Exhibit R-2, RDT&E Budget Item Justification: PB 2020 Missile Defense Agency	Date: March 2019
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 Program Element (Number/Name)** PE 0603914C / *Ballistic Missile Defense Test*

COST ($ in Millions)	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
Total Program Element	1,964.192	406.806	515.897	395.924	-	395.924	417.946	335.481	451.723	405.136	Continuing	Continuing
MD04: *BMDS Consolidated Test Center*	-	0.000	0.000	0.000	-	0.000	31.710	0.000	95.000	73.700	0.000	200.410
MT04: *BMDS Test Program*	1,861.802	383.821	472.673	371.710	-	371.710	360.921	306.746	326.575	306.066	Continuing	Continuing
MC04: *Cyber Operations*	13.792	8.459	28.619	8.710	-	8.710	8.806	8.905	8.904	9.082	Continuing	Continuing
MD40: *Program Wide Support*	88.598	14.526	14.605	15.504	-	15.504	16.509	19.830	21.244	16.288	Continuing	Continuing

Program MDAP/MAIS Code: 362

Note

Decrease from FY 2019 to FY 2020 in accordance with the Integrated Master Test Plan (IMTP) 20.1

A. Mission Description and Budget Item Justification

Missile Defense Agency (MDA) utilizes a disciplined system engineering process to develop and integrate the Ballistic Missile Defense System (BMDS) into an effective, layered defense against ballistic missiles of all ranges during all phases of flight. This process consists of the following steps: Plan, Define, Design, Build, Test and Verify, Assess, and Deliver BMDS Capability, followed by transfer of selected capabilities. The BMDS Test Program Element (PE) is responsible for testing that provides critical data to: determine validity of models and simulations used to verify and assess BMDS capabilities; validate that Elements and Components are properly designed, built, and integrated; and provide confidence that the BMDS will perform as designed. Results from the Test and Verify step provide feedback into the Plan, Define, and Design steps to identify areas for system improvements. Key to the systems engineering process is Modeling and Simulation (M&S), which reflects the integrated operational system's performance. Confidence in M&S is based on a comprehensive Verification, Validation, and Accreditation (VV&A) process. The BMDS Test Program, as documented in the Integrated Master Test Plan (IMTP), has a primary emphasis to provide the data necessary to verify and assess BMDS capabilities in support of Technical Capability Declarations, and to anchor BMDS M&S. As models are validated and accredited, MDA and the BMDS Operational Test Agency (OTA) Team will utilize these models to assess BMDS capabilities through a campaign of ground testing.

BMDS Test Program Functions include:
- Represent MDA as the single test authority to the test and evaluation community, international cooperative program representatives, and other organization representatives
- Develop and implement MDA test policy, standards, tools, products, and processes to enable effective tests while balancing MDA and element programmatic needs
- Develop an IMTP that compiles all MDA test objectives, test schedules, and funding requirements from the year of execution through the Future Years Defense Program time period and beyond (through FY 2027)
- Act as the single point of contact in MDA for all external ranges and common test resources
- Provide, maintain, and develop common test resources and infrastructure required to execute tests in the MDA Test Program by leveraging element laboratories, ranges, executing agents, and functional expertise, as applicable

Exhibit R-2, RDT&E Budget Item Justification: PB 2020 Missile Defense Agency	Date: March 2019
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 Program Element (Number/Name)** PE 0603914C / *Ballistic Missile Defense Test*

- Certify that test personnel are trained and equipped to conduct safe and effective tests
- Provide test personnel and support services to plan and execute tests
- Collect, archive, and distribute all MDA test data/information

B. Program Change Summary ($ in Millions)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Previous President's Budget	316.193	365.681	349.388	-	349.388
Current President's Budget	406.806	515.897	395.924	-	395.924
Total Adjustments	90.613	150.216	46.536	-	46.536
• Congressional General Reductions	-2.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	88.400	150.216			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	4.336	0.000			
• SBIR/STTR Transfer	-0.123	0.000			
• Missile Defeat and Defense Enhancement	0.000	0.000	0.000	-	0.000
• Other Adjustment	0.000	0.000	46.536	-	46.536

Change Summary Explanation

Increase in FY 2018 from PB19 to PB20 reflects the enacted congressional adjustments for HALO acquisitions.

Increase in FY 2019 from PB19 to PB20 reflects the enacted congressional adjustments for HALO acquisitions, JEON testing, and Facilities, Sustainment, Restoration, and Modernization (FSRM).

Increase in FY 2020 from PB19 to PB20 provides ground and flight tests in accordance with the Integrated Master Test Plan (IMTP) 20.1.

Exhibit R-2A, RDT&E Project Justification: PB 2020 Missile Defense Agency			Date: March 2019
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603914C / *Ballistic Missile Defense Test*	**Project (Number/Name)** MD04 / *BMDS Consolidated Test Center*	

COST ($ in Millions)	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
MD04: *BMDS Consolidated Test Center*	-	0.000	0.000	0.000	-	0.000	31.710	0.000	95.000	73.700	0.000	200.410
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

The MD04 project has been added in FY 2021 to provide the procurement and outfitting of the Consolidated Test Center (CTC).

A. Mission Description and Budget Item Justification

The CTC is a two-phase complex of test and development focused buildings to be located on Redstone Arsenal. When completed, this complex will provide a more operationally realistic, secure, and efficient test infrastructure environment. Current Agency test infrastructure consists of 109 labs in 29 facilities across ten states. The consolidation of these geographically dispersed test centers into the CTC allows for future upgrades to capability and efficiently maintains a more robust security posture in accordance with DoD policy. The consolidation into the CTC also aligns the Agency to the mandated Federal Data Center Consolidation Initiative and reduces security vulnerabilities from several disparate security authorities. The Agency will be better positioned to support emerging requirements and address agile integration and testing through a conformed DoD network, not dispersed geographically which adds additional complexity and security issues to an evolving threat response. Agency testing requires agility and complexity to meet the evolving threat, and updating the current test infrastructure requires substantial investment.

CTC-1 will allow the Agency to consolidate developmental testing and Hardware-In-the-Loop (HWIL) assets into a single complex to support the increasing pace of system-level testing. This strategy is critical because several data centers are approaching capacity. It also ensures compliance with Agency commitments to vacate currently leased space and consolidate laboratories into MDA-owned facilities. By synchronizing technology refreshes across the laboratories and data centers, the Agency will reduce the cost of common test infrastructure across the Agency and will provide more efficient infrastructure for continuous operations. CTC-2 will move the majority of MDA developmental laboratories out of Army (AMRDEC/SED) and other premises and under Agency cognizance, with the potential to reduce future infrastructure costs (beyond FYDP) while improving Agency security posture through developmental laboratory consolidation. CTC-1 MILCON is scheduled to begin in FY 2022, with outfitting and equipping beginning simultaneously to ensure complete transition NLT FY 2025. CTC-2 MILCON is planned to begin in FY 2025.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2018	FY 2019	FY 2020
Title: Consolidated Test Center	0.000	0.000	0.000
Articles:	-	-	-
Description: Acquire, move, and build the ground test infrastructure of the Agency in the CTC-1 building. CTC-1 consolidates multiple laboratories and facilities including the Advanced Research Center (ARC), THAAD HWIL laboratories, Tactical Communications Environment Segment (TCES), Network, Systems Integration and Test Environment (NSITE), and Ground Test Communications.			

Exhibit R-2A, RDT&E Project Justification: PB 2020 Missile Defense Agency		Date: March 2019
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603914C / *Ballistic Missile Defense Test*	**Project (Number/Name)** MD04 / *BMDS Consolidated Test Center*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2018	FY 2019	FY 2020
This work is scheduled to begin in FY 2021. ***FY 2019 Plans:*** - SEE ABOVE. ***FY 2020 Plans:*** - SEE ABOVE. ***FY 2019 to FY 2020 Increase/Decrease Statement:*** N/A			
Accomplishments/Planned Programs Subtotals	0.000	0.000	0.000

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Missile Defense Agency		Date: March 2019
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603914C / *Ballistic Missile Defense Test*	**Project (Number/Name)** MD04 / *BMDS Consolidated Test Center*

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Consolidated Test Center - Test Equipment	MIPR	USACE : AL	0.000	0.000		0.000		0.000		-		0.000	0.000	0.000	0.000
		Subtotal	0.000	0.000		0.000		0.000		-		0.000	0.000	0.000	N/A

Remarks

N/A

	Prior Years	FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	0.000		0.000		0.000		-		0.000	0.000	0.000	N/A

Remarks

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

Exhibit R-4, RDT&E Schedule Profile: PB 2020 Missile Defense Agency		**Date:** March 2019
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603914C / *Ballistic Missile Defense Test*	**Project (Number/Name)** MD04 / *BMDS Consolidated Test Center*

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 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
Consolidated Test Center One Move and Outfit (CTC-1)				✧ ✧ ✧ ✧	✧ ✧ ✧ ✧	✧ ✧ ✧ ✧	✧ ✧ ✧ ✧

Exhibit R-4A, RDT&E Schedule Details: PB 2020 Missile Defense Agency		Date: March 2019
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603914C / *Ballistic Missile Defense Test*	**Project (Number/Name)** MD04 / *BMDS Consolidated Test Center*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
Consolidated Test Center One Move and Outfit (CTC-1)	1	2021	4	2025

Exhibit R-2A, RDT&E Project Justification: PB 2020 Missile Defense Agency			Date: March 2019
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603914C / *Ballistic Missile Defense Test*	**Project (Number/Name)** MT04 / *BMDS Test Program*	

COST ($ in Millions)	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
MT04: *BMDS Test Program*	1,861.802	383.821	472.673	371.710	-	371.710	360.921	306.746	326.575	306.066	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Decrease from FY 2019 to FY 2020 in accordance with the Integrated Master Test Plan (IMTP) 20.1.

