hypersonic and Ballistic Tracking Space Sensor (HBTSS) - FFRDC/UARC - SDL	C/CPFF	SDL (Space Dynamics Lab) : Various	0.000	0.000		0.000		2.512	Nov 2022	-		2.512	Continuing	Continuing	Continuing
Hypersonic and Ballistic Tracking Space Sensor (HBTSS) - MDA Civilian	Allot	MDA : Various	0.231	0.305	Feb 2021	1.316	Nov 2021	1.370	Oct 2022	-		1.370	Continuing	Continuing	Continuing
Hypersonic and Ballistic Tracking Space Sensor (HBTSS) - Program Mission Support	C/Various	Various : Various	0.798	0.510	Feb 2021	0.633	Nov 2021	0.478	Nov 2022	-		0.478	Continuing	Continuing	Continuing
Subtotal			13.878	2.467		15.498		14.224		-		14.224	Continuing	Continuing	N/A
Remarks N/A															

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022					
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 1206895C / Ballistic Missile Defense System Space Programs					Project (Number/Name) MD42 / Hypersonic & Ballistic Tracking Space Sensor (HBTSS) Prototyping							
					Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals					108.139	130.000		256.222		89.220		-		89.220	Continuing	Continuing	N/A

Remarks

Award Date reflects date of first obligation. Additional obligations may incrementally occur throughout the year.

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Missile Defense Agency										Date: April 2022									
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 1206895C / Ballistic Missile Defense System Space Programs					Project (Number/Name) MD42 / Hypersonic & Ballistic Tracking Space Sensor (HBTSS) Prototyping									
Significant Event Complete ▲		Milestone Decision Complete ★		Element Test Complete ◆		System Level Test Complete ●				Complete Activity ◆									
Significant Event Planned △		Milestone Decision Planned ☆		Element Test Planned ◇		System Level Test Planned ○				Planned Activity ◇									
					FY 2021		FY 2022		FY 2023		FY 2024		FY 2025		FY 2026		FY 2027		
Preliminary Concept Review (PCR)					◆														
Ground System Development Q1 FY 2021 - Q4 FY 2021					◆	◆	◆	◆											
Long Lead Procurement						◇	◇	◇	◇										
Spacecraft Bus Procurement						◇	◇	◇	◇	◇									
Payload Assembly/Integration/Test							◇	◇	◇	◇	◇								
Critical Design Reviews									△										
Ground System Development Q1 FY 2022 - Q4 FY 2022									◇	◇	◇	◇							
Payload Calibration Test Review (PCTR)										△									
Space Vehicle Assembly/Integration/Test											◇	◇							
Ground Readiness Review (GRR)												△							
Pre-Ship Review (PSR)												△							
Launch Readiness Review (LRR)												△							
HBTSS Phase IIb Launch												△							
Launch and Early Orbit Test (LEOT)												△							
On-Orbit Testing													◇	◇	◇	◇	◇	◇	
FTM-43 (AEGIS 5.1, DT/OT Intercept Flight Test)														△					

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Missile Defense Agency			Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 1206895C / <i>Ballistic Missile Defense System Space Programs</i>	Project (Number/Name) MD42 / <i>Hypersonic & Ballistic Tracking Space Sensor (HBTSS) Prototyping</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Preliminary Concept Review (PCR)	1	2021	1	2021
Ground System Development Q1 FY 2021 - Q4 FY 2021	1	2021	4	2021
Long Lead Procurement	2	2021	1	2022
Spacecraft Bus Procurement	2	2021	2	2022
Payload Assembly/Integration/Test	3	2021	3	2022
Critical Design Reviews	1	2022	1	2022
Ground System Development Q1 FY 2022 - Q4 FY 2022	1	2022	4	2022
Payload Calibration Test Review (PCTR)	3	2022	3	2022
Space Vehicle Assembly/Integration/Test	4	2022	1	2023
Ground Readiness Review (GRR)	1	2023	1	2023
Pre-Ship Review (PSR)	2	2023	2	2023
Launch Readiness Review (LRR)	2	2023	2	2023
HBTSS Phase IIb Launch	2	2023	2	2023
Launch and Early Orbit Test (LEOT)	3	2023	3	2023
On-Orbit Testing	4	2023	4	2025
FTM-43 (AEGIS 5.1, DT/OT Intercept Flight Test)	2	2024	2	2024

