

**UNCLASSIFIED**

**Exhibit R-2, RDT&E Budget Item Justification:** PB 2021 Missile Defense Agency **Date:** February 2020

<b>Appropriation/Budget Activity</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide / BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0603881C / <i>Ballistic Missile Defense Terminal Defense Segment</i>
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COST (\$ in Millions)	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	Cost To Complete	Total Cost
Total Program Element	1,990.559	383.369	306.761	412.627	-	412.627	340.071	302.279	204.986	227.970	Continuing	Continuing
MD07: <i>THAAD</i>	1,729.357	224.495	194.752	360.233	-	360.233	313.000	280.307	188.601	208.923	Continuing	Continuing
MC07: <i>Cyber Operations</i>	12.674	6.087	13.580	9.806	-	9.806	12.325	8.544	4.595	5.286	Continuing	Continuing
MD06: <i>Patriot Advanced Capability-3 (PAC-3)</i>	153.370	144.054	90.404	26.198	-	26.198	1.251	1.274	1.300	1.326	Continuing	Continuing
MD40: <i>Program-Wide Support</i>	95.158	8.733	8.025	16.390	-	16.390	13.495	12.154	10.490	12.435	Continuing	Continuing

**Program MDAP/MAIS Code:** 362

**Note**

Increase from FY 2020 to FY 2021 provides for the initiation of the development for the THAAD Layered Homeland Defense Prototype, additional development requirements in support of Software Build 4.0 - THAAD/Missile Segment Enhancement (MSE) Integration Part 1 (USINDOPACOM JEON), and provides for a full year of Software Build 5.0 - Expanded Regional Defense development to include: development of Enhanced THAAD / MSE Integration Part 2, development for TFCC Remote Workstations with Dual Monitors, and Expanded Active Sensor Bias Monitoring.

The FY 2021 funding request was reduced by \$3.0 million during DWR to reduce Facilities Sustainment, Restoration, and Modernization (FSRM) Projects.

The funding request for FY 2021 includes Joint Emergent Operational Need (JEON) PC-0021 requirements.

**A. Mission Description and Budget Item Justification**

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

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<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021 Base</b>	<b>FY 2021 OCO</b>	<b>FY 2021 Total</b>
Previous President's Budget	388.273	302.761	234.679	-	234.679
Current President's Budget	383.369	306.761	412.627	-	412.627
Total Adjustments	-4.904	4.000	177.948	-	177.948
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	4.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	-4.904	0.000			
• Missile Defeat and Defense Enhancement	0.000	0.000	0.000	-	0.000
• Other Adjustment	0.000	0.000	177.948	-	177.948

**Change Summary Explanation**

Increase in FY 2020 provides a \$4M Congressional add for Cyber Security enhancements.

Increase in FY 2021 provides funding for initiation of the development for the THAAD Layered Homeland Defense Prototype, additional development requirements in support of Software Build 4.0 - THAAD/Missile Segment Enhancement (MSE) Integration Part 1 (USINDOPACOM JEON) and Software Build 5.0 - Expanded Regional Defense.

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**Exhibit R-2A, RDT&E Project Justification:** PB 2021 Missile Defense Agency **Date:** February 2020

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603881C / <i>Ballistic Missile Defense Terminal Defense Segment</i>	<b>Project (Number/Name)</b> MD07 / <i>THAAD</i>
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COST (\$ in Millions)	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	Cost To Complete	Total Cost
MD07: <i>THAAD</i>	1,729.357	224.495	194.752	360.233	-	360.233	313.000	280.307	188.601	208.923	Continuing	Continuing
Quantity of RDT&E Articles	50	-	-	-	-	-	-	-	-	-		

**Note**  
Increase from FY 2020 to FY 2021 provides for the initiation of the development for the THAAD Layered Homeland Defense Prototype, additional development requirements in support of Software Build 4.0 - THAAD/Missile Segment Enhancement (MSE) Integration Part 1 (USINDOPACOM JEON), and provides for a full year of Software Build 5.0 - Expanded Regional Defense development to include: development of Enhanced THAAD / MSE Integration Part 2, development for TFCC Remote Workstations with Dual Monitors, and Expanded Active Sensor Bias Monitoring.

**A. Mission Description and Budget Item Justification**

The THAAD system provides a capability to intercept and destroy short-range, medium-range, and limited intermediate-range missile threats inside or outside the atmosphere during the terminal phase of flight. THAAD continues the development and integration of multiple, independent software upgrades to address the evolving threat, improve the Warfighter's defense planning, and improve capabilities to engage SRBM, MRBM, and limited IRBM threats.

THAAD Development continues the development and integration of multiple, independent software builds to deliver enhanced system capabilities and expand the defense of allies and deployed forces from short-to-intermediate-range threats.

Program Operations provides strategic planning, program integration, cost estimating, contracting, financial management, internal reviews and audits, earned-value management and program assessments for the THAAD Program Office.

USINDOPACOM JEON provides enhanced capability against specific USINDOPACOM threats by expanding engagement options and increasing coverage areas.

Project Redwood details are provided at a Higher Classification reported in accordance with Title 10, United States Code, Section 119 (a)(1) in the Special Access Program Annual Report to Congress.

THAAD Program Support provides support for communications and interoperability efforts to operate on multiple networks and safety and mission assurance efforts in support of the Materiel Release process.

THAAD Layered Homeland Defense Prototype Development provides the development and demonstration of a new interceptor prototype to support Contiguous United States (CONUS) defense as part of the Layered Homeland Defense strategy.