A. Mission Description and Budget Item Justification

The Test Program provides consolidated MDA capabilities and resources to support the management and execution of BMDS and Element-level testing.

The MDA Test Program is responsible for all BMDS testing and relies on BMDS Systems Engineering to provide the system test objectives that define the test architecture by developing, updating, coordinating, and assessing the IMTP. The MDA Test Program plans and executes BMDS test events and develops the necessary test policy, test plans, and test infrastructure to conduct an effective test program. The goals of this budget project are to sustain and improve a robust testing program and to enhance M&S efforts to provide, in conjunction with flight and ground testing, confidence to the Combatant Commanders that the missile defense system works.

Activities are grouped into six major areas: 1) Program Planning and Operations; 2) Flight Test; 3) Ground Test; 4) Test Infrastructure; 5) Engineering Test Analysis; and 6) USFK JEON.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2018	FY 2019	FY 2020
Title: Program Planning and Operations	100.203	85.841	95.465
Articles:	-	-	-
Description: The BMDS Test program is responsible for the following Program Planning and Operational activities: - Provide BMDS OTA System Team funding for civilian salaries and personnel support of system-level testing and conduct cybersecurity assessments of BMDS. - Implement cybersecurity test requirements as directed by the National Defense Authorization Act (NDAA) for Fiscal Year 2016, Pub. L. No. 114-92, Sec. 1647 (a), Director, Operational Test and Evaluation (DOT&E), and Deputy Assistant Secretary of Defense, Developmental Test and Evaluation (DT&E) to include planning, coordination, and execution of Cooperative Vulnerability and Penetration Assessments, Adversarial Assessments, Cyber Table Top Exercises, and Element Cybersecurity Experiments - Serve as the MDA Test Interface/Liaison to the DOT&E, the DASD (DT&E), JFCC IMD, JITC and the Service OTAs. - Maintain a professional and diverse civilian workforce for flight and ground test support events. - Establish, maintain and execute the BMDS Test program budget. - Provide Integrated Master Test Plan cost modeling. - Provide day-to-day Test Functional Area (TFA) management.			

Exhibit R-2A, RDT&E Project Justification: PB 2020 Missile Defense Agency		Date: March 2019
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603914C / *Ballistic Missile Defense Test*	**Project (Number/Name)** MT04 / *BMDS Test Program*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2018	FY 2019	FY 2020
- Provide Test organizational property accountability. - Establish and standardize Test issuance documents. - Provide external interface services to support execution of the Ballistic Missile Defense System (BMDS) test program. - Manage Test contracting and acquisition activities as well as manpower activities ensuring proper integration of contracts, support agreements; oversight and maintenance of the Test Directorate Inter/Intra-agency Acquisition Review (IAR) database. - Provide oversight and coordination of test policy guidance to ensure compliance and strategic synchronization across the Test Directorate and the MDA. - Manage travel, including travel to support IMTP flight and ground test events. Specific and/or unique accomplishments to each FY are as follows: ***FY 2019 Plans:*** - SEE ABOVE. ***FY 2020 Plans:*** - Transition of all OTA requirements to the BMD Test PE 0603914C, including OTA teams supporting GMD, VV&A, Cyber, and THAAD. ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Increase from FY 2019 to FY 2020 provides for the consolidation of all OTA requirements to the BMD Test PE 0603914C.			
Title: Flight Test	19.496	51.822	38.786
Articles:	-	-	-
Description: The Flight Test Execution program solely reflects the Integrated Master Test Plan (IMTP) cost model. The program integrates, manages, and executes flight tests using certified personnel and standardized processes and products to support Ballistic Missile Defense System (BMDS) fielding to the warfighter. - Develop flight test training requirements for Test Directors and other console operators. - Implement cybersecurity test requirements as directed by the National Defense Authorization Act (NDAA) for Fiscal Year 2016, Pub. L. No. 114-92, Sec. 1647 (a), Director, Operational Test and Evaluation (DOT&E), and Deputy Assistant Secretary of Defense, Developmental Test and Evaluation (DT&E) to include planning, coordination, and execution of Cooperative Vulnerability and Penetration Assessments, Adversarial Assessments, Cyber Table Top Exercises, and Element Cybersecurity Experiments. - Develop and manage the cybersecurity test organization including plans, policy and strategy, resources, and tracking of information and coordinating Cyber test schedules in support of Flight Tests. - Identify mission risks and implement mitigation practices as required ensuring safe and successful test outcomes. - Provide a Failure Response Team to ensure implementation of the response plan and capture lessons learned for process improvement.			

Exhibit R-2A, RDT&E Project Justification: PB 2020 Missile Defense Agency		Date: March 2019
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603914C / *Ballistic Missile Defense Test*	**Project (Number/Name)** MT04 / *BMDS Test Program*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2018	FY 2019	FY 2020
- Train test personnel for each flight test and maintain training records for all test personnel. - Train and resource System Mission Managers to lead Integrated Event Test Team mission management and readiness activities across all four test event phases for System and Element flight test and contingency operations. - Complete test planning for BMDS Flight Test events. - Conduct mission planning and range coordination activities; provide communications security equipment and management for BMDS Flight Test events. - Design and develop the Lessons Learned database. Specific and/or unique accomplishments to each FY are as follows: ***FY 2019 Plans:*** Execute Flight Test events in accordance with the R-4 schedule. ***FY 2020 Plans:*** Execute Flight Test events in accordance with the R-4 schedule. ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Decrease from FY 2019 to FY 2020 is in accordance with the IMTP.			
Title: Ground Test	10.102	17.116	78.221
Articles:	-	-	-
Description: The Ground Test Execution program plans, designs, and executes BMDS ground tests in support of flight test risk reduction; BMDS fielding decisions; and Doctrine, Organization, Training, Materiel, Leadership and Education, and Personnel and Facilities (DOTMLPF) assessments. In addition, enables the warfighter to effectively employ, maintain, and sustain the BMDS and participate in the development of future missile defense capabilities through efficient ground testing. - Conduct SPMTs as required to support BMDS Flight Test Risk Reduction Analysis. - Refine and continue development of the Ground Test Mission Directors, System Mission Manager and Mission Director training plan. - Implement cybersecurity test requirements as directed by the National Defense Authorization Act (NDAA) for Fiscal Year 2016, Pub. L. No. 114-328, *1647 (a), Director, Operational Test and Evaluation (DOT&E), and Deputy Assistant Secretary of Defense, Developmental Test and Evaluation (DT&E) to include planning, coordination, and execution of Cooperative Vulnerability and Penetration Assessments, Adversarial Assessments, Cyber Table Top Exercises, and Element Cybersecurity Experiments. - Develop and manage the cybersecurity test organization including plans, policy and strategy, resources, and tracking of information and coordinating Cyber test schedules in support of the IMTP. Maintain Ground Test Infrastructure:			