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency										Date: April 2022		
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 1206895C / Ballistic Missile Defense System Space Programs				Project (Number/Name) MC33 / MD Space Exp Center (MDSEC)			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
MC33: MD Space Exp Center (MDSEC)	10.839	0.376	1.358	1.506	-	1.506	1.688	1.741	1.780	1.817	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
Note Increase from FY 2022 to FY 2023 provides for civilian oversight of cyber activities previously funded in Program Element 1206893C, Budget Project MC12												
A. Mission Description and Budget Item Justification Ballistic Missile Defense System (BMDS) Space Programs Cyber Operations sustain the Missile Defense Agency (MDA) Risk Management Framework (RMF) and Security Controls Assessments (SCA)/Controls Validation Testing activities, analysis of validation results, risk assessments, and reviews of proposed Program Manager/Information System Security Manager Plans of Action and Milestones (POA&Ms) for BMDS Space Program mission systems. Activities in this Project are necessary to comply with the Federal Information Security Management Act.												
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)									FY 2021	FY 2022	FY 2023	
Title: Network / System Certification and Accreditation (C&A) Articles: Description: This activity maintains the Assessment and Authorization and C&A data repository, capturing the RMF documentation (artifacts, validation results, and Information Assurance Risk Assessment results, and Designated Approving Authority (DAA) accreditation decisions) and POA&Ms on all MDA information systems. This activity prepares and submits C&A documentation and accreditation recommendations to the MDA Chief Information Officer/Certification Authority and the DAA. Independent Verification and Validation team actions ensure the availability, integrity, authentication, confidentiality, and non-repudiation of the MDA mission, test, and administrative systems. Recurring accomplishments include the following: - Monitor and track cybersecurity and mitigations detailed in Information Technology security POA&Ms - Conduct cybersecurity design, engineering, and architecture planning for information technology systems - Plan and test the cybersecurity controls for space systems - Conduct SCA testing continuous monitoring of mission systems and provide POA&Ms to mitigate cybersecurity vulnerabilities Specific and/or unique accomplishments to each Fiscal Year (FY) are as follows: FY 2022 Plans: SEE ABOVE FY 2023 Plans:									0.376	1.358	1.506	
									-	-	-	

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency		Date: April 2022	
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 1206895C / <i>Ballistic Missile Defense System Space Programs</i>	Project (Number/Name) MC33 / <i>MD Space Exp Center (MDSEC)</i>	
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2021	FY 2022
SEE ABOVE			
<i>FY 2022 to FY 2023 Increase/Decrease Statement:</i> Increase from FY 2022 to FY 2023 provides for civilian oversight of cyber activities previously funded in Program Element 1206893C, Budget Project MC12			
Accomplishments/Planned Programs Subtotals		0.376	1.358
C. Other Program Funding Summary (\$ in Millions) N/A			
Remarks			
D. Acquisition Strategy N/A			