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	FY 2019	FY 2020	FY 2021
<b>Title:</b> Terminal High Altitude Area Defense (THAAD) Development	103.811	110.300	156.894

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2021 Missile Defense Agency		<b>Date:</b> February 2020
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603881C / <i>Ballistic Missile Defense Terminal Defense Segment</i>	<b>Project (Number/Name)</b> MD07 / <i>THAAD</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>
<p align="right"><i>Articles:</i></p> <p><b>Description:</b> The THAAD Development program continues the development and integration of multiple, independent software builds to deliver enhanced system capabilities and expand the defense of allies and deployed forces from short-to-intermediate-range threats.</p> <p>Software Build deliveries have been adjusted to efficiently and effectively deliver both the USINDOPACOM JEON content along with the program of record capabilities as follows:</p> <p>Software Build 3.2 - Remote Launcher Part 1 (USINDOPACOM JEON) (completed in 4QFY2019)</p> <ul style="list-style-type: none"> <li>- Initial requirements for increased defended area footprints via remote operation of THAAD Launchers in support of USINDOPACOM JEON.</li> <li>- PATRIOT Launch on Remote to utilize THAAD's capability to detect and track threat ballistic missiles at longer ranges and utilize Patriot Advanced Capability (PAC-3) MSE's full kinematic capability in support of USINDOPACOM JEON.</li> </ul> <p>Software Build 4.0 - THAAD/MSE Integration Part 1 (USINDOPACOM JEON) (scheduled to be completed in 2QFY2021)</p> <ul style="list-style-type: none"> <li>- Initial requirements to integrate MSE launchers and missiles into the THAAD weapon system enabling a more tightly integrated upper/lower tier defensive capability in support of USINDOPACOM JEON.</li> <li>- Expanded requirements for increased defended area footprints via THAAD Remote Launcher Part 2.</li> <li>- Improved capability to engage short-range ballistic missile (SRBM), medium-range ballistic missile (MRBM) and limited intermediate-range ballistic missile (IRBM) threats capable of creating complex scenes.</li> <li>- Expanded requirements for THAAD Electronic Protection/Objective Debris Mitigation to provide radar enhancements improving performance against adverse environments.</li> </ul> <p>Software Build 5.0 - Expanded Regional Defense (scheduled to be completed in 2QFY2023)</p> <ul style="list-style-type: none"> <li>- Expanded THAAD/MSE Integration will significantly expand the threat set and provide a more robust capability by integrating the full capability of the MSE interceptor, as well as implementing safety measures including Cold Fire Prevention and Manual Emplacement.</li> <li>- External THAAD Fire Control and Communication (TFCC) hardware and software connectivity allowing for the capability to remote from the TFCC tactical shelter to a remote location.</li> <li>- Integrate Dual Monitor capabilities into the TFCC tactical shelters as well as at the remoted locations to satisfy the need for additional monitor viewing space as identified in multiple U.S. Army Test and Evaluation Command (ATEC) Milestone Assessment Reports.</li> </ul>	-	-	-

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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>
<p>- Expanded Active Sensor Bias Monitoring allows the weapon system to actively compute and continuously monitor any radar bias errors/track covariance to ensure positional accuracy during engagements.</p> <p>Recurring efforts include:</p> <ul style="list-style-type: none"> <li>- Support element Models and Simulations (M&amp;S) related activities, to include Verification, Validation and Accreditation (VV&amp;A) and Continuous Digital Assessment (CDA) on the path of accredited models and simulations for BMDS assessment.</li> <li>- Support M&amp;S related activities in element and BMDS test events in the approved Integrated Master Test Plan (IMTP) such as requirements, design, development, and VV&amp;A.</li> <li>- Design, develop, test, and field the releases of THAAD system software to ensure continued performance and operation of fielded batteries.</li> <li>- Provide software updates in support of the incremental evolution of performance upgrades.</li> <li>- Support laboratory assets and equipment to enable future development, and to isolate, identify, and remedy root causes of equipment and software deficiencies identified by the warfighter.</li> <li>- Perform requirements development, engineering analysis, and performance verification for THAAD development and BMDS integration to ensure THAAD compliance with the Ballistic Missile Defense (BMD) System Specification, BMD System Description Document, and Master Integration Plan.</li> <li>- Participate in Missile Defense Agency (MDA) and Army studies to determine the architecture and integration of the THAAD Weapon system into the Integrated Air and Missile Defense (IAMD) Battle Command System (IBCS).</li> <li>- Provide and coordinate analysis, studies and papers to support the resolution of issues and concerns with the integration of the THAAD weapon system into the future Army IBCS architecture.</li> <li>- Development of improved tactical network architecture in order to increase availability, robustness, and security of the system to counter cybersecurity threats.</li> <li>- Incremental Development Process to identify THAAD evolution and synchronize requirements that address emerging threat evolution, obsolescence needs, Army training needs, reliability and sustainment issues.</li> </ul> <p>Specific and/or unique accomplishments to each FY are as follows:</p> <p><b>FY 2020 Plans:</b></p> <ul style="list-style-type: none"> <li>- Provides development of Expanded THAAD Electronic Protection/Objective Debris Mitigation and remote operation of THAAD Launchers.</li> <li>- Provides development for improved capability to engage short-range ballistic missile (SRBM), medium-range ballistic missile (MRBM) and limited intermediate-range ballistic missile (IRBM) threats capable of creating complex scenes.</li> </ul>			

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<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603881C / <i>Ballistic Missile Defense Terminal Defense Segment</i>	<b>Project (Number/Name)</b> MD07 / <i>THAAD</i>		
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>
<p>- Provides development, qualification, and integration efforts to replace current GPS antennas with Position, Navigation and Timing (PNT) Antennas and regional clock capabilities. This effort is a Department of Defense mandate to ensure the integrity and availability of PNT data for the THAAD weapon system.</p> <p>- Initiate preliminary requirements development and early concept of operations for THAAD Software Build 5.0 - Expanded Regional Defense to include:</p> <p>- Initiate Enhanced THAAD/MSE integration Part 2 to provide the warfighter the capability to extend the defended area and provide the THAAD weapon system with self-defense capability.</p> <p><b>FY 2021 Plans:</b></p> <p>- Complete development efforts and integration of THAAD Software Build 4.0. - THAAD/MSE Integration (USINDOPACOM JEON) into the THAAD Weapon System.</p> <p>- Complete development of Expanded THAAD Electronic Protection/Objective Debris Mitigation.</p> <p>- Provides development efforts and integration of THAAD Software Build 5.0 - Expanded Regional Defense to include:</p> <p>- Provides development of Enhanced THAAD / MSE Integration Part 2 to provide the warfighter the capability to extend the defended area and provide the THAAD weapon system with self-defense capability.</p> <p>- Initiate development for TFCC remote Workstations with Dual Monitors to address warfighter requirement for External hardware and software connectivity.</p> <p>- Initiate Expanded Active Sensor Bias Monitoring allows the weapon system to actively compute and continuously monitor any radar bias errors/track covariance to ensure positional accuracy during engagements.</p> <p>- Provides development, qualification, and integration efforts to replace current GPS antennas with Position, Navigation and Timing (PNT) Antennas and regional clock capabilities. This effort is a Department of Defense mandate to ensure the integrity and availability of PNT data for the THAAD weapon system.</p> <p>- Provides Software Independent Verification and Validation (IV&amp;V) and software assurance risk report.</p> <p><b>FY 2020 to FY 2021 Increase/Decrease Statement:</b></p> <p>Increase from FY 2020 to FY 2021 provides for additional development requirements in support of Software Build 4.0 - THAAD/ Missile Segment Enhancement (MSE) Integration Part 1 (USINDOPACOM JEON) and provides for a full year of Software Build 5.0 - Expanded Regional Defense development to include: development of Enhanced THAAD / MSE Integration Part 2, development for TFCC remote Workstations with Dual Monitors, and Expanded Active Sensor Bias Monitoring. Previous THAAD software builds related to USINDOPACOM JEON were predominately funded from the USINDOPACOM JEON Accomplishment. This increase reflects the realignment of follow-on THAAD software development requirements being funded from the THAAD Development Accomplishment.</p>				
<b>Title:</b> Program Operations		47.101	43.801	47.864
<b>Articles:</b>		-	-	-