Exhibit R-2A, RDT&E Project Justification: PB 2020 Missile Defense Agency		Date: March 2019
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603914C / *Ballistic Missile Defense Test*	**Project (Number/Name)** MT04 / *BMDS Test Program*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2018	FY 2019	FY 2020
- Execute ground test planning activities supporting MDA test requirements and priorities to include test design, test integration, digital assessment, and international testing. - Maintain the hardware-in-the-loop (HWIL) Labs and communication test assets. - Maintain Advanced Research Center (ARC) infrastructure and networks, complete accreditation activities and ensure cyber compliance of all ARC enclaves Specific and/or unique accomplishments to each FY are as follows: ***FY 2019 Plans:*** - Initiate planning for cyber requirements in FY 2020 GTD-08 (E/C) and GTD-08 (N/P) test events. - Finalize development of CONOPS to support CI/CAT emerging requirements, which begins execution in FY 2021. - Execute the following Ground Tests in FY 19: GTD-07b (NORTHCOM/CENTCOM), GTI-07c (NORTHCOM/CENTCOM), GTI-19 (USEUCOM/CENTCOM), and GTI-ISR (18) (International). - Initiate planning for the following Ground Test in FY20: GTI-08 (N/P) and CAT Sprints. ***FY 2020 Plans:*** - Execute the following Ground Tests in FY 2020: GTI-07c, GT-20 Sprint (BL 5.4), GT-20 Sprint (JEON), GTI-08 (N/P), GTI-ISR (21) (International) Risk Reduction Test. - Execute planning phase of CONOPS to support CI/CAT requirements, which begin execution first quarter FY 2021. - Initiate planning for the following Ground Tests in FY 2021: GTI-09 Sprint 1 (E/C), GTI-09 Sprint 2 (E/C), GTD-08 (N/P), GTI-ISR (21) Formal Testing. - Plan, coordinate, and execute Cybersecurity Activities in Development and Operations Test (DT/OT) environments (Platform (Element) level and Systems of System Level) as identified in the IMTP for Cyber activities. - Plan, coordinate, and execute Element Cybersecurity Experiments (ECEs) to provide an early cyber assessment of the platforms. - Continue to incorporate cybersecurity testing requirements into the BMDS ground tests to include planning for cyber requirements in FY20 GTI-08 (N/P). - Identify efficiencies gained in NORTHCOM/PACOM cyber activities from lessons learned as documented in previous cyber activities. ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Increase from FY 2019 to FY 2020 provides transfer of all Ground Test infrastructure from the Test Infrastructure accomplishment to the Ground Test accomplishment.			
Title: Test Infrastructure	211.895	220.890	114.589
Articles:	-	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2020 Missile Defense Agency		Date: March 2019
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603914C / *Ballistic Missile Defense Test*	**Project (Number/Name)** MT04 / *BMDS Test Program*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2018	FY 2019	FY 2020
Description: The BMDS Test Program procures, maintains, and manages test resource infrastructure and provides all resources and requirements in support of a robust IMTP schedule in six primary functions: 1) Flight Test Ranges 2) Sea Based Mobile Assets 3) Airborne Optics 4) Flight Test Communications 5) IMTP Development & Data Management 6) Test Facilities Sustainment Restoration/Modernization The primary function responsibilities are as follows: Flight Test Ranges: - Maintain the MDA unique range facilities and mobile sensors, communication, data processing and dissemination infrastructure to support a broad spectrum of test requirements including metric tracking, target characterization, and multi-spectral imagery of BMDS phenomena. - Construct the new Wake Island communications facility and provide enhancements to the fiber backbone providing Flight Test Communications Network (FTCN) services to remote sites. - Facilities Sustainment Restoration/Modernization (FSRM) Funds are required to repair, upgrade, and sustain numerous facilities, test infrastructure, and equipment maintained by MDA world-wide Sea Based Mobile Assets: - Provide Sea Based Systems (SBS) continued sustainment of test instrumentation ships, PACIFIC COLLECTOR and PACIFIC TRCKER, and associated telemetry and radar systems. Airborne Optics: - Maintain and procure modified Gulfstream Aircraft (HALOs) that collect radiometric and photo-documentary performance data for strategic and tactical defense systems flight and ground tests. - All three current HALO aircraft and sensors are nearing end-of-life and require replacement in order to meet the Federal Aviation Administration requirement for Next Gen Navigation system by FY 2020. - The key FY 2019 initiative is to replace the first ABS (HALO) Fleet Renewal Program sensor airframe. Flight Test Communications: - Provide operations and maintenance support for the Flight Test Communications Network at Wake Island.			

Exhibit R-2A, RDT&E Project Justification: PB 2020 Missile Defense Agency		Date: March 2019
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603914C / *Ballistic Missile Defense Test*	**Project (Number/Name)** MT04 / *BMDS Test Program*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2018	FY 2019	FY 2020
- Maintain accreditation for the Transportable Telemetry Systems (TTS), Pacific Collector Range Safety System (PCRSS), and the Flight Test Communications Network (FTCN). IMTP Development & Data Management: - Establish authority and maintain configuration control of the test baseline. - Develop, update, coordinate and deliver the IMTP, coordinated within MDA and External stakeholders (Director, Operational Test and Evaluation (DOT&E); the Deputy Assistant Secretary of Defense for Developmental Test and Evaluation (DASD(DT&E)); the Joint Functional Component Command for Integrated Missile Defense (JFCC IMD); the Service Operational Test Agencies (OTAs)); and the Joint Interoperability Test Command (JITC)); and provides an affordable and executable test plan to meet Warfighter needs and National Security commitments. - Coordinate the IMTP Special Access Programs (SAP) Annex with respect to changes to SAP Program Test Baseline and synchronize with the collateral IMTP. - Manage the approved test baseline by assessing all proposed changes to the BMDS Test Schedule and Test Configurations for each BMDS test event identified in the IMTP. - Support the Developmental Baseline Reviews and the annual BMDS Accountability Reviews to assess baseline execution risk and verify BMDS components are consistent with the approved test baseline. - Update and maintain the classified Test Resource Mission Planning-Tool (TRMP-T(C)) database. - Execute Flight Test Design Analysis ensuring test designs are safe and sufficient to meet test objectives. - Develop and maintain integrated test tools to support Truth Data Requirements Documents, Truth Data Packages, on-site Truth Quick-Look product development, pre- and post-test analysis test planning, and resource de-confliction; Integrated Data Management Plans (IDMPs), Data Handling Plans (DHPs), Cybersecurity documentation, data planning and management, library operations, deployment process; infrastructure requirements process; and test operations support. - Provide analytical capability for Flight and Ground test planning to include: test design feasibility assessments, truth data and sensor analysis, truth data requirements documentation and data packages; flight safety analysis and flight safety data packages; and telemetry link margin, collision avoidance, and pre- and post-test trajectory analyses. - Review BMDS component programs' content on a quarterly basis to ensure consistency with the approved IMTP. - Maintain and extend the Directorate of Test Support System (DTSS) classified Computer Network Defense Service Provider (CNDSP) to support network cybersecurity defense for ground test network systems. Continue to define cybersecurity investments, risks and benefits used to reduce vulnerabilities and protect critical administrative and test data. - Maintain accreditation of the Orion Voice Switch Conferencing System (VSCS). - Co-chair the Signature Working Group to review all signature models and identify technical limitations associated with radar and optical signatures used to support Ballistic Missile Defense System (BMDS) ground and flight testing. - Manage the Missile Defense Data Center (MDDC) Program and its library, operations, and infrastructure providing centralized data management, archival, and distribution services.			

Exhibit R-2A, RDT&E Project Justification: PB 2020 Missile Defense Agency		Date: March 2019
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603914C / *Ballistic Missile Defense Test*	**Project (Number/Name)** MT04 / *BMDS Test Program*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2018	FY 2019	FY 2020
Specific and/or unique accomplishments to each FY are as follows: ***FY 2019 Plans:*** - Procure third Gulfstream-550. - Begin modifications on the new Gulfstream-550s as part of the ABS (HALO) Fleet Renewal Program. - Design, test, and integrate the Airborne Sensors Primary Sensor replacement into the first Gulfstream-550. - Replace the Sea Tel primary C-Band SATCOM antennas onboard Pacific Tracker and Pacific Collector to address End of Life (EoL). - Implement a redundant communications hub at the MDA Integration and Operations Center (MDIOC). - Complete construction and initiate outfit of the new Wake Island Test Support Facility that will replace failing and condemned mission support facilities and consolidate multiple test support and test execution functions into a single facility. - Execute a phased repair and modernization project for the Meck Island Power Plant at the Reagan Test Site (RTS) in conjunction with a U.S. Army Garrison-Kwajalein (USAG-KA)/MDA project to establish a green, renewable power generation and distribution system. - Execute deferred test infrastructure sustainment and modernization projects consistent with Independent Facility Condition Assessments (FCAs) conducted at multiple BMDS Test Ranges. - Implement an Operation and Sustainment (O&S) program for a new launch infrastructure at Kauai Test Facility (KTF) to support future target launches using new target variants currently in design. - Execute facility repair and maintenance activities across multiple locations, including: Pacific Missile Range Facility, Wake Island, Reagan Test Site/Meck Island, and Kauai Test Facility. ***FY 2020 Plans:*** - Complete the sensor integration, perform airworthiness flight tests, and mission systems ground and flight tests for the first new HALO system (HALO-IR) prior to fielding in late FY 2020/early FY 2021. - Complete modifications on the second and third Gulfstream-550 as part of the ABS (HALO) Fleet Renewal Program. - Design, test, and integrate the Airborne Sensors Primary Sensor replacement into the second and third Gulfstream-550. - Complete the Business Case Analysis (BCA) on replacement of the Pacific Tracker and Pacific Collector vessels. - Refresh flight test support equipment and the fleet of utility vehicles at Wake Island. - Install phase 2 and 3 of the Maritime Acquisition and Range Safety System (MARSS) on board the Mobile At-Sea Sensor Ship (MATSS) to replace the aging Mobile Range Safety System (MRSS) currently on board. - Implement a distributed communications hub architecture facilitating near-simultaneous flight test mission operations. - Modernize Mobile Communications Suite - 2 (MCS-2) to meet emerging MDA flight test requirements for remote sites.			