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 1206895C / Ballistic Missile Defense System Space Programs				Project (Number/Name) MC33 / MD Space Exp Center (MDSEC)					
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Network / System Certification and Accreditation (C&A) - CORE Upgrade	C/CPAF	Northrop Grumman : Schriever AFB, CO	1.157	0.000		0.000		0.000		-		0.000	0.000	1.157	1.157
Network / System Certification and Accreditation (C&A) - Contractor Support Services (CSS)	C/Various	Various : Various	2.098	0.376	Nov 2020	1.358	Nov 2021	0.108	Nov 2022	-		0.108	Continuing	Continuing	Continuing
Network / System Certification and Accreditation (C&A) - Cybersecurity Management and Computer Network Defense - CSS	C/Various	TBD : Various	0.000	0.000		0.000		1.237	Nov 2022	-		1.237	Continuing	Continuing	Continuing
Network / System Certification and Accreditation (C&A) - MDSEA Solutions	C/CPIF	Jacobs : Schriever AFB, CO	3.471	0.000		0.000		0.000		-		0.000	0.000	3.471	1.106
Network / System Certification and Accreditation (C&A) - Network/Comm Assurance	Various	Various : Various	1.813	0.000		0.000		0.000		-		0.000	0.000	1.813	1.648
Network / System Certification and Accreditation (C&A) - SKA Communications	C/CPFF	JHU/APL : MD	0.360	0.000		0.000		0.000		-		0.000	0.000	0.360	0.360
Network / System Certification and Accreditation (C&A) - Strengthening Risk Management Framework	C/CPAF	Northrop Grumman, Various : Schriever AFB, CO	1.940	0.000		0.000		0.000		-		0.000	0.000	1.940	3.917
Subtotal			10.839	0.376		1.358		1.345		-		1.345	Continuing	Continuing	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency													Date: April 2022		
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 1206895C / <i>Ballistic Missile Defense System Space Programs</i>				Project (Number/Name) MC33 / <i>MD Space Exp Center (MDSEC)</i>					
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Remarks N/A															
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Network / System Certification and Accreditation (C&A) - MDA Civilian	Allot	MDA : CO	0.000	0.000		0.000		0.161	Oct 2022	-		0.161	Continuing	Continuing	Continuing
Subtotal			0.000	0.000		0.000		0.161		-		0.161	Continuing	Continuing	N/A
Remarks N/A															
			Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			10.839	0.376		1.358		1.506		-		1.506	Continuing	Continuing	N/A
Remarks Award Date reflects date of first obligation. Additional obligations may incrementally occur throughout the year.															

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PE 1206895C: *Ballistic Missile Defense System Space P...*
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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Missile Defense Agency			Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 1206895C / Ballistic Missile Defense System Space Programs	Project (Number/Name) MC33 / MD Space Exp Center (MDSEC)	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
MC33 Cyber Operations Planned	1	2021	4	2027

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency										Date: April 2022		
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 1206895C / Ballistic Missile Defense Sy stem Space Programs				Project (Number/Name) MD40 / Program-Wide Support			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
MD40: Program-Wide Support	2.661	1.274	5.165	4.719	-	4.719	4.237	4.261	1.805	1.854	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Program Wide Support (PWS) is allocated on a pro-rata basis across multiple Agency Program Elements (PE) each fiscal year based on the total Agency budget, and therefore fluctuates per PE by fiscal year.

A. Mission Description and Budget Item Justification

PWS contains non-headquarters management costs in support of the Missile Defense Agency (MDA) functions and activities across the entire Missile Defense System (MDS). These functions include Government Civilians and Contract Support Services. This effort provides integrity and oversight of the MDS as well as supports MDA in the development and evaluation of technologies that will respond to the changing threat. Additionally, PWS includes personnel to support global deployments performing deployment site preparation and activation, and provides facility capabilities for MDA Executing Agent locations worldwide. Other MDA wide costs include: physical and technical security; civilian drug testing; audit readiness; the Science, Technology, Engineering, and Mathematics (STEM) program; legal services and settlements; travel and agency training; office, equipment, vehicle, and warehouse leases; utilities and base operations across multiple geographic locations; commercial and ancillary facility services; management of all facility aspects regardless of lifecycle stage; supplies and maintenance; compliance with statutory environmental requirements; data and unified communications support; materiel and readiness and central property management of equipment; Facilities Sustainment, Restoration and Modernization (FSRM) program, (formerly Real Property Maintenance) to keep the Department's inventory of facilities in good working order; and similar operating expenses. PWS is allocated on a pro-rata basis across most Agency PEs and therefore fluctuates per PE by fiscal year based on the total Agency budget in that fiscal year.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

