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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0101213F / <i>Minuteman Squadrons</i>
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COST (\$ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	0.000	111.754	73.650	33.237	0.000	33.237	3.133	3.148	3.148	3.261	Continuing	Continuing
672983: <i>MM Ground and Comm Equipment</i>	0.000	16.128	6.781	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	22.909
672984: <i>MM III Baseline Support</i>	0.000	92.623	53.414	33.237	0.000	33.237	3.133	3.148	3.148	3.261	Continuing	Continuing
672985: <i>MM Support Equip</i>	0.000	0.000	13.455	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	13.455
672986: <i>MM Crypto Mods</i>	0.000	3.003	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.003

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

The MM Ground and Comm Equipment program replaces obsolete/unsupportable ground-based weapon system equipment located at Launch Control Centers (LCCs) and Launch Facilities (LFs) necessary to continue Minuteman III (MM III) operations until replaced by Sentinel. Current efforts include development, qualification, integration, and testing of replacement equipment for the LGM-30G Fast Rising B-