Exhibit R-2A, RDT&E Project Justification: PB 2020 Missile Defense Agency		Date: March 2019
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603914C / *Ballistic Missile Defense Test*	**Project (Number/Name)** MT04 / *BMDS Test Program*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2018	FY 2019	FY 2020
- Continue execution of the Meck Island Power Plant Replacement Project to include all power generation, switchgear, controls, Life Support Area, and downstream power distribution system components. - Release 2.0 NSITE Software to support all flight and ground test events. ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Decrease from FY 2019 to FY 2020 provides acceleration of ABS (HALO) Fleet Renewal Program improvements into FY 2018 and FY 2019, completion of FSRM activities in FY 2019, and the transfer of Ground Test Infrastructure to the Ground Test accomplishment.			
Title: Engineering and Test Analysis	29.925	25.104	27.049
Articles:	-	-	-
Description: The Engineering and Analysis effort provides essential BMDS ground and flight test event planning, execution, and evaluation activities for each test event: - Designing test architecture, defining test objectives and evaluation criteria, defining target requirements, and generating ground and flight test scenarios appropriate to the data collection requirements to assess BMDS performance and anchor Models and Simulations. - Producing the threat data for BMDS ground and flight tests. - Coordinating with BMDS OTA to address test issues, disposition them, coordinate them, with the OTA and recommend action plans to achieve closure. - Delivering HWIL M&S integration test cases. - Integrating, testing, functionally qualifying, and delivering end-to-end BMDS simulations supporting ground test missions. - Analyzing system-level interoperability. - Conducting modeling and technical analysis for Combatant Command wargames and exercises. - Utilizing M&S for pre-test assessment and post-test review, as well as M&S updates. - Providing test configuration management; risk assessments; and anomaly/deficiency review, assessment and closure. - Analyzing test results to identify verification and validation data collection shortfalls and reassigning objectives to future test events as required. - Documenting BMDS test observations for system-level test anomalies and coordinating the resulting BMDS Discrepancy Reports within the Failure Reporting, Analysis, and Corrective Action System (FRACAS) - Providing the Quick Look Brief, Mission Data Review (MDR), and Executive MDR. IMTP and infrastructure tasks include: - Providing long-range BMDS IMTP planning and integration strategies related to overarching BMDS analysis product integration. - Upgrading test analysis tools in concert with the BMDS evolution (e.g., Modular Analysis and Reporting Suite (MARS)) to enhance analysis capability and efficiency.			

Exhibit R-2A, RDT&E Project Justification: PB 2020 Missile Defense Agency		Date: March 2019
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603914C / *Ballistic Missile Defense Test*	**Project (Number/Name)** MT04 / *BMDS Test Program*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2018	FY 2019	FY 2020
- Populating the MARS database with data from the most recently completed tests to support as-built analysis and capability assessments. - Providing engineering analysis process software to include System Coordination and Observation Reporting Environment (SCORE), Software Change Analysis Review Environment (SCARE), File Manager (FileMan), and ManPower Loading (MPL). - Incrementally improving and providing infrastructure, software, and MDA/IA compliance for the RApid Scenario Prototyping (RaSP) capability. Specific and/or unique accomplishments to each FY are as follows: ***FY 2019 Plans:*** - SEE ABOVE. ***FY 2020 Plans:*** - SEE ABOVE. ***FY 2019 to FY 2020 Increase/Decrease Statement:*** N/A			
Title: USFK JEON	12.200	71.900	17.600
Articles:	-	-	-
Description: USFK USPACOM Joint Emergent Operational Need Statement (JEON) Testing. ***FY 2019 Plans:*** - Joint Requirements Oversight Council approved USPACOM JEON to deliver integrated Upper Tier and Lower Tier ballistic missile defense capability to expand engagement options and increases coverage area on the Korean Peninsula. - Delivers improved BMDS capability to the Korean Peninsula begun in September 2017. - These funds support USFK JEON testing. ***FY 2020 Plans:*** Continue flight and ground testing associated with USFK JEON program per IMTP schedule. ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Decrease from FY 2019 to FY 2020 is in accordance with the IMTP.			
Accomplishments/Planned Programs Subtotals	383.821	472.673	371.710

Exhibit R-2A, RDT&E Project Justification: PB 2020 Missile Defense Agency		Date: March 2019
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603914C / *Ballistic Missile Defense Test*	**Project (Number/Name)** MT04 / *BMDS Test Program*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
• 0603890C: *BMD Enabling Programs*	533.993	620.831	571.507	-	571.507	603.672	541.667	574.553	553.969	Continuing	Continuing

Remarks

D. Acquisition Strategy

The BMDS Test Program acquisition strategy is consistent with the MDA capabilities-based acquisition strategy that emphasizes testing, evolutionary acquisition, and knowledge-based funding. Test directs a team of various internal staff (government and scientific, engineering and technical assistance support), executing agents (including DoD agencies, Service Organizations, Laboratories and Program Offices, Federally Funded Research and Development Center (FFRDC) and other MDA programs to execute the various diverse efforts within the BMDS test program through competition. When a specific effort/activity being conducted, acquired, or maintained requires the use of an executing agent, respective headquarter regulations are used to conform the acquisition strategy.

The MDA IMTP establishes and documents the test requirements for the BMDS with the specific focus on collecting the data needed for the Verification, Validation, and Accreditation (VV&A) of the BMDS Models and Simulations. This paradigm uses critical factor analysis to drive test design, planning, and execution for accrediting M&S, which is used to validate and assess system performance. With this test approach, MDA will establish confidence that the M&S used to evaluate the BMDS represent real world behavior, thereby enabling simulation-based performance assessment to verify system functionality.

E. Performance Metrics

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Missile Defense Agency		Date: March 2019
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603914C / *Ballistic Missile Defense Test*	**Project (Number/Name)** MT04 / *BMDS Test Program*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
		Subtotal	-	-		-		-		-		-	-	-	N/A

Remarks

N/A

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
		Subtotal	-	-		-		-		-		-	-	-	N/A

Remarks

N/A

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Planning and Operations - IMTP Planning and Data Management Tools	C/FP	None : AL	118.365	21.723	Feb 2018	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Program Planning and Operations - Lab Analysis Infrastructure	MIPR	MIT-LL/Aerospace : AL/CA/MA	65.145	8.059	Feb 2018	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Program Planning and Operations - Operational Test Agency	MIPR	ATEC/Aberdeen Proving Grounds : MD	84.086	13.166	Feb 2018	23.310	Nov 2018	21.624	Nov 2019	-		21.624	Continuing	Continuing	Continuing
Program Planning and Operations - Support to Flight Testing	C/CPAF	Northrop Grumman/ Lockheed Martin : AL/CO	60.251	12.571	Oct 2017	0.000		0.000		-		0.000	Continuing	Continuing	Continuing

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Missile Defense Agency		Date: March 2019
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603914C / *Ballistic Missile Defense Test*	**Project (Number/Name)** MT04 / *BMDS Test Program*

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Planning and Operations - Support to Ground Testing	C/CPAF	MDIOC/JRDC/IRES/ Northrop Grumman : AL/CO/VA/DC	23.030	5.645	Oct 2017	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Program Planning and Operations - Support to Test Resources	C/CPAF	None : TEAMS/AL	26.615	4.354	Oct 2017	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Program Planning and Operations - Test Functional Management Office	C/CPFF	None : MDA/ MiDAESS/AL/VA/ CO/MA	317.502	34.685	Mar 2018	62.531	Nov 2018	73.841	Nov 2019	-		73.841	Continuing	Continuing	Continuing
Flight Test - IMTP Flight Testing	MIPR	Air & Missile Def Command/AFGSC/ H'ville Operations Support Center/ NAWC/NRL/Ronald Reagan Test Site /SPAWAR/ Vandenberg AFB/ White Sands Missile Range/AMRDEC/ NSWC/PMRF/611th CES/611th ASUS/ AEDC : AL/CA/CO/ HI	245.006	19.496	Oct 2017	51.822	Oct 2018	38.786	Oct 2019	-		38.786	Continuing	Continuing	Continuing
Ground Test - Ground Test Infrastructure	MIPR	Space and Naval Warfare Command : AL/CA	0.000	0.000		0.000		69.411	Oct 2019	-		69.411	Continuing	Continuing	Continuing
Ground Test - IMTP Ground Testing	MIPR	Aviation & Missile Research & Development/LTPO/ Space & Naval Warfare Command : AL/CO/CA	49.144	10.102	Oct 2017	17.116	Oct 2018	8.810	Oct 2019	-		8.810	Continuing	Continuing	Continuing
Test Infrastructure - Ground Test Infrastructure	MIPR	Space and Naval Warfare Command : AL/CA	23.593	3.908	Nov 2017	43.825	Nov 2018	0.000		-		0.000	0.000	71.326	0.000

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Missile Defense Agency		Date: March 2019
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603914C / *Ballistic Missile Defense Test*	**Project (Number/Name)** MT04 / *BMDS Test Program*