Title: Program Wide Support		FY 2021	FY 2022	FY 2023
Articles:		1.274	5.165	4.719
Description: PWS contains non-headquarters management costs in support of MDA functions and activities across the entire MDS. These functions include Government Civilians and Contract Support Services. This effort provides integrity and oversight of the MDS as well as supports MDA in the development and evaluation of technologies that will respond to the changing threat. Additionally, PWS includes personnel to support global deployments performing deployment site preparation and activation, and provides facility capabilities for MDA Executing Agent locations worldwide. Other MDA wide costs include: physical and technical security; civilian drug testing; audit readiness; the STEM program; legal services and settlements; travel and agency training; office, equipment, vehicle, and warehouse leases; utilities and base operations across multiple geographic locations; commercial and ancillary facility services; management of all facility aspects regardless of lifecycle stage; supplies and maintenance; compliance with statutory environmental requirements; data and unified communications support; materiel and readiness and central property management of equipment; FSRM program, (formerly Real Property Maintenance) to keep the Department's		-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency		Date: April 2022	
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 1206895C / <i>Ballistic Missile Defense System Space Programs</i>	Project (Number/Name) MD40 / <i>Program-Wide Support</i>	
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2021	FY 2022
inventory of facilities in good working order; and similar operating expenses. PWS is allocated on a pro-rata basis across most Agency PEs and therefore fluctuates per PE by fiscal year based on the total Agency budget in that fiscal year.			
FY 2022 Plans: - SEE ABOVE.			
FY 2023 Plans: - SEE ABOVE.			
FY 2022 to FY 2023 Increase/Decrease Statement: N/A			
Accomplishments/Planned Programs Subtotals		1.274	5.165
C. Other Program Funding Summary (\$ in Millions) N/A			
Remarks			
D. Acquisition Strategy N/A			

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Missile Defense Agency												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 1206895C / <i>Ballistic Missile Defense System Space Programs</i>						Project (Number/Name) MD40 / <i>Program-Wide Support</i>			
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Wide Support - Agency Facilities and Maintenance	MIPR	Various : Multi: AL, CA, CO, VA	0.000	0.371	Nov 2020	0.023	Nov 2021	2.481	Nov 2022	-		2.481	Continuing	Continuing	Continuing
Program Wide Support - Agency Facilities and Maintenance SRM	MIPR	Various : Multi: AK, AL, CA, CO, HI, NY, VA	0.000	0.000		0.029	Nov 2021	1.700	Nov 2022	-		1.700	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations Management	C/CPAF	Various Multi: AL, CA, : CO, VA	0.080	0.000		0.000		0.000		-		0.000	0.000	0.080	0.000
Program Wide Support - Agency Operations and Support Other Agency Services	MIPR	Various : Multi: AK, AL, CO, CA, HI, MD, VA	0.000	0.000		0.380	Nov 2021	0.000		-		0.000	0.000	0.380	0.000
Program Wide Support - Agency Operations and Support Services	MIPR	DOD - WASHINGTON HEADQUARTERS SERVICES (WHS) : VA	2.581	0.903	Dec 2020	4.733	Nov 2021	0.538	Dec 2022	-		0.538	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations, Sustainment and GPC	C/FFP	Various : Multi: AK, AL, CA, HI, NY, VA	0.000	0.000		0.000		0.000		-		0.000	0.000	0.000	0.000
Subtotal			2.661	1.274		5.165		4.719		-		4.719	Continuing	Continuing	N/A
Remarks N/A															
			Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			2.661	1.274		5.165		4.719		-		4.719	Continuing	Continuing	N/A
Remarks Award Date reflects date of first obligation. Additional obligations may incrementally occur throughout the year.															