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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>
<p><b>Description:</b> Program Operations provides strategic planning, program integration, contracting, acquisition, engineering, financial management, internal reviews and audits, and program assessments for the THAAD Program Office.</p> <p>Recurring efforts include:</p> <ul style="list-style-type: none"> <li>-Provide technical and business management support activities to provide the Program Director with critical program status and decision quality data.</li> <li>-Ensure THAAD program compliance with internal and external direction, policies, and regulations to deliver critical capability within a consistent and disciplined process.</li> <li>-Conduct internal program reviews to measure program progress against the six Missile Defense Agency approved baselines.</li> <li>-Continue a Mission Assurance and Manufacturing Engineering Program to include Quality, Configuration Management, Manufacturing, Engineering, and Safety in all phases of the system life cycle, throughout the supply chain, and at all levels of assembly emphasizing high yield rates which minimize test and rework costs.</li> <li>-Provide Quality Safety and Mission Assurance (QSMA) operations to ensure compliance with Agency requirements for design, test, manufacturing, quality, safety and reliability to ensure high quality products are delivered to the Warfighter.</li> </ul> <p>Specific and/or unique accomplishments to each FY are as follows:</p> <p><b>FY 2020 Plans:</b> - SEE ABOVE.</p> <p><b>FY 2021 Plans:</b> - SEE ABOVE.</p> <p><b>FY 2020 to FY 2021 Increase/Decrease Statement:</b> N/A.</p>				
<p><b>Title:</b> USINDOPACOM JEON</p> <p align="right"><b>Articles:</b></p> <p><b>Description:</b> This accomplishment fully funds the THAAD portion of USINDOPACOM JEON to deliver expanded engagement options and increased coverage area. This includes accelerating some content previously included in the THAAD Development accomplishment, while adding new development efforts which include Rapid Deployment of Command and Control and Software upgrades and Performance Optimization Against Additional Threats as well as the following three new priorities:</p> <p>1) PATRIOT Launch on Remote to utilize THAAD's capability to detect and track threat ballistic missiles at longer ranges and utilize PAC-3 MSE's full kinematic capability.</p>		60.700 -	33.300 -	3.200 -

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<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603881C / <i>Ballistic Missile Defense Terminal Defense Segment</i>	<b>Project (Number/Name)</b> MD07 / <i>THAAD</i>		
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>
<p>2) THAAD/MSE Integration Part 1 that integrates MSE launchers and missiles into the THAAD weapon system enabling a more tightly integrated upper/lower tier defensive capability.</p> <p>3) THAAD Remote Launcher Part 1 that utilizes flexible communication paths to extend the defended area of a THAAD battery.</p> <p>Specific and/or unique accomplishments to each FY are as follows:</p> <p><b>FY 2020 Plans:</b></p> <ul style="list-style-type: none"> <li>- Completes and delivers PATRIOT Launch on Remote to utilize THAAD's capability to detect and track threat ballistic missiles at longer ranges and utilize PAC-3 MSE's full kinematic capability.</li> <li>- Continues THAAD / MSE Integration Part 1 that integrates MSE launchers and missiles into the THAAD weapon system enabling a more tightly integrated upper/lower tier defensive capability.</li> </ul> <p><b>FY 2021 Plans:</b></p> <ul style="list-style-type: none"> <li>- Complete and deliver THAAD/MSE Integration Part 1 integrating MSE launchers and missiles in to the THAAD weapon system enabling a more tightly integrated upper/lower tier defensive capability.</li> </ul> <p><b>FY 2020 to FY 2021 Increase/Decrease Statement:</b></p> <p>Decrease from FY 2020 to FY 2021 reflects completion and delivery of the THAAD/MSE Integration Part 1 USINDOPACOM JEON development requirements. Follow-on THAAD software development funding resides in the THAAD Development Accomplishment.</p>				
<p><b>Title:</b> Project Redwood- Details at a Higher Classification</p> <p align="right"><b>Articles:</b></p> <p><b>Description:</b> This project is reported in accordance with Title 10, United States Code, Section 119 (a)(1) in the Special Access Program (SAP) Annual Report to Congress.</p> <p><b>FY 2020 Plans:</b></p> <ul style="list-style-type: none"> <li>- SEE ABOVE.</li> </ul> <p><b>FY 2021 Plans:</b></p> <ul style="list-style-type: none"> <li>- SEE ABOVE.</li> </ul> <p><b>FY 2020 to FY 2021 Increase/Decrease Statement:</b></p> <p>Further details are reported in accordance with Title 10, United States Code, Section 119(a)(1) in the Special Access Program Annual Report to Congress.</p>		11.556	4.430	10.493
		-	-	-
<b>Title:</b> THAAD Program Support		1.327	2.921	2.782

