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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 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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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: <i>Ground Based Midcourse</i>	7,063.948	1,108.120	669.813	616.461	-	616.461	811.895	750.058	727.176	706.512	Continuing	Continuing
MC08: <i>Cyber Operations</i>	163.201	47.814	24.800	27.795	-	27.795	28.553	24.908	25.407	30.271	Continuing	Continuing
MD40: <i>Program-Wide Support</i>	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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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)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
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 / <i>Ballistic Missile Defense Midcourse Defense Segment</i>	Project (Number/Name) MD08 / <i>Ground Based Midcourse</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
MD08: <i>Ground Based Midcourse</i>	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)

	FY 2021	FY 2022	FY 2023
Title: Ground Based Interceptor	181.009	105.560	68.905
Articles:	-	-	-
<p>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.</p>			
Recurring work:			

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

	FY 2021	FY 2022	FY 2023
<p>-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</p> <p>-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</p> <p>-Continue Probabilistic Risk Assessment (reliability model) development to assess the GBI design enabling improvements to overall GBI reliability for Warfighter defense of the homeland</p> <p>-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</p> <p>-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</p> <p>-Develop software to improve system robustness and reliability</p> <p>-Sustain the capability to develop and test replacement components and to upgrade the GBI fleet</p> <p>-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> <p>Specific and/or unique accomplishments to each FY are as follows:</p> <p>FY 2022 Plans:</p> <p>-Develop EKV software to provide additional mid-term discrimination and homeland threat space updates for the Capability Enhancement II(CE-II) fleet</p> <p>-Maintain boost vehicle software</p> <p>-Begin integration of hardware for flight test GBI to support FTG-12</p> <p>-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> <p>FY 2023 Plans:</p> <p>-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</p> <p>-Continue developing CE-II EKV software to provide additional mid-term discrimination and homeland threat space updates</p> <p>-Deliver GBI for FTG-12</p>			

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2021	FY 2022	FY 2023
<p>-Complete second delivery of two additional CE-II Block 1 EKV with Configuration 2 (C2) Boost Vehicle GBIs assembled from spares</p> <p>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.</p>				
<p>Title: Ground Systems & Fire Control</p> <p>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.</p> <p>-Continue development of the Fort Greely, AK (FGA) Communication Center (FGACC) to improve communication redundancy</p> <p>-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</p> <p>-Continue development, testing and integration of FGA MF-4 and increase Silo capacity and modernize SIV equipment in existing Silos</p> <p>-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</p> <p>-Continue implementation of software and hardware fixes to address weaknesses found during testing</p> <p>-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</p> <p>-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</p> <p>-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)</p>		203.486	172.385	156.614
		Articles:	-	-

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2021	FY 2022	FY 2023
<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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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: 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 align="right">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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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023
<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) 			

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2021	FY 2022	FY 2023
<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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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> <ul style="list-style-type: none"> -Execute GMD Increment 6B assessments and verification -Execute GWS 10A System Requirements Review (SRR) and Preliminary Design Review (PDR) -Execute GWS Incremental Reviews -Initiate and Support NGI PDRs -Conduct GMD Increment 10 SRR -Conduct Increment 10 GMD Element Design and Technical integration using Digital Engineering to integrate the NGI to deliver a multi-interceptor GMD Weapon System -Transition, expand, maintain, and operate GMD Engineering Development and Early Integration Lab Capabilities for fielded and future GMD increments including establishing GMD Integration Lab -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 -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>FY 2022 to FY 2023 Increase/Decrease Statement: 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>				
Title: Program Operations		60.118	46.476	50.704
		Articles: -	-	-
<p>Description: Program Operations provides for government management of the GMD program. This effort provides:</p> <ul style="list-style-type: none"> -Technical, business, acquisition, configuration management and integration activities to ensure the GMD program meets cost, schedule, and performance goals -Ensure program compliance with internal and external direction, policies, and regulations to deliver critical capability within a consistent and disciplined process -Internal Agency program reviews to measure program progress against the six MDA approved baselines -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 				

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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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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: 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
• 0604874C: <i>Improved</i> <i>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
• 0604887C: <i>Ballistic</i> <i>Missile Defense Midcourse</i> <i>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

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.

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.

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.

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.

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Exhibit R-2A, 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>

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 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.

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.

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.

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.

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.

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, VSF, 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.