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Missile Defense Agency														Date: April 2022															
Appropriation/Budget Activity 0400 / 4										R-1 Program Element (Number/Name) PE 1206895C / Ballistic Missile Defense System Space Programs										Project (Number/Name) MD40 / Program-Wide Support									
Significant Event Complete ▲				Milestone Decision Complete ★				Element Test Complete ◆				System Level Test Complete ●				Complete Activity ◆													
Significant Event Planned △				Milestone Decision Planned ☆				Element Test Planned ◇				System Level Test Planned ○				Planned Activity ◇													
										FY 2021		FY 2022		FY 2023		FY 2024		FY 2025		FY 2026		FY 2027							
MD40 Program-Wide Support										◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇					

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Missile Defense Agency			Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 1206895C / Ballistic Missile Defense System Space Programs	Project (Number/Name) MD40 / Program-Wide Support	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
MD40 Program-Wide Support	1	2021	4	2027

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Missile Defense Agency										Date: April 2022		
Appropriation/Budget Activity 0400: Research, Development, Test & Evaluation, Defense-Wide I BA 6: RDT&E Management Support					R-1 Program Element (Number/Name) PE 0605502C I Small Business Innovation Research - MDA							
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
Total Program Element	-	114.633	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	114.633
MD45: Small Business Innovation Research	-	114.633	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	114.633
Program MDAP/MAIS Code: 362												
Note Funds are transferred into this Program Element (PE) in the execution year.												
A. Mission Description and Budget Item Justification Small Business Innovation Research (SBIR) explores innovative concepts pursuant to Public Law 106-554 (Small Business Reauthorization Act of 2000) and Public Law 107-50 (Small Business Technology Transfer Program Reauthorization Act of 2001), which mandates a two-phase competition for small businesses with innovative technology that can be commercialized. SBIR and Small Business Technology Transfer (STTR) programs will develop new dual-use technology for future Missile Defense Agency (MDA) Missile Defense Systems (MDS) needs. Dual-use means that the technology will be judged on the potential for future private sector investment both as a vehicle for reducing development time and cost, unit costs of new MDS technology, and as a route to national economic growth through new commercial products. MDA will conduct the competition, award, and manage the contracts.												
B. Program Change Summary (\$ in Millions)				FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total				
Previous President's Budget				0.000	0.000	0.000	-	0.000				
Current President's Budget				114.633	0.000	0.000	-	0.000				
Total Adjustments				114.633	0.000	0.000	-	0.000				
• Congressional General Reductions				0.000	0.000							
• Congressional Directed Reductions				0.000	0.000							
• Congressional Rescissions				0.000	0.000							
• Congressional Adds				0.000	0.000							
• Congressional Directed Transfers				0.000	0.000							
• Reprogrammings				0.000	0.000							
• SBIR/STTR Transfer				114.633	0.000							
• Missile Defeat and Defense Enhancement				0.000	0.000	0.000	-	0.000				
• Other Adjustment				0.000	0.000	0.000	-	0.000				
Change Summary Explanation FY 2021 funds were transferred to SBIR/STTR from other PEs in accordance with the SBIR/STTR Reauthorization Act of 2011.												

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency										Date: April 2022		
Appropriation/Budget Activity 0400 / 6					R-1 Program Element (Number/Name) PE 0605502C / Small Business Innovation Research - MDA				Project (Number/Name) MD45 / Small Business Innovation Research			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
MD45: Small Business Innovation Research	-	114.633	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	114.633
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

N/A

A. Mission Description and Budget Item Justification

Small Business Innovation Research (SBIR) explores innovative concepts pursuant to Public Law 106-554 (Small Business Reauthorization Act of 2000) and Public Law 107-50 (Small Business Technology Transfer Program Reauthorization Act of 2001), which mandates a two-phase competition for small businesses with innovative technology that can be commercialized. SBIR and Small Business Technology Transfer (STTR) programs will develop new dual-use technology for future Missile Defense Agency (MDA) Missile Defense Systems (MDS) needs. Dual-use means that the technology will be judged on the potential for future private sector investment both as a vehicle for reducing development time and cost, unit costs of new MDS technology, and as a route to national economic growth through new commercial products. MDA will conduct the competition, award, and manage the contracts.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