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Test Infrastructure - Airborne Optics Mobile Assets	C/IDIQ	None : L3/JHU/APL/ TX/MD/AZ/TN	105.313	102.750	Feb 2018	81.878	Feb 2019	24.424	Feb 2020	-		24.424	Continuing	Continuing	Continuing
Test Infrastructure - Core Ground Test Labs and HWILS	C/IDIQ	None : Colsa/ AMRDEC/AL/MD/FL/ CA/OH/CO	167.741	25.957	Feb 2018	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Test Infrastructure - Enhanced GT Capability Assets	C/IDIQ	None : Colsa/Boeing/ NG/AL/CO/FL/MD/HI	31.664	9.940	Feb 2018	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Test Infrastructure - Facilities Sustainment, Restoration & Modernization	MIPR	SMDC/Northrup Grumman/Colsa : AL/CO/NM	15.803	6.000	Nov 2017	26.049	Nov 2018	0.000		-		0.000	Continuing	Continuing	Continuing
Test Infrastructure - Flight Test Communications	C/IDIQ	ASI/WSMR : Gray Research/NRL/ NAWC/CA/MD/NCR/ NM/AL/MA	98.252	18.141	Nov 2017	17.787	Nov 2018	21.015	Nov 2019	-		21.015	Continuing	Continuing	Continuing
Test Infrastructure - Flight Test Ranges	C/IDIQ	SMDC/SNL/PMRF : NAWC/WSMR/ AMRDEC/NG/AK/AL/ CA/HI/NM/CO	77.473	10.018	Nov 2017	12.002	Nov 2018	13.807	Nov 2019	-		13.807	Continuing	Continuing	Continuing
Test Infrastructure - IMTP Planning & Data Management Tools	C/FP	None : AL	0.000	18.894	Nov 2017	19.379	Nov 2018	33.725	Nov 2019	-		33.725	Continuing	Continuing	Continuing
Test Infrastructure - Sea Based Mobile Assets	MIPR	None : MARAD/ NAWC/Hanscom AFB/AL/CA/MD/ NCR/NM/MA	81.931	16.287	Nov 2017	19.970	Nov 2018	21.618	Nov 2019	-		21.618	Continuing	Continuing	Continuing
Test Infrastructure - Support to Test Resources	MIPR	None : TEAMS/AL	146.104	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Engineering and Test Analysis - CSS Support	C/CPFF	TEAMS : AL	24.440	4.079	Nov 2017	4.162	Nov 2018	6.517	Nov 2019	-		6.517	Continuing	Continuing	Continuing
Engineering and Test Analysis - FFRDA/UARC 2	MIPR	Aerospace : CA	0.755	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Missile Defense Agency		Date: March 2019
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603914C / *Ballistic Missile Defense Test*	**Project (Number/Name)** MT04 / *BMDS Test Program*

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Engineering and Test Analysis - FFRDC/UARC	MIPR	MITRE : VA	3.187	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Engineering and Test Analysis - Industry Support	C/CPAF	Boeing : AL	22.447	1.856	Nov 2017	2.467	Nov 2018	0.000		-		0.000	Continuing	Continuing	Continuing
Engineering and Test Analysis - Industry Support - NME	C/CPAF	Northrop Grumman-JRDC : CO, AL	0.000	1.848	Nov 2017	0.350	Nov 2018	0.000		-		0.000	Continuing	Continuing	Continuing
Engineering and Test Analysis - Industry Support 2	C/CPAF	COLSA : AL, CO	0.000	0.000		0.000		2.332	Nov 2019	-		2.332	Continuing	Continuing	Continuing
Engineering and Test Analysis - OGA Support	MIPR	AMRDEC : AL	71.603	19.380	Nov 2017	18.125	Nov 2018	18.200	Nov 2019	-		18.200	Continuing	Continuing	Continuing
Engineering and Test Analysis - OGA Support - NME	MIPR	LTPO : AL	2.352	2.762	Nov 2017	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
USFK JEON - USFK JEON	SS/IDIQ	Lockheed Martin : Sunnyvale, CA/ Huntsville, AL	0.000	12.200	Nov 2017	71.900	Nov 2018	17.600	Nov 2019	-		17.600	Continuing	Continuing	Continuing
		Subtotal	1,861.802	383.821		472.673		371.710		-		371.710	Continuing	Continuing	N/A

Remarks

Recategorized and streamlined BMDS Test cost category content to better align test priorities.

The FY 2019 to FY 2020 increase of $54.411 million in Ground Test - Ground Test Infrastructure line reflects movement of all Ground Test infrastructure from the Test Infrastructure R-2A accomplishment to the Ground Test R-2A accomplishment.

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
		Subtotal	-	-		-		-		-		-	-	-	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Missile Defense Agency		**Date:** March 2019
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603914C / *Ballistic Missile Defense Test*	**Project (Number/Name)** MT04 / *BMDS Test Program*

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract

Remarks

N/A

	Prior Years	FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	1,861.802	383.821		472.673		371.710		-		371.710	Continuing	Continuing	N/A

Remarks

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

Exhibit R-4, RDT&E Schedule Profile: PB 2020 Missile Defense Agency | **Date:** March 2019

Appropriation/Budget Activity	**R-1 Program Element (Number/Name)**	**Project (Number/Name)**
0400 / 4	PE 0603914C / *Ballistic Missile Defense Test*	MT04 / *BMDS Test Program*

Significant Event Complete ▲ | Milestone Decision Complete ★ | Element Test Complete ◆ | System Level Test Complete ● | Complete Activity ✦
Significant Event Planned △ | Milestone Decision Planned ☆ | Element Test Planned ◇ | System Level Test Planned ○ | Planned Activity ✧

	FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023				FY 2024			
SM CTV-03 (AEGIS 3.6.1, Intercept Only Flight Test)	▲																											
FE-1 (DT Tracking Exercise Flight Test)	▲																											
FS 17-2 (DT Tracking Exercise Flight Test)	▲																											
FS 17-4 (DT Tracking Exercise Flight Test)	▲																											
Israeli Cooperative Intercept Flight Test - FY 2018	✦	✦	✦	✦																								
FTM-29 (AEGIS 5.1, Intercept Flight Test)		▲																										
Warfighter TP 07a (BMDS Ground Test)		✦																										
FTX-33 (DT Tracking Exercise Flight Test)		▲																										
GTI-07b E/C (BMDS Ground Test)		✦	✦																									
FTP-12a (P8-3) (LTPO, Intercept Flight Test)		▲																										
FTX-35 (TH, Target Only Flight Test)			▲																									
JFTM-05 E1 (JAPAN, DT Intercept Flight Test)				▲																								
JFTM-05 E2 (JAPAN, DT Intercept Flight Test)				▲																								
PACIFIC DRAGON-18 (AEGIS 5.0, DT Tracking Exercise Flight Test)				▲																								
FTM-45 (AEGIS 5.1, DT Intercept Flight Test)					▲																							
FTI-03 (OTA, OT Intercept Flight Test)					▲																							
Israeli Cooperative Intercept Flight Test - FY 2019					✧	✧	✧	✧																				
FTG-11 (OT) (GM, OT Intercept Flight Test)						△																						
GT-18 Sprint 3 (N/P) (BMDS Ground Test)						✧																						
FS-19 E1 (AEGIS 5.1, DT Interceptor Only Flight Test)							△																					
FS-19 E2 (AEGIS 5.1, DT Target Only Flight Test)							△																					
FS-19 E3 (AEGIS 5.1, DT Target Only Flight Test)							△																					
FS-19 E4 (AEGIS 5.1, DT Intercept Flight Test)							△																					
GT-19 Sprint 1 (N/P) (BMDS Ground Test)							✧																					

Exhibit R-4, RDT&E Schedule Profile: PB 2020 Missile Defense Agency		**Date:** March 2019
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603914C / *Ballistic Missile Defense Test*	**Project (Number/Name)** MT04 / *BMDS Test Program*

Significant Event Complete ▲ Milestone Decision Complete ★ Element Test Complete ◆ System Level Test Complete ● Complete Activity ✦
Significant Event Planned △ Milestone Decision Planned ☆ Element Test Planned ◇ System Level Test Planned ○ Planned Activity ✧

	FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023				FY 2024			
GT-19 Sprint 2 (JEON) (BMDS Ground Test)							✧																					
GTD-07b (N/P) (BMDS Ground Test)							✧																					
FTM-31 E1 (AEGIS SBT, DT/OT Intercept Flight Test)								△																				
FTM-31 E2 (AEGIS 5.1, DT Intercept Flight Test)								△																				
FTT-23 (TH, DT Intercept Flight Test)								△																				
Warfighter TP 07b (BMDS Ground Test)								✧																				
FTX-23 (AEGIS 5.1, DT Target Only Flight Test)								△																				
FEX-01 (OTHER, DT Tracking Exercise FT)									△																			
GTI-07c (N/P) (BMDS Ground Test)									✧																			
FTX-39 (LTPO, DT Target Only Flight Test)									△																			
Israeli Cooperative Intercept Flight Test - FY 2020									✧	✧	✧	✧																
FTM-32 (AEGIS SBT, DT/OT Intercept Flight Test)										△																		
FTM-33 (AEGIS SBT, DT/OT Intercept Flight Test)										△																		
FTP-21 (LTPO, DT Intercept Flight Test)										△																		
FTP-27 E1 (LTPO, DT/OT Flight Test)										△																		
GT-20 Sprint (JEON) (BMDS Ground Test)										✧																		
GT-20 Sprint (BL 5.4) (BMDS Ground Test)										✧																		
FTM-44 (AEGIS 5.1, DT Intercept Flight Test)										△																		
FTP-27 E2 (LTPO, DT/OT Flight Test)										△																		
FTP-17 (I8-2) (LTPO, DT Intercept Flight Test)											△																	
FTP-22 (LTPO, OT Intercept Flight Test)											△																	
GTD-07b (AA) (BMDS Ground Test)											✧																	
FTM-30 (AEGIS 5.1, DT/OT Intercept Flight Test)												△																
FTO-03 (OTA, OT Intercept Flight Test)												△																

Exhibit R-4, RDT&E Schedule Profile: PB 2020 Missile Defense Agency | **Date:** March 2019

Appropriation/Budget Activity	**R-1 Program Element (Number/Name)**	**Project (Number/Name)**
0400 / 4	PE 0603914C / *Ballistic Missile Defense Test*	MT04 / *BMDS Test Program*

Significant Event Complete ▲ | Milestone Decision Complete ★ | Element Test Complete ◆ | System Level Test Complete ● | Complete Activity ✦
Significant Event Planned △ | Milestone Decision Planned ☆ | Element Test Planned ◇ | System Level Test Planned ○ | Planned Activity ✧