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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>
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Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
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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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>
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Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
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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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>
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Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
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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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 0603882C / Ballistic Missile Defense Midcourse Defense Segment						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 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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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>
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Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
- 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 To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
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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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>
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Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
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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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>
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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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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 0603882C / Ballistic Missile Defense Midcourse Defense Segment				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 - 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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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 0603882C / Ballistic Missile Defense Midcourse Defense Segment						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 - 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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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>
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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
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					R-1 Program Element (Number/Name)					Project (Number/Name)					
0400 / 4					PE 0603882C / Ballistic Missile Defense Midcourse Defense Segment					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>
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Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			

Remarks
N/A

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

Remarks
N/A

Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
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 / <i>Ballistic Missile Defense Midcourse Defense Segment</i>	Project (Number/Name) MD08 / <i>Ground Based Midcourse</i>
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Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
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 / <i>Ballistic Missile Defense Midcourse Defense Segment</i>	Project (Number/Name) MD08 / <i>Ground Based Midcourse</i>
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Activity	Significant Event Complete ▲		Milestone Decision Complete ★		Element Test Complete ◆		System Level Test Complete ●		Complete Activity ◆		System Level Test Planned ○		Planned Activity ◇	
	Significant Event Planned △	Milestone Decision Planned ☆	Element Test Planned ◇	System Level Test Planned ○	Complete Activity Planned Activity ◇	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>
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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 / <i>Ballistic Missile Defense Midcourse Defense Segment</i>	Project (Number/Name) MC08 / <i>Cyber Operations</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
MC08: <i>Cyber Operations</i>	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:			
-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 / <i>Ballistic Missile Defense Midcourse Defense Segment</i>	Project (Number/Name) MC08 / <i>Cyber Operations</i>		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2021	FY 2022	FY 2023
<p>-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</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 reassessment of required cyber contractor personnel to support Warfighter Integration for Network / System C&A.</p>				
<p>Title: Cyber Security and Cyber Resiliency</p> <p>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.</p> <p>Recurring Accomplishments:</p> <ul style="list-style-type: none"> -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 		<p>Articles:</p> <p>39.322</p> <p>-</p>	<p>18.223</p> <p>-</p>	<p>20.421</p> <p>-</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>

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023
-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 -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 Specific and/or unique accomplishments to each FY are as follows: FY 2022 Plans: - Test a new Computer Network Defense system that improves the operators ability to detect and respond to real-time cyber events - Conduct Penetration Assessment on Fort Greely AK Power Plant systems to assess attack vectors and implement a Cyber Resilient design FY 2023 Plans: - 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 - Develop new attack vectors on a virtual power plant system similar to Fort Greely, AK (FGA) Power Plant - Implement EAS SCMS upgrades for RMF compliance FY 2022 to FY 2023 Increase/Decrease Statement: 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.			
Accomplishments/Planned Programs Subtotals	47.814	24.800	27.795

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>
• 0208866C: MD08: <i>GMD Procurement</i>	150.000	0.000	11.300	-	11.300	0.000	18.403	42.725	48.866	Continuing	Continuing
• 028866C: MD08: <i>Midcourse Defense O&M</i>	148.741	156.623	185.564	-	185.564	199.248	204.864	188.486	186.647	0.000	1,270.173
• 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

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Exhibit R-2A, 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>
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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>
• 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

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.

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.

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.

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.

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.

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.

GMD Future Acquisition Strategy:

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

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Exhibit R-2A, 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>
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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.

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.

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.

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.

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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>
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Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
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 To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
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>
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Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
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 / <i>Ballistic Missile Defense Midcourse Defense Segment</i>	Project (Number/Name) MC08 / <i>Cyber Operations</i>
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Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
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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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 / <i>Ballistic Missile Defense Midcourse Defense Segment</i>	Project (Number/Name) MC08 / <i>Cyber Operations</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							
Network and System Certification and Accreditation	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇
Cybersecurity and Cyber Resiliency	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇
Cooperative Vulnerability Penetration Assessment (CVPA)	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇
Adversarial Assessment (AA)	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇
Computer Network Defense (CND)	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇

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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 / <i>Ballistic Missile Defense Midcourse Defense Segment</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>	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
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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) MD40 / <i>Program-Wide Support</i>
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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023
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.			
<i>FY 2022 Plans:</i> - SEE ABOVE.			
<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 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	23.268

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>
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Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
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 / <i>Ballistic Missile Defense Midcourse Defense Segment</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
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

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>
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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 ◇																
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 15%;"></th> <th style="width: 10%;">FY 2021</th> <th style="width: 10%;">FY 2022</th> <th style="width: 10%;">FY 2023</th> <th style="width: 10%;">FY 2024</th> <th style="width: 10%;">FY 2025</th> <th style="width: 10%;">FY 2026</th> <th style="width: 10%;">FY 2027</th> </tr> </thead> <tbody> <tr> <td>MD40 Program-Wide Support</td> <td>◇</td><td>◇</td><td>◇</td><td>◇</td><td>◇</td><td>◇</td><td>◇</td> </tr> </tbody> </table>						FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	MD40 Program-Wide Support	◇	◇	◇	◇	◇	◇	◇
	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 0603882C / <i>Ballistic Missile Defense Midcourse Defense Segment</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