<i>Title:</i> Small Business Innovation Research - MDA		FY 2021	FY 2022	FY 2023
<i>Articles:</i>		114.633	0.000	0.000
<i>Description:</i> MDA currently supports the Office of the Secretary of Defense SBIR/STTR Office priorities as follows: - Artificial Intelligence: Develop innovative recommendation algorithms applicable to digital data engineering artifacts and tools to be used by systems engineers for the MDS - Cybersecurity: Cyber Deception for Network Defense; Cyber Defense Ranking and Prioritization of Attack-related Events; Cyber Physical Security for Tactical Systems; Network Isolation of Industrial Control Systems - Directed Energy: Design and conduct experiments to measure and assess the electron energy distribution of high energy lasers for all scenarios including hypersonic lethality - Fully Networked Command, Control, and Communications: Creation of a Modeling and Simulation development and execution environment which significantly decreases the time to execute statistically significant batches of stochastic simulation runs for the purpose of estimating scenario output/outcome distributions while improving our knowledge of the outcome distributions - Hypersonics: Develop improved tools to model hypersonic jet interaction. Demonstrate innovative infrared and radio frequency window materials and integrated antenna technology for Government hypersonic flight systems, and develop hypersonic thermal protection system materials		-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency		Date: April 2022	
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605502C / <i>Small Business Innovation Research - MDA</i>	Project (Number/Name) MD45 / <i>Small Business Innovation Research</i>	
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2021	FY 2022
<ul style="list-style-type: none"> - Microelectronics: Develop and deliver next generation microelectronics technologies to enhance lethality, ensure critical infrastructure, and achieve economic competitiveness - Quantum Science: Seeks to demonstrate the use of quantum computing-based modeling and simulation to design and develop lightweight structural materials - Space: Seeks innovative technologies to apply and defeat incoming ballistic missiles to provide the capability and capacity to outpace the threat. Demonstrate additive manufacturing of metallic materials for Government hypersonic flight systems <p>FY 2022 Plans: - See Above</p> <p>FY 2023 Plans: Funds are transferred into this PE in the execution year. MDA plans to execute approximately \$115 million in FY 2023 to support the above mentioned activities. Final amount to be determined by enactment.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: N/A</p>			
Accomplishments/Planned Programs Subtotals		114.633	0.000
C. Other Program Funding Summary (\$ in Millions) N/A			
Remarks			
D. Acquisition Strategy N/A			

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Missile Defense Agency **Date:** April 2022

Appropriation/Budget Activity 0400: Research, Development, Test & Evaluation, Defense-Wide / BA 6: RDT&E Management Support	R-1 Program Element (Number/Name) PE 0901598C / Management HQ - MDA
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COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
Total Program Element	283.010	26.902	24.102	25.259	-	25.259	25.836	26.438	26.984	27.524	Continuing	Continuing
MD38: Management Headquarters	283.010	26.902	24.102	25.259	-	25.259	25.836	26.438	26.984	27.524	Continuing	Continuing

Program MDAP/MAIS Code: 362

Note

The Management Headquarters Activity (MHA) Program Element (PE) 0901598C includes decreases in accordance with Department of Defense (DoD) reform efforts to maintain major headquarter activities' civilian staffing at reduced levels. DoD efforts to establish a common MHA framework resulted in a net funding decrease due to the transfer of civilian manpower performing functions Missile Defense Agency (MDA) considered MHA in prior years. Funding and civilian manpower performing these non-MHA functions were appropriately transferred to Program Wide Support (PWS).

A. Mission Description and Budget Item Justification

As prescribed by DoD Instruction 5100.73 Major Headquarters Activities, MDA's Management Headquarters PE supports the operation of MDA's management headquarters activities. This program element funds government civilian salaries and benefits, travel, contract support services, and operations of non-fielded activities.