	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
GM BVT-03+ (GM, DT Interceptor Only Flight Test)			△				
GTI-08 (N/P) (BMDS Ground Test)			✧	✧			
TH CTV-01 (LTPO, DT Interceptor Only Flight Test)				△			
GTI-09 Sprint 1 (E/C) (BMDS Ground Test)				✧ ✧			
Israeli Cooperative Intercept Flight Test - FY 2021				✧ ✧ ✧ ✧			
GTD-08 (N/P) (BMDS Ground Test)				✧			
JFTM-07 E1 (JAPAN, DT Intercept Flight Test)				△			
JFTM-07 E2 (JAPAN, DT Intercept Flight Test)				△			
FTT-21 (TH, DT Intercept Flight Test)				△			
Warfighter TP 08 (BMDS Ground Test)				✧			
FTX-26 (OT) (SN, OT Target Only Flight Test)				△			
GTI-ISR (21) (BMDS Ground Test)				✧			
GTI-09 Sprint 2 (E/C) (BMDS Ground Test)				✧			
FTP-23 (LTPO, DT/OT Intercept Flight Test)				△			
FTP-28 (LTPO, OT Intercept Flight Test)				△			
FTP-25 (LTPO, OT Intercept Flight Test)				△			
FTP-24 (LTPO, DT Intercept Flight Test)				△			
FS-21 E1 (AEGIS 5.1, DT Interceptor Only Flight Test)				△			
FS-21 E2 (AEGIS 5.1, DT Target Only Flight Test)				△			
FS-21 E3 (AEGIS 5.1, DT Target Only Flight Test)				△			
FS-21 E4 (AEGIS 5.1, DT Intercept Flight Test)				△			
GTD-09 (E/C) (BMDS Ground Test)					✧		
Israeli Cooperative Intercept Flight Test - FY 2022					✧ ✧ ✧ ✧		
FTP-18 (I8-3) (LTPO, OT Intercept Flight Test)					△		

Exhibit R-4, RDT&E Schedule Profile: PB 2020 Missile Defense Agency | **Date:** March 2019

Appropriation/Budget Activity	**R-1 Program Element (Number/Name)**	**Project (Number/Name)**
0400 / 4	PE 0603914C / *Ballistic Missile Defense Test*	MT04 / *BMDS Test Program*

Significant Event Complete ▲ | Milestone Decision Complete ★ | Element Test Complete ◆ | System Level Test Complete ● | Complete Activity ✦
Significant Event Planned △ | Milestone Decision Planned ☆ | Element Test Planned ◇ | System Level Test Planned ○ | Planned Activity ✧

	FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023				FY 2024			
FTP-19 (I8-4) (LTPO, DT Intercept Flight Test)																	△											
FTP-20 (I8-5) (LTPO, OT Intercept Flight Test)																	△											
GTI-10 Sprint 1 (E/C) (BMDS Ground Test)																	✧											
GM CTV-03+ (GM, DT Interceptor Only Flight Test)																	△											
FTX-28 E1 (TH, DT Target Only Flight Test)																		△										
FTX-28 E2 (TH, DT Target Only Flight Test)																		△										
FTX-28 E3 (TH, DT Target Only Flight Test)																		△										
GTI-11 Sprint 1 (N/P) (BMDS Ground Test)																		✧										
FTM-38 (AEGIS 5.0, DT/OT Intercept Flight Test)																			△									
GTI-10 Sprint 2 (E/C) (BMDS Ground Test)																			✧									
FTX-40 (AEGIS 5.1, DT Tracking Exercise Flight Test)																			△									
GTI-11 Sprint 2 (N/P) (BMDS Ground Test)																				✧								
FTM-37 (OT) (AEGIS 5.1, OT Intercept Flight Test)																				△								
FTG-17 (GM, DT Intercept Flight Test)																				△								
GTD-10 (E/C) (BMDS Ground Test)																					✧							
GTI-11 Sprint 3 (N/P) (BMDS Ground Test)																						✧						
Israeli Cooperative Intercept Flight Test - FY 2023																				✧	✧	✧	✧					
GTI-ISR (23) (BMDS Ground Test)																						✧						
FTT-24 (TH, DT Intercept Flight Test)																						△						
FTM-43 (AEGIS 5.1, DT/OT Intercept Flight Test)																							△					
FS-23 E1 (AEGIS 5.1, DT Interceptor Only Flight Test)																							△					
FS-23 E2 (AEGIS 5.1, DT Target Only Flight Test)																							△					
FS-23 E3 (AEGIS 5.1, DT Target Only Flight Test)																							△					
FS-23 E4 (AEGIS 5.1, DT Intercept Flight Test)																							△					

Exhibit R-4, RDT&E Schedule Profile: PB 2020 Missile Defense Agency		**Date:** March 2019
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603914C / *Ballistic Missile Defense Test*	**Project (Number/Name)** MT04 / *BMDS Test Program*

Significant Event Complete ▲ Milestone Decision Complete ★ Element Test Complete ◆ System Level Test Complete ● Complete Activity ✦
Significant Event Planned △ Milestone Decision Planned ☆ Element Test Planned ◇ System Level Test Planned ○ Planned Activity ✧

	FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023				FY 2024			
GTD-11 (N/P) (BMDS Ground Test)																								✧	✧			
Warfighter TP 11 (BMDS Ground Test)																								✧	✧	✧	✧	
Warfighter TP 13 (BMDS Ground Test)																								✧	✧	✧	✧	✧
FTX-38 (AEGIS 5.1, DT Target Only Flight Test)																									△			
FTG-18 (GM, DT/OT Intercept Flight Test)																									△			
Israeli Cooperative Intercept Flight Test - FY 2024																									✧	✧	✧	✧
GTI-12 Sprint 1 (E/C) (BMDS Ground Test)																										✧		
FTM-40 (AEGIS 5.1, DT/OT Intercept Flight Test)																										△		
GTI-13 Sprint 1 (N/P) (BMDS Ground Test)																											✧	
FTM-41 (AEGIS 5.1, DT Target Only Flight Test)																											△	
GTI-12 Sprint 2 (E/C) (BMDS Ground Test)																												✧
FTG-19 (GM, DT/OT Intercept Flight Test)																												

Exhibit R-4A, RDT&E Schedule Details: PB 2020 Missile Defense Agency		Date: March 2019
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603914C / *Ballistic Missile Defense Test*	**Project (Number/Name)** MT04 / *BMDS Test Program*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
SM CTV-03 (AEGIS 3.6.1, Intercept Only Flight Test)	1	2018	1	2018
FE-1 (DT Tracking Exercise Flight Test)	1	2018	1	2018
FS 17-2 (DT Tracking Exercise Flight Test)	1	2018	1	2018
FS 17-4 (DT Tracking Exercise Flight Test)	1	2018	1	2018
Israeli Cooperative Intercept Flight Test - FY 2018	1	2018	4	2018
FTM-29 (AEGIS 5.1, Intercept Flight Test)	2	2018	2	2018
Warfighter TP 07a (BMDS Ground Test)	2	2018	2	2018
FTX-33 (DT Tracking Exercise Flight Test)	2	2018	2	2018
GTI-07b E/C (BMDS Ground Test)	2	2018	3	2018
FTP-12a (P8-3) (LTPO, Intercept Flight Test)	2	2018	2	2018
FTX-35 (TH, Target Only Flight Test)	3	2018	3	2018
JFTM-05 E1 (JAPAN, DT Intercept Flight Test)	4	2018	4	2018
JFTM-05 E2 (JAPAN, DT Intercept Flight Test)	4	2018	4	2018
PACIFIC DRAGON-18 (AEGIS 5.0, DT Tracking Exercise Flight Test)	4	2018	4	2018
FTM-45 (AEGIS 5.1, DT Intercept Flight Test)	1	2019	1	2019
FTI-03 (OTA, OT Intercept Flight Test)	1	2019	1	2019
Israeli Cooperative Intercept Flight Test - FY 2019	1	2019	4	2019
FTG-11 (OT) (GM, OT Intercept Flight Test)	2	2019	2	2019
GT-18 Sprint 3 (N/P) (BMDS Ground Test)	2	2019	2	2019
FS-19 E1 (AEGIS 5.1, DT Interceptor Only Flight Test)	3	2019	3	2019
FS-19 E2 (AEGIS 5.1, DT Target Only Flight Test)	3	2019	3	2019
FS-19 E3 (AEGIS 5.1, DT Target Only Flight Test)	3	2019	3	2019

Exhibit R-4A, RDT&E Schedule Details: PB 2020 Missile Defense Agency		Date: March 2019
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603914C / *Ballistic Missile Defense Test*	**Project (Number/Name)** MT04 / *BMDS Test Program*