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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>
<p align="right"><b>Articles:</b></p> <p><b>Description:</b> This activity provides support for efforts such as communications and interoperability upgrades to operate on joint, service, or allied communications networks. This activity provides support for safety and mission assurance requirements, and support of independent government offices as part of the Materiel Release process.</p> <p>Recurring efforts include:</p> <ul style="list-style-type: none"> <li>- Interoperability development and maintenance to ensure the weapon system is authorized to operate on joint, service, or allied communications networks.</li> <li>- Safety confirmation and verification testing, preparation and approvals of System Safety Risk Assessments, issuance of hazard classifications and safety releases, insensitive munitions approvals and waivers, and independent oversight and support in the areas of reliability, availability, and maintainability (RAM) and quality assurance.</li> </ul> <p>Specific and/or unique accomplishments to each FY are as follows:</p> <p><b>FY 2020 Plans:</b> - SEE ABOVE.</p> <p><b>FY 2021 Plans:</b> - SEE ABOVE.</p> <p><b>FY 2020 to FY 2021 Increase/Decrease Statement:</b> N/A.</p>		-	-	-
<p><b>Title:</b> THAAD Layered Homeland Defense Prototype Development</p> <p align="right"><b>Articles:</b></p> <p><b>Description:</b> The THAAD Layered Homeland Defense Prototype Development effort supports the development and demonstration of interceptor improvements resulting in a prototype to enhance THAAD support of Contiguous United States (CONUS) Defense as part of the Layered Homeland Defense strategy. This effort will develop prototype software and hardware and perform a series of demonstrations to prove the technologies to support a FY 2023 Development Decision. Demonstrations will be performed both at the component level and in a combined THAAD Layered Homeland Defense Prototype.</p> <p><b>FY 2020 Plans:</b> N/A.</p> <p><b>FY 2021 Plans:</b></p>		0.000 -	0.000 -	139.000 -

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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>
- Initiate development of the THAAD Layered Homeland Defense Prototype effort.			
<b><i>FY 2020 to FY 2021 Increase/Decrease Statement:</i></b> Increase from FY 2020 to FY 2021 provides for the initiation of the development for the THAAD Layered Homeland Defense Prototype effort.			
<b>Accomplishments/Planned Programs Subtotals</b>	224.495	194.752	360.233

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

<u>Line Item</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u> <u>Base</u>	<u>FY 2021</u> <u>OCO</u>	<u>FY 2021</u> <u>Total</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• 0208866C: MD07: <i>THAAD O&amp;M</i>	87.560	99.819	99.626	-	99.626	106.849	112.696	115.435	120.094	Continuing	Continuing
• 0208866C: MD07: <i>THAAD Procurement</i>	1,025.804	425.863	348.433	-	348.433	341.446	328.736	374.844	425.603	Continuing	Continuing
• 0603914C: <i>Ballistic Missile Defense Test</i>	510.292	399.738	378.302	-	378.302	385.910	396.524	394.949	417.261	Continuing	Continuing
• 0604876C: <i>Ballistic Missile Defense Terminal Defense Segment Test</i>	57.972	25.137	7.768	-	7.768	72.388	74.306	60.179	19.877	Continuing	Continuing

**Remarks**

**D. Acquisition Strategy**

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Missile Defense Agency												Date: February 2020			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)						Project (Number/Name)					
0400 / 4				PE 0603881C / Ballistic Missile Defense Terminal Defense Segment						MD07 / THAAD					
Product Development (\$ in Millions)				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Terminal High Altitude Area Defense (THAAD) Development - Advanced Capability Development	SS/IDIQ	Lockheed Martin : Sunnyvale, CA / Huntsville, AL	802.867	66.592	Nov 2018	68.933	Nov 2019	111.455	Nov 2020	-		111.455	Continuing	Continuing	Continuing
Terminal High Altitude Area Defense (THAAD) Development - IT Program Support	C/CPAF	Northrup Grumman : AL, AK, CA, CO, HI, NM, VA	7.294	3.037	Jan 2019	2.870	Nov 2019	2.889	Nov 2020	-		2.889	Continuing	Continuing	Continuing
Terminal High Altitude Area Defense (THAAD) Development - MDA Program Support	MIPR	Missile Defense Agency (MDA) : Ft. Belvoir, VA/ Huntsville, AL	11.248	0.000		2.500	Dec 2019	2.470	Dec 2020	-		2.470	Continuing	Continuing	Continuing
Terminal High Altitude Area Defense (THAAD) Development - Models & Simulations	MIPR	US Army Research, Development, Engineering Command (RDECOM) : Huntsville, AL	222.047	22.624	Dec 2018	31.191	Dec 2019	29.607	Dec 2020	-		29.607	Continuing	Continuing	Continuing
Terminal High Altitude Area Defense (THAAD) Development - Requirements and Design	C/CPAF	Boeing : AL	14.981	3.660	Dec 2018	2.801	Dec 2019	4.917	Dec 2020	-		4.917	Continuing	Continuing	Continuing
Terminal High Altitude Area Defense (THAAD) Development - Software IV&V	MIPR	US Army Research, Development, Engineering Command (RDECOM) : Huntsville, AL	0.000	0.000		0.000		4.504	Nov 2020	-		4.504	Continuing	Continuing	Continuing
Terminal High Altitude Area Defense (THAAD) Development - Software Support (GOVT)	MIPR	US Army Research, Development, Engineering Command (RDECOM) : Huntsville, AL	8.864	5.283	Nov 2018	0.000		0.000		-		0.000	0.000	14.147	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Missile Defense Agency												Date: February 2020			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
0400 / 4				PE 0603881C / Ballistic Missile Defense Terminal Defense Segment				MD07 / THAAD							
Product Development (\$ in Millions)				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Terminal High Altitude Area Defense (THAAD) Development - THAAD Radar Improvements	SS/CPAF	Raytheon : MA	10.000	0.000		0.000		0.000		-		0.000	0.000	10.000	0.000
Terminal High Altitude Area Defense (THAAD) Development - Verification and Assessment	C/CPFF	TEAMS SE&I : AL / CO	12.240	2.615	Dec 2018	2.005	Dec 2019	1.052	Nov 2020	-		1.052	Continuing	Continuing	Continuing
USINDOPACOM JEON - Advanced Capability Development	SS/IDIQ	Lockheed Martin : Sunnyvale, CA / Huntsville, AL	90.785	57.004	Dec 2018	30.100	Dec 2019	0.000		-		0.000	0.000	177.889	0.000
USINDOPACOM JEON - MDA Program Support	Various	MDA : Huntsville, AL	0.509	0.000		0.000		0.000		-		0.000	0.000	0.509	0.000
USINDOPACOM JEON - OGA JEON Support (GOVT)	MIPR	US Army Tank Automotive Research, Development, and Engineering Center (TARDEC), Army Test and Evaluation Command (ATEC) : Warren, MI / Huntsville, AL	9.263	3.696	Dec 2018	3.200	Dec 2019	3.200	Dec 2020	-		3.200	Continuing	Continuing	Continuing
THAAD Layered Homeland Defense Prototype Development - THAAD Layered Homeland Defense Prototype Development	Various	Various : Various	0.000	0.000		0.000		139.000	Dec 2020	-		139.000	Continuing	Continuing	Continuing
<b>Subtotal</b>			1,190.098	164.511		143.600		299.094		-		299.094	Continuing	Continuing	N/A
<b>Remarks</b>															
N/A.															