Management Headquarters Activities provide executive leadership planning, develop centralized agency policy, prepare and defend annual budget submissions, respond to external inquiries, and implement Secretary of Defense (SECDEF) and Presidential priorities. As a DoD research, development and acquisition agency, the Headquarters Activities provide cost efficient oversight, direction, and control of initiatives and processes that assure best value, high quality, on-time, and successful performance of MDA acquisition programs. This is accomplished by ensuring acquisition and procurement program management emphasizes systems engineering; incorporates life cycle management objectives; implements risk management; and assesses cost, schedule or performance trade-offs.

B. Program Change Summary (\$ in Millions)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Previous President's Budget	26.902	24.102	0.000	-	0.000
Current President's Budget	26.902	24.102	25.259	-	25.259
Total Adjustments	0.000	0.000	25.259	-	25.259
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Missile Defeat and Defense Enhancement	0.000	0.000	0.000	-	0.000

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Missile Defense Agency				Date: April 2022	
Appropriation/Budget Activity		R-1 Program Element (Number/Name)			
0400: Research, Development, Test & Evaluation, Defense-Wide I BA 6: RDT&E Management Support		PE 0901598C I Management HQ - MDA			
• Other Adjustment		0.000	0.000	25.259	- 25.259
Change Summary Explanation					
FY 2023 funding increase reflects the fact that the FY 2022 President's Budget request did not include out-year funding.					

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency										Date: April 2022		
Appropriation/Budget Activity 0400 / 6					R-1 Program Element (Number/Name) PE 0901598C / Management HQ - MDA				Project (Number/Name) MD38 / Management Headquarters			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
MD38: Management Headquarters	283.010	26.902	24.102	25.259	-	25.259	25.836	26.438	26.984	27.524	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
Note												
The Management Headquarters Activity (MHA) Program Element (PE) 0901598C includes decreases in accordance with Department of Defense (DoD) reform efforts to maintain major headquarter activities' civilian staffing at reduced levels. DoD efforts to establish a common MHA framework resulted in a net funding decrease due to the transfer of civilian manpower performing functions Missile Defense Agency (MDA) considered MHA in prior years.												
A. Mission Description and Budget Item Justification												
The MDA Headquarters provides oversight, direction and control over MDA's acquisition programs and fielded systems. The MDA Headquarters staff functions (government salaries, government travel, and contract support services) support the mission and operations of the world-wide MDA mission.												
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)									FY 2021	FY 2022	FY 2023	
Title: MHA Civilian Salaries Articles: Description: Provide mission support, oversight, and management of: - Acquisition, implementation of international initiatives to increase missile defense coverage to deployed forces and allies, efficiency-oriented administrative services, business operations, financial resources, human capitol, general counsel, internal review, public affairs, and media release. Specific and/or unique accomplishments to each FY are as follows: FY 2022 Plans: - SEE ABOVE. FY 2023 Plans: - SEE ABOVE. FY 2022 to FY 2023 Increase/Decrease Statement: N/A									16.457	15.194	15.806	
									-	-	-	
Title: MHA Travel Articles: Description: Provide mission essential government travel.									0.606	0.423	0.911	
									-	-	-	

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Missile Defense Agency		Date: April 2022	
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0901598C / Management HQ - MDA	Project (Number/Name) MD38 / Management Headquarters	
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2021	FY 2022
FY 2022 Plans: - SEE ABOVE. FY 2023 Plans: - SEE ABOVE. FY 2022 to FY 2023 Increase/Decrease Statement: Increase from FY 2022 to FY 2023 provides Management Headquarters with pre-pandemic baseline funding level for official travel in support of the agency mission.			
Title: MHA Contract Services Articles: Description: Provide contract support services to mission activities for acquisition, business operations, internal review, general counsel, administrative support and public affairs. Specific and/or unique accomplishments to each FY are as follows: FY 2022 Plans: - SEE ABOVE. FY 2023 Plans: - SEE ABOVE. FY 2022 to FY 2023 Increase/Decrease Statement: N/A		9.839 -	8.485 -
Accomplishments/Planned Programs Subtotals		26.902	25.259
C. Other Program Funding Summary (\$ in Millions)			
N/A			
Remarks			
D. Acquisition Strategy			
N/A			