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
FS-19 E4 (AEGIS 5.1, DT Intercept Flight Test)	3	2019	3	2019
GT-19 Sprint 1 (N/P) (BMDS Ground Test)	3	2019	3	2019
GT-19 Sprint 2 (JEON) (BMDS Ground Test)	3	2019	3	2019
GTD-07b (N/P) (BMDS Ground Test)	3	2019	3	2019
FTM-31 E1 (AEGIS SBT, DT/OT Intercept Flight Test)	4	2019	4	2019
FTM-31 E2 (AEGIS 5.1, DT Intercept Flight Test)	4	2019	4	2019
FTT-23 (TH, DT Intercept Flight Test)	4	2019	4	2019
Warfighter TP 07b (BMDS Ground Test)	4	2019	4	2019
FTX-23 (AEGIS 5.1, DT Target Only Flight Test)	4	2019	4	2019
FEX-01 (OTHER, DT Tracking Exercise FT)	1	2020	1	2020
GTI-07c (N/P) (BMDS Ground Test)	1	2020	1	2020
FTX-39 (LTPO, DT Target Only Flight Test)	1	2020	1	2020
Israeli Cooperative Intercept Flight Test - FY 2020	1	2020	4	2020
FTM-32 (AEGIS SBT, DT/OT Intercept Flight Test)	2	2020	2	2020
FTM-33 (AEGIS SBT, DT/OT Intercept Flight Test)	2	2020	2	2020
FTP-21 (LTPO, DT Intercept Flight Test)	2	2020	2	2020
FTP-27 E1 (LTPO, DT/OT Flight Test)	2	2020	2	2020
GT-20 Sprint (JEON) (BMDS Ground Test)	2	2020	2	2020
GT-20 Sprint (BL 5.4) (BMDS Ground Test)	2	2020	2	2020
FTM-44 (AEGIS 5.1, DT Intercept Flight Test)	2	2020	2	2020
FTP-27 E2 (LTPO, DT/OT Flight Test)	2	2020	2	2020
FTP-17 (I8-2) (LTPO, DT Intercept Flight Test)	3	2020	3	2020
FTP-22 (LTPO, OT Intercept Flight Test)	3	2020	3	2020
GTD-07b (AA) (BMDS Ground Test)	3	2020	3	2020
FTM-30 (AEGIS 5.1, DT/OT Intercept Flight Test)	4	2020	4	2020

Exhibit R-4A, RDT&E Schedule Details: PB 2020 Missile Defense Agency		Date: March 2019
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603914C / *Ballistic Missile Defense Test*	**Project (Number/Name)** MT04 / *BMDS Test Program*

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
FTO-03 (OTA, OT Intercept Flight Test)	4	2020	4	2020
GM BVT-03+ (GM, DT Interceptor Only Flight Test)	4	2020	4	2020
GTI-08 (N/P) (BMDS Ground Test)	4	2020	1	2021
TH CTV-01 (LTPO, DT Interceptor Only Flight Test)	1	2021	1	2021
GTI-09 Sprint 1 (E/C) (BMDS Ground Test)	1	2021	2	2021
Israeli Cooperative Intercept Flight Test - FY 2021	1	2021	4	2021
GTD-08 (N/P) (BMDS Ground Test)	2	2021	2	2021
JFTM-07 E1 (JAPAN, DT Intercept Flight Test)	2	2021	2	2021
JFTM-07 E2 (JAPAN, DT Intercept Flight Test)	2	2021	2	2021
FTT-21 (TH, DT Intercept Flight Test)	2	2021	2	2021
Warfighter TP 08 (BMDS Ground Test)	3	2021	3	2021
FTX-26 (OT) (SN, OT Target Only Flight Test)	3	2021	3	2021
GTI-ISR (21) (BMDS Ground Test)	3	2021	3	2021
GTI-09 Sprint 2 (E/C) (BMDS Ground Test)	3	2021	3	2021
FTP-23 (LTPO, DT/OT Intercept Flight Test)	3	2021	3	2021
FTP-28 (LTPO, OT Intercept Flight Test)	3	2021	3	2021
FTP-25 (LTPO, OT Intercept Flight Test)	4	2021	4	2021
FTP-24 (LTPO, DT Intercept Flight Test)	4	2021	4	2021
FS-21 E1 (AEGIS 5.1, DT Interceptor Only Flight Test)	4	2021	4	2021
FS-21 E2 (AEGIS 5.1, DT Target Only Flight Test)	4	2021	4	2021
FS-21 E3 (AEGIS 5.1, DT Target Only Flight Test)	4	2021	4	2021
FS-21 E4 (AEGIS 5.1, DT Intercept Flight Test)	4	2021	4	2021
GTD-09 (E/C) (BMDS Ground Test)	1	2022	1	2022
Israeli Cooperative Intercept Flight Test - FY 2022	1	2022	4	2022
FTP-18 (I8-3) (LTPO, OT Intercept Flight Test)	2	2022	2	2022

Exhibit R-4A, RDT&E Schedule Details: PB 2020 Missile Defense Agency		Date: March 2019
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603914C / *Ballistic Missile Defense Test*	**Project (Number/Name)** MT04 / *BMDS Test Program*

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
FTP-19 (I8-4) (LTPO, DT Intercept Flight Test)	2	2022	2	2022
FTP-20 (I8-5) (LTPO, OT Intercept Flight Test)	2	2022	2	2022
GTI-10 Sprint 1 (E/C) (BMDS Ground Test)	2	2022	2	2022
GM CTV-03+ (GM, DT Interceptor Only Flight Test)	2	2022	2	2022
FTX-28 E1 (TH, DT Target Only Flight Test)	3	2022	3	2022
FTX-28 E2 (TH, DT Target Only Flight Test)	3	2022	3	2022
FTX-28 E3 (TH, DT Target Only Flight Test)	3	2022	3	2022
GTI-11 Sprint 1 (N/P) (BMDS Ground Test)	3	2022	3	2022
FTM-38 (AEGIS 5.0, DT/OT Intercept Flight Test)	4	2022	4	2022
GTI-10 Sprint 2 (E/C) (BMDS Ground Test)	4	2022	4	2022
FTX-40 (AEGIS 5.1, DT Tracking Exercise Flight Test)	4	2022	4	2022
GTI-11 Sprint 2 (N/P) (BMDS Ground Test)	1	2023	1	2023
FTM-37 (OT) (AEGIS 5.1, OT Intercept Flight Test)	1	2023	1	2023
FTG-17 (GM, DT Intercept Flight Test)	1	2023	1	2023
GTD-10 (E/C) (BMDS Ground Test)	2	2023	2	2023
GTI-11 Sprint 3 (N/P) (BMDS Ground Test)	3	2023	3	2023
Israeli Cooperative Intercept Flight Test - FY 2023	1	2023	4	2023
GTI-ISR (23) (BMDS Ground Test)	3	2023	3	2023
FTT-24 (TH, DT Intercept Flight Test)	3	2023	3	2023
FTM-43 (AEGIS 5.1, DT/OT Intercept Flight Test)	4	2023	4	2023
FS-23 E1 (AEGIS 5.1, DT Interceptor Only Flight Test)	4	2023	4	2023
FS-23 E2 (AEGIS 5.1, DT Target Only Flight Test)	4	2023	4	2023
FS-23 E3 (AEGIS 5.1, DT Target Only Flight Test)	4	2023	4	2023
FS-23 E4 (AEGIS 5.1, DT Intercept Flight Test)	4	2023	4	2023
GTD-11 (N/P) (BMDS Ground Test)	4	2023	1	2024

Exhibit R-4A, RDT&E Schedule Details: PB 2020 Missile Defense Agency		Date: March 2019
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603914C / *Ballistic Missile Defense Test*	**Project (Number/Name)** MT04 / *BMDS Test Program*

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
Warfighter TP 11 (BMDS Ground Test)	4	2023	3	2024
Warfighter TP 13 (BMDS Ground Test)	4	2023	4	2025
FTX-38 (AEGIS 5.1, DT Target Only Flight Test)	1	2024	1	2024
FTG-18 (GM, DT/OT Intercept Flight Test)	1	2024	1	2024
Israeli Cooperative Intercept Flight Test - FY 2024	1	2024	4	2024
GTI-12 Sprint 1 (E/C) (BMDS Ground Test)	2	2024	2	2024
FTM-40 (AEGIS 5.1, DT/OT Intercept Flight Test)	2	2024	2	2024
GTI-13 Sprint 1 (N/P) (BMDS Ground Test)	3	2024	3	2024
FTM-41 (AEGIS 5.1, DT Target Only Flight Test)	3	2024	3	2024
GTI-12 Sprint 2 (E/C) (BMDS Ground Test)	4	2024	4	2024
FTG-19 (GM, DT/OT Intercept Flight Test)	1	2025	1	2025

Exhibit R-2A, RDT&E Project Justification: PB 2020 Missile Defense Agency			Date: March 2019
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603914C / *Ballistic Missile Defense Test*	**Project (Number/Name)** MC04 / *Cyber Operations*	

COST ($ in Millions)	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
MC04: *Cyber Operations*	13.792	8.459	28.619	8.710	-	8.710	8.806	8.905	8.904	9.082	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Decrease from FY 2019 to FY 2020 reflects completion of cybersecurity enhancements, as addressed in House Rpt 115-676, page 232, accompanying the National Defense Authorization Act for Fiscal Year 2019.