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Missile Defense Agency** **Date:** February 2020

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603881C / <i>Ballistic Missile Defense Terminal Defense Segment</i>	<b>Project (Number/Name)</b> MD07 / <i>THAAD</i>
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<b>Support (\$ in Millions)</b>				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Operations - Program Operations	Various	Missile Defense Agency (MDA) : Ft. Belvoir, VA / Huntsville, AL	285.516	47.101	Oct 2018	43.801	Nov 2019	47.864	Nov 2020	-		47.864	Continuing	Continuing	Continuing
Project Redwood- Details at a Higher Classification - Special Programs	SS/FP	N/A : N/A	83.865	11.556	Oct 2018	4.430	Nov 2019	10.493	Nov 2020	-		10.493	Continuing	Continuing	Continuing
THAAD Program Support - Mission Support	MIPR	ATEC / SMDC / AMRDEC / MDA : WSMR, NM / Huntsville, AL	32.699	1.327	Nov 2018	2.921	Dec 2019	2.782	Dec 2020	-		2.782	Continuing	Continuing	Continuing
THAAD Program Support - Prime Contractor Support	SS/IDIQ	Lockheed Martin : Sunnyvale, CA / Huntsville, AL	0.600	0.000		0.000		0.000		-		0.000	0.000	0.600	0.000
THAAD Program Support - Prior year no longer funded in the FYDP	Various	Various : Various	136.579	0.000		0.000		0.000		-		0.000	0.000	136.579	0.000
<b>Subtotal</b>			539.259	59.984		51.152		61.139		-		61.139	Continuing	Continuing	N/A

**Remarks**  
N/A

<b>Test and Evaluation (\$ in Millions)</b>				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
<b>Subtotal</b>			-	-		-		-		-		-	-	-	N/A

**Remarks**  
N/A

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Missile Defense Agency** **Date:** February 2020

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603881C / <i>Ballistic Missile Defense Terminal Defense Segment</i>	<b>Project (Number/Name)</b> MD07 / <i>THAAD</i>
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<b>Management Services (\$ in Millions)</b>				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 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			
<b>Subtotal</b>			-	-		-		-		-		-	-	-	N/A

**Remarks**  
N/A

	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	Cost To Complete	Total Cost	Target Value of Contract
<b>Project Cost Totals</b>	1,729.357	224.495	194.752	360.233	-	360.233	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 2021 Missile Defense Agency** **Date:** February 2020

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603881C / <i>Ballistic Missile Defense Terminal Defense Segment</i>	<b>Project (Number/Name)</b> MD07 / <i>THAAD</i>
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	FY 2019			FY 2020			FY 2021			FY 2022			FY 2023			FY 2024			FY 2025		
	▲	△	★	◆	◇	●	◆	◇	●	◆	◇	●	◆	◇	●	◆	◇	●	◆	◇	●
THAAD Software Build 3.2 - Remote Launcher Part 1 (USINDOPACOM JEON Phase 3)			▲																		
THAAD Software Build 4.0 - THAAD/Missile Segment Enhancement (MSE) Integration (USINDOPACOM JEON) Critical Design Review					△																
THAAD Software Build 5.0 - Expanded Regional Defense System Requirement Review (SRR)									△												
THAAD Software Build 4.0 - THAAD/Missile Segment Enhancement (MSE) Integration (USINDOPACOM JEON)									△												
THAAD Software Build 5.0 - Expanded Regional Defense Critical Design Review (CDR)												△									
THAAD Software Build 5.0 - Expanded Regional Defense															△						
THAAD Layered Homeland Defense Prototype Development - Development Decision																		★			

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2021 Missile Defense Agency		<b>Date:</b> February 2020
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603881C / <i>Ballistic Missile Defense Terminal Defense Segment</i>	<b>Project (Number/Name)</b> MD07 / <i>THAAD</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
THAAD Software Build 3.2 - Remote Launcher Part 1 (USINDOPACOM JEON Phase 3)	4	2019	4	2019
THAAD Software Build 4.0 - THAAD/Missile Segment Enhancement (MSE) Integration (USINDOPACOM JEON) Critical Design Review	2	2020	2	2020
THAAD Software Build 5.0 - Expanded Regional Defense System Requirement Review (SRR)	1	2021	1	2021
THAAD Software Build 4.0 - THAAD/Missile Segment Enhancement (MSE) Integration (USINDOPACOM JEON)	2	2021	2	2021
THAAD Software Build 5.0 - Expanded Regional Defense Critical Design Review (CDR)	2	2022	2	2022
THAAD Software Build 5.0 - Expanded Regional Defense	2	2023	2	2023
THAAD Layered Homeland Defense Prototype Development - Development Decision	4	2023	4	2023

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**Exhibit R-2A, RDT&E Project Justification:** PB 2021 Missile Defense Agency **Date:** February 2020

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603881C / <i>Ballistic Missile Defense Terminal Defense Segment</i>	<b>Project (Number/Name)</b> MC07 / <i>Cyber Operations</i>
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COST (\$ in Millions)	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	Cost To Complete	Total Cost
MC07: <i>Cyber Operations</i>	12.674	6.087	13.580	9.806	-	9.806	12.325	8.544	4.595	5.286	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

**Note**

N/A.

**A. Mission Description and Budget Item Justification**

Cyber Operations sustain MDA Risk Management Framework (RMF) and Controls Validation Testing (CVT) activities; analysis of validation results, risk assessments; reviews of proposed Program Manager/Information Assurance Manager Plans of Action and Milestones for MDA THAAD mission systems; and supports THAAD certification to operate in the BMDS.

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

	FY 2019	FY 2020	FY 2021
<b>Title:</b> Network / System Certification and Accreditation (C&A)	6.087	13.580	9.806
<b>Articles:</b>	-	-	-
<p><b>Description:</b> Funding in this project sustains MDA Risk Management Framework (RMF) and Controls Validation Testing (CVT) activities, analysis of validation results, risk assessments, monitoring and tracking of Cybersecurity mitigations, and all other activities necessary to comply with the Federal Information Security Management Act (FISMA).</p> <p>Recurring efforts include:</p> <ul style="list-style-type: none"> <li>- Conduct cybersecurity/information assurance engineering and architecture planning for THAAD information technology systems.</li> <li>- Develop and testing cybersecurity/information assurance control measures for BMDS THAAD systems.</li> <li>- Develop THAAD RMF for DoD Information Technology Certification and accreditation packages.</li> <li>- Support CVT of THAAD mission, test, and training systems.</li> <li>- Develop Plan of Action and Milestones (POA&amp;Ms) to resource and remediate information assurance deficiencies.</li> <li>- Conduct annual information assurance reviews on the THAAD enclaves to assess compliance in implementing and maintaining Information Assurance (IA) controls.</li> <li>- Perform Information Assurance Vulnerability Alert (IAVA) to mitigate potential system vulnerabilities.</li> <li>- Update THAAD software and hardware to ensure compliance with DoD Weapon System Information Assurance Programs.</li> <li>- Continue THAAD Weapon System software development efforts consistent with DoD cybersecurity requirements which were previously covered under THAAD Development, in order to correlate cyber software activities with realigned funding.</li> </ul> <p>Specific and/or unique accomplishments to each FY are as follows:</p>			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2021 Missile Defense Agency		<b>Date:</b> February 2020
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603881C / <i>Ballistic Missile Defense Terminal Defense Segment</i>	<b>Project (Number/Name)</b> MC07 / <i>Cyber Operations</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>
<p><b>FY 2020 Plans:</b> - Improve software development efforts for more robust cyber security for both offense and defense to address the advanced threat in order to align with Agency and USD(R&amp;E) cyber security priority</p> <p><b>FY 2021 Plans:</b> - Continue software development efforts for more robust cybersecurity for both offense and defense to address the advanced threat in order to align with Agency and USD(R&amp;E) cybersecurity priorities.</p> <p><b>FY 2020 to FY 2021 Increase/Decrease Statement:</b> Decrease from FY 2020 to FY 2021 reflects the FY 2020 Congressional plus up for Cybersecurity Enhancements.</p>			
<b>Accomplishments/Planned Programs Subtotals</b>	6.087	13.580	9.806

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

<u>Line Item</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u> <u>Base</u>	<u>FY 2021</u> <u>OCO</u>	<u>FY 2021</u> <u>Total</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• 0208866C: MD07: <i>THAAD O&amp;M</i>	87.560	99.819	99.626	-	99.626	106.849	112.696	115.435	120.094	Continuing	Continuing
• 0208866C: MD07: <i>THAAD Procurement</i>	1,014.068	425.863	348.433	-	348.433	341.446	328.736	374.844	425.603	Continuing	Continuing
• 0604876C: <i>Ballistic Missile Defense Terminal Defense Segment Test</i>	57.972	25.137	7.768	-	7.768	72.388	74.306	60.179	19.877	Continuing	Continuing

**Remarks**

**D. Acquisition Strategy**

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

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<b>Exhibit R-3, RDT&amp;E Project Cost Analysis: PB 2021 Missile Defense Agency</b>											<b>Date:</b> February 2020				
<b>Appropriation/Budget Activity</b> 0400 / 4						<b>R-1 Program Element (Number/Name)</b> PE 0603881C / <i>Ballistic Missile Defense Terminal Defense Segment</i>					<b>Project (Number/Name)</b> MC07 / <i>Cyber Operations</i>				

<b>Support (\$ in Millions)</b>				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 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) - CND/IA Advisory and Assistance Services	C/CPFF	Torch Technologies : Various MDA Locations	3.154	0.960	Nov 2018	0.903	Dec 2019	0.761	Dec 2020	-		0.761	Continuing	Continuing	Continuing
Network / System Certification and Accreditation (C&A) - Security Engineering	SS/CPFF	LMSSC : Sunnyvale, CA/Huntsville, AL	9.520	5.127	Jan 2019	12.677	Nov 2019	9.045	Dec 2020	-		9.045	Continuing	Continuing	Continuing
<b>Subtotal</b>			12.674	6.087		13.580		9.806		-		9.806	Continuing	Continuing	N/A

**Remarks**  
N/A.

	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	Cost To Complete	Total Cost	Target Value of Contract
<b>Project Cost Totals</b>	12.674	6.087	13.580	9.806	-	9.806	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 2021 Missile Defense Agency** **Date:** February 2020

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603881C / <i>Ballistic Missile Defense Terminal Defense Segment</i>	<b>Project (Number/Name)</b> MC07 / <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 2019		FY 2020			FY 2021			FY 2022			FY 2023			FY 2024			FY 2025			
MC07 Completed Cyber Operations					◆	◆	◆	◆	◆																
MC07 Planned Cyber Operations																									

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2021 Missile Defense Agency		<b>Date:</b> February 2020
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603881C / <i>Ballistic Missile Defense Terminal Defense Segment</i>	<b>Project (Number/Name)</b> MC07 / <i>Cyber Operations</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
MC07 Completed Cyber Operations	1	2019	1	2020
MC07 Planned Cyber Operations	2	2020	4	2025

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2021 Missile Defense Agency										<b>Date:</b> February 2020		
<b>Appropriation/Budget Activity</b> 0400 / 4					<b>R-1 Program Element (Number/Name)</b> PE 0603881C / <i>Ballistic Missile Defense Terminal Defense Segment</i>				<b>Project (Number/Name)</b> MD06 / <i>Patriot Advanced Capability-3 (PAC-3)</i>			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021 Base</b>	<b>FY 2021 OCO</b>	<b>FY 2021 Total</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
MD06: <i>Patriot Advanced Capability-3 (PAC-3)</i>	153.370	144.054	90.404	26.198	-	26.198	1.251	1.274	1.300	1.326	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

**Note**

Decrease from FY 2020 to FY 2021 reflects completion of the USINDOPACOM JEON PATRIOT Launch on Remote capability in FY 2020.