A. Mission Description and Budget Item Justification

BMDS Test Cyber Operations sustain Missile Defense Agency Risk Management Framework (RMF) Standards, Computer Network Defense Service Provider and Controls Validation Testing activities: validation results; risk assessments; and reviews of proposed Program Manager/Information Systems Security Manager (PM/ ISSM) Plans of Action and Milestones (POA&Ms) for MDA Ballistic Missile Defense Test program. It maintains the Certification and Accreditation (C&A) data repository, capturing the RMF documentation (artifacts, validation results, and Cybersecurity Risk Assessment results, and Authorizing Official (AO) accreditation decisions) and POA&Ms on all MDA information systems. This project supports the monitoring and tracking of Cybersecurity mitigations detailed in Information Technology security POA&Ms. Activities include preparation of C&A documentation and accreditation recommendations to the MDA Senior Information Systems Security Officer/ Security Controls Assessor (SCA) and AO. Independent Verification and Validation (IV&V) team actions ensure the availability, integrity, authentication, confidentiality and non-repudiation of the MDA mission, test and administrative systems. Activities in the Project are necessary to comply with the Federal Information Systems Modernization Act (FISMA) of 2014. The MDA Information Technology Networks and Systems (ICTA) and Cross Domain Solution (CDS) provide oversight and guidance for implementing standard CDS security policies across the BMDS. The Network Operations Security Center (DNOSC) is the Local Control Center (LCC) (Tier 3) that protects, detects, characterizes, reports, and mitigates cyber threats through real-time continuous monitoring for flight and ground test assets.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2018	FY 2019	FY 2020
Title: Network / System Certification and Accreditation (C&A)	8.459	28.619	8.710
Articles:	-	-	-
Description: The BMDS Test Network/System Certification and Accreditation program will: - Provide cyber security program oversight of all MDA Test Directorate (DT) information systems, networks, sponsored remote sites, ground and flight test infrastructure, and exercise/war game infrastructures. This includes management of: cyber security compliance and authorization; cyber security training and awareness; information system secure configuration; assessment and incident management; and computer network defense. - Fund Ballistic Missile Defense Test Program Information Systems Security Manager (ISSM) civilian salaries. - Conduct cyber security/information assurance engineering and architecture planning for the BMDS Test Program information technology systems. - Plan and test the Cybersecurity controls for BMDS.			

Exhibit R-2A, RDT&E Project Justification: PB 2020 Missile Defense Agency		Date: March 2019
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603914C / *Ballistic Missile Defense Test*	**Project (Number/Name)** MC04 / *Cyber Operations*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2018	FY 2019	FY 2020
- Develop DT NIST certification and accreditation packages. - Leverage Cross Domain Solution (CDS) as single authority implementing standard security policies for test and across the BMDS. - Maintain and extend the Support System (DTSS) classified Computer Network Defense Service Provider (CNDSP) to support network cyber security defense for ground test network systems. - Continue to define cyber security investments, risks and benefits used to reduce vulnerabilities and protect critical administrative and test data. Specific and/or unique accomplishments to each FY are as follows: ***FY 2019 Plans:*** - Fund Disaster Recovery (DR) Continuity of Operations (COOP) hardware upgrades to ensure critical MDA test data archival while meeting and maintaining cybersecurity requirements. - Replace end of life hardware and software to reduce cybersecurity risks. - Build required Cross Domain Solution (CDS) with approved COCOM rulesets in support of RDT&E efforts to securely share data with allies during testing. - Build RDT&E development environment to meet DoD cybersecurity separation requirements in support of testing and fielding products to the warfighter. ***FY 2020 Plans:*** - SEE ABOVE. ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Decrease from FY 2019 to FY 2020 reflects completion of cybersecurity enhancements, as addressed in House Rpt 115-676, page 232, accompanying the National Defense Authorization Act for Fiscal Year 2019.			
Accomplishments/Planned Programs Subtotals	8.459	28.619	8.710

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Missile Defense Agency		Date: March 2019
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603914C / *Ballistic Missile Defense Test*	**Project (Number/Name)** MC04 / *Cyber Operations*

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Network / System Certification and Accreditation (C&A) - Cybersecurity Civ	MIPR	MDA : Various	1.224	0.473	Oct 2017	0.345	Nov 2018	0.494	Oct 2019	-		0.494	Continuing	Continuing	Continuing
Network / System Certification and Accreditation (C&A) - Cybersecurity Support	C/IDIQ	Torch Technologies : Various	5.630	3.765	Oct 2017	22.233	Oct 2018	3.510	Nov 2019	-		3.510	Continuing	Continuing	Continuing
Network / System Certification and Accreditation (C&A) - DNOSC	MIPR	Teledyne Brown/ AMRDEC : AL	6.938	4.221	Nov 2017	6.041	Oct 2018	4.706	Nov 2019	-		4.706	Continuing	Continuing	Continuing
		Subtotal	13.792	8.459		28.619		8.710		-		8.710	Continuing	Continuing	N/A

Remarks

N/A

	Prior Years	FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	13.792	8.459		28.619		8.710		-		8.710	Continuing	Continuing	N/A

Remarks

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

Exhibit R-4, RDT&E Schedule Profile: PB 2020 Missile Defense Agency		**Date:** March 2019
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603914C / *Ballistic Missile Defense Test*	**Project (Number/Name)** MC04 / *Cyber Operations*

Significant Event Complete ▲ Milestone Decision Complete ★ Element Test Complete ◆ System Level Test Complete ● Complete Activity ✦
Significant Event Planned △ Milestone Decision Planned ☆ Element Test Planned ◇ System Level Test Planned ○ Planned Activity ✧

	FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023				FY 2024			
MC04 Cyber Operations	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧

Exhibit R-4A, **RDT&E Schedule Details:** PB 2020 Missile Defense Agency		**Date:** March 2019
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603914C / *Ballistic Missile Defense Test*	**Project (Number/Name)** MC04 / *Cyber Operations*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
MC04 Cyber Operations	1	2018	4	2024

Exhibit R-2A, RDT&E Project Justification: PB 2020 Missile Defense Agency			Date: March 2019
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603914C / *Ballistic Missile Defense Test*	**Project (Number/Name)** MD40 / *Program Wide Support*	

COST ($ in Millions)	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
MD40: *Program Wide Support*	88.598	14.526	14.605	15.504	-	15.504	16.509	19.830	21.244	16.288	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

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

A. Mission Description and Budget Item Justification

PWS contains non-headquarters management costs in support of MDA functions and activities across the entire BMDS. It Includes Government Civilians and Contract Support Services. This provides integrity and oversight of the BMDS 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. 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; data and unified communications support; supplies and maintenance; materiel and readiness and central property management of equipment; 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 2018	FY 2019	FY 2020
Title: Program Wide Support	14.526	14.605	15.504
Articles:	-	-	-

Description: PWS contains non-headquarters management costs in support of MDA functions and activities across the entire BMDS. It Includes Government Civilians and Contract Support Services. This provides integrity and oversight of the BMDS 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. 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; data and unified communications support; supplies and maintenance; materiel and readiness and central property management of equipment; and similar operating expenses. PWS is allocated on a pro-rata basis across most Agency PEs and therefore fluctuates per PE by fiscal year based on the total Agency budget in that fiscal year.

FY 2019 Plans:

Exhibit R-2A, RDT&E Project Justification: PB 2020 Missile Defense Agency		Date: March 2019
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603914C / *Ballistic Missile Defense Test*	**Project (Number/Name)** MD40 / *Program Wide Support*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2018	FY 2019	FY 2020
- SEE ABOVE. ***FY 2020 Plans:*** - SEE ABOVE. ***FY 2019 to FY 2020 Increase/Decrease Statement:*** N/A			
Accomplishments/Planned Programs Subtotals	14.526	14.605	15.504

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Missile Defense Agency		Date: March 2019
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603914C / *Ballistic Missile Defense Test*	**Project (Number/Name)** MD40 / *Program Wide Support*

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Wide Support - Agency Operations Management	Allot	Various : Multi: AL, CA, CO, VA	5.123	0.000		0.221	Jul 2019	0.232	Jul 2020	-		0.232	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations and Support Other Agency Services	MIPR	Various : Multi: AL, CA, CO, VA	0.000	0.245		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations and Support Services	C/CPFF	Various : Multi: AL, CA, CO, VA	79.885	9.714	Aug 2018	10.700	Mar 2019	15.272	May 2020	-		15.272	Continuing	Continuing	Continuing
Program Wide Support - Facilities and Maintenance - SRM	MIPR	Various : Multi: AK,AL,CA,VA	3.590	4.567	Nov 2017	3.684	Mar 2019	0.000		-		0.000	Continuing	Continuing	Continuing
		Subtotal	88.598	14.526		14.605		15.504		-		15.504	Continuing	Continuing	N/A

Remarks
N/A

	Prior Years	FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	88.598	14.526		14.605		15.504		-		15.504	Continuing	Continuing	N/A

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

Exhibit R-4, RDT&E Schedule Profile: PB 2020 Missile Defense Agency		**Date:** March 2019
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603914C / *Ballistic Missile Defense Test*	**Project (Number/Name)** MD40 / *Program Wide Support*

Significant Event Complete ▲ Milestone Decision Complete ★ Element Test Complete ◆ System Level Test Complete ● Complete Activity ✦
Significant Event Planned △ Milestone Decision Planned ☆ Element Test Planned ◇ System Level Test Planned ○ Planned Activity ✧

	FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023				FY 2024			
MD40 Program-Wide Support	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧

Exhibit R-4A, **RDT&E Schedule Details:** PB 2020 Missile Defense Agency		**Date:** March 2019
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603914C / *Ballistic Missile Defense Test*	**Project (Number/Name)** MD40 / *Program Wide Support*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
MD40 Program-Wide Support	1	2018	4	2024