**A. Mission Description and Budget Item Justification**

PAC-3 is an operational, land-based weapon built upon the proven U.S. Army Phased Array Tracking Radar Intercept on Target (PATRIOT) air and missile defense infrastructure. The Army is responsible for production and further development of the PAC-3 System and Missile Segment Enhancements (MSE); MDA remains responsible for any BMDS interoperability and integration efforts. Lower Tier Project Office (LTPO) will utilize MDA funds to further the integration of PATRIOT with the BMDS.

This project includes LTPO's portion of the USINDOPACOM JEON including:

- 1) PATRIOT launch on remote to utilize THAAD's capability to detect and track threat ballistic missiles at longer ranges and utilize MSE's full kinematic capability
- 2) THAAD/MSE Integration Part 1 that integrates MSE launchers and missiles into the THAAD weapon system enabling a more tightly integrated upper/lower tier defensive capability

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

	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>
<b>Title:</b> General Support	0.454	1.204	1.198
<b>Articles:</b>	-	-	-
<b>Description:</b> MDA funds PATRIOT participation in BMDS interoperability integration efforts. Activities support the day-to-day tasking that is leveraged upon LTPO by MDA based on the Transfer and Transition Plan Annex L.			
<b>FY 2020 Plans:</b> - SEE ABOVE.			
<b>FY 2021 Plans:</b> - SEE ABOVE.			
<b>FY 2020 to FY 2021 Increase/Decrease Statement:</b> N/A.			
<b>Title:</b> USINDOPACOM JEON - LTPO	143.600	89.200	25.000

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2021 Missile Defense Agency		<b>Date:</b> February 2020
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603881C / <i>Ballistic Missile Defense Terminal Defense Segment</i>	<b>Project (Number/Name)</b> MD06 / <i>Patriot Advanced Capability-3 (PAC-3)</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>
<p align="right"><b>Articles:</b></p> <p><b>Description:</b> This accomplishment fully funds LTPO's portion of the USINDOPACOM JEON including PATRIOT Launch on Remote and THAAD/MSE integration Part 1.</p> <p>Specific and/or unique accomplishments to each FY are as follows:</p> <p><b>FY 2020 Plans:</b></p> <ul style="list-style-type: none"> <li>- Completes and delivers PATRIOT Launch on Remote to utilize THAAD's capability to detect and track threat ballistic missiles at longer ranges and utilize PAC-3 MSE full kinematic capability</li> <li>- Continues THAAD / MSE Integration Part 1 that integrates MSE launchers and missiles into the THAAD weapon system enabling a more tightly integrated upper/lower tier defensive capability</li> </ul> <p><b>FY 2021 Plans:</b></p> <ul style="list-style-type: none"> <li>- Completes and delivers THAAD/MSE Integration Part 1 that integrates MSE launchers and missiles into the THAAD weapon system enabling a more tightly integrated upper/lower tier defensive capability.</li> </ul> <p><b>FY 2020 to FY 2021 Increase/Decrease Statement:</b></p> <p>Decrease from FY 2020 to FY 2021 reflects completion of the USINDOPACOM JEON PATRIOT Launch on Remote capability in FY 2020.</p>	-	-	-
<b>Accomplishments/Planned Programs Subtotals</b>	144.054	90.404	26.198

<b>C. Other Program Funding Summary (\$ in Millions)</b>											
<b>Line Item</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021 Base</b>	<b>FY 2021 OCO</b>	<b>FY 2021 Total</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
• 0208866C: MD07: <i>THAAD O&amp;M</i>	87.560	99.819	99.626	-	99.626	106.849	112.696	115.435	120.094	Continuing	Continuing
• 0208866C: MD07: <i>THAAD Procurement</i>	1,025.804	425.863	348.433	-	348.433	341.446	328.736	374.844	425.603	Continuing	Continuing
• 0604876C: <i>Ballistic Missile Defense Terminal Defense Segment Test</i>	57.972	25.137	7.768	-	7.768	72.388	74.306	60.179	19.877	Continuing	Continuing

**Remarks**

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2021 Missile Defense Agency		<b>Date:</b> February 2020
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603881C / <i>Ballistic Missile Defense Terminal Defense Segment</i>	<b>Project (Number/Name)</b> MD06 / <i>Patriot Advanced Capability-3 (PAC-3)</i>

**D. Acquisition Strategy**

The planned acquisition strategy for U.S. Army's Phased Array Tracking Radar Intercept on Target (PATRIOT) support is to provide Military Interdepartmental Purchase Requests (MIPR) to the U.S. Army Lower-Tier Program Office (LTPO) to further the integration of PATRIOT with the BMDS.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Missile Defense Agency** **Date:** February 2020

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603881C / <i>Ballistic Missile Defense Terminal Defense Segment</i>	<b>Project (Number/Name)</b> MD06 / <i>Patriot Advanced Capability-3 (PAC-3)</i>
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<b>Product Development (\$ in Millions)</b>				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 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			
USINDOPACOM JEON - LTPO - USINDOPACOM JEON - LTPO	MIPR	Lower Tier Project Office : Huntsville, AL	143.600	143.600	Dec 2018	89.200	Dec 2019	25.000	Dec 2020	-		25.000	0.000	401.400	0.000
<b>Subtotal</b>			143.600	143.600		89.200		25.000		-		25.000	0.000	401.400	N/A

**Remarks**  
N/A

<b>Support (\$ in Millions)</b>				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 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			
General Support - General Support	MIPR	Lower Tier Project Office : Huntsville, AL	9.770	0.454	Nov 2018	1.204	Nov 2019	1.198	Nov 2020	-		1.198	Continuing	Continuing	Continuing
<b>Subtotal</b>			9.770	0.454		1.204		1.198		-		1.198	Continuing	Continuing	N/A

**Remarks**  
N/A

<b>Test and Evaluation (\$ in Millions)</b>				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 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			
<b>Subtotal</b>			-	-		-		-		-		-	-	-	N/A

**Remarks**  
N/A

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Missile Defense Agency** **Date:** February 2020

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603881C / <i>Ballistic Missile Defense Terminal Defense Segment</i>	<b>Project (Number/Name)</b> MD06 / <i>Patriot Advanced Capability-3 (PAC-3)</i>
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<b>Management Services (\$ in Millions)</b>				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 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			
<b>Subtotal</b>			-	-		-		-		-		-	-	-	N/A

**Remarks**  
N/A

	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	Cost To Complete	Total Cost	Target Value of Contract
<b>Project Cost Totals</b>	153.370	144.054	90.404	26.198	-	26.198	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 2021 Missile Defense Agency** **Date:** February 2020

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603881C / <i>Ballistic Missile Defense Terminal Defense Segment</i>	<b>Project (Number/Name)</b> MD06 / <i>Patriot Advanced Capability-3 (PAC-3)</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 2019		FY 2020		FY 2021		FY 2022		FY 2023		FY 2024		FY 2025												
MD06 Completed Patriot Advanced Capability-3 (PAC-3) General Support	◆	◆	◆	◆	◆																				
MD06 Planned Patriot Advanced Capability-3 (PAC-3) General Support						◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇			
MD06 USINDOPACOM JEON - LTPO																									

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2021 Missile Defense Agency		<b>Date:</b> February 2020
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603881C / <i>Ballistic Missile Defense Terminal Defense Segment</i>	<b>Project (Number/Name)</b> MD06 / <i>Patriot Advanced Capability-3 (PAC-3)</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
MD06 Completed Patriot Advanced Capability-3 (PAC-3) General Support	1	2019	1	2020
MD06 Planned Patriot Advanced Capability-3 (PAC-3) General Support	2	2020	4	2025
MD06 USINDOPACOM JEON - LTPO	2	2021	2	2021

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2021 Missile Defense Agency										<b>Date:</b> February 2020		
<b>Appropriation/Budget Activity</b> 0400 / 4					<b>R-1 Program Element (Number/Name)</b> PE 0603881C / <i>Ballistic Missile Defense Terminal Defense Segment</i>				<b>Project (Number/Name)</b> MD40 / <i>Program-Wide Support</i>			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021 Base</b>	<b>FY 2021 OCO</b>	<b>FY 2021 Total</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
MD40: <i>Program-Wide Support</i>	95.158	8.733	8.025	16.390	-	16.390	13.495	12.154	10.490	12.435	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)**

	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>
<b>Title:</b> Program Wide Support	8.733	8.025	16.390
<b>Articles:</b>	-	-	-
<b>Description:</b> PWS contains non-headquarters management costs in support of MDA functions and activities across the entire MDS. These functions include Government Civilians and Contract Support Services. This effort provides integrity and oversight of the MDS as well as supports MDA in the development and evaluation of technologies that will respond to the changing threat. Additionally, PWS includes personnel to support global deployments performing deployment site preparation and activation, and provides facility capabilities for MDA Executing Agent locations worldwide. Other MDA wide costs include: physical and technical security; civilian drug testing; audit readiness; the Science, Technology, Engineering, and Mathematics (STEM) program; legal services and settlements; travel and agency training; office, equipment, vehicle, and warehouse leases; utilities and base operations across multiple geographic locations; commercial and ancillary facility services; management of all facility aspects regardless of lifecycle stage; supplies and maintenance; compliance with statutory environmental requirements; data and unified communications support; materiel and readiness and central property management of equipment; Facilities Sustainment,			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2021 Missile Defense Agency		<b>Date:</b> February 2020
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603881C / <i>Ballistic Missile Defense Terminal Defense Segment</i>	<b>Project (Number/Name)</b> MD40 / <i>Program-Wide Support</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>
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><i>FY 2020 Plans:</i></b> - SEE ABOVE.			
<b><i>FY 2021 Plans:</i></b> - SEE ABOVE.			
<b><i>FY 2020 to FY 2021 Increase/Decrease Statement:</i></b> Increase from FY 2020 to FY 2021 provides 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.			
<b>Accomplishments/Planned Programs Subtotals</b>	8.733	8.025	16.390

**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 2021 Missile Defense Agency** **Date:** February 2020

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603881C / <i>Ballistic Missile Defense Terminal Defense Segment</i>	<b>Project (Number/Name)</b> MD40 / <i>Program-Wide Support</i>
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<b>Support (\$ in Millions)</b>				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 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 : VA	3.500	0.000		1.473	Oct 2019	0.000		-		0.000	0.000	4.973	0.000
Program Wide Support - Agency Operations Management	Various	Various : Multi: AL, CA, CO, VA	6.857	0.132	Jul 2019	0.120	Jul 2020	0.000		-		0.000	0.000	7.109	0.000
Program Wide Support - Agency Operations and Support Civilian Salaries, Travel, Training	Various	Various : MDA Multi: AL, CO, CA, VA,	14.049	0.550	Oct 2018	3.401	Oct 2019	0.000		-		0.000	0.000	18.000	0.000
Program Wide Support - Agency Operations and Support International and Materiel and Readiness	MIPR	Various : Multi: AL, VA, Aust, Japan	3.455	0.037	Apr 2019	0.000		0.000		-		0.000	0.000	3.492	0.000
Program Wide Support - Agency Operations and Support Services	C/CPFF	Various : Multi: AL, CO, VA	62.359	7.650	Aug 2019	3.031	Dec 2019	16.390	Dec 2020	-		16.390	Continuing	Continuing	Continuing
Program Wide Support - FFRDC/UARC	C/CPAF	Various : Multi: AL, VA	1.423	0.364	Jan 2019	0.000		0.000		-		0.000	0.000	1.787	0.000
Program Wide Support - Prior year no longer funded in the FYDP	Various	Various : Various	3.515	0.000		0.000		0.000		-		0.000	0.000	3.515	0.000
<b>Subtotal</b>			95.158	8.733		8.025		16.390		-		16.390	Continuing	Continuing	N/A

**Remarks**  
N/A

	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	Cost To Complete	Total Cost	Target Value of Contract
<b>Project Cost Totals</b>	95.158	8.733	8.025	16.390	-	16.390	Continuing	Continuing	N/A

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



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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2021 Missile Defense Agency		<b>Date:</b> February 2020
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603881C / <i>Ballistic Missile Defense Terminal Defense Segment</i>	<b>Project (Number/Name)</b> MD40 / <i>Program-Wide Support</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
MD40 Program-Wide Support	1	2019	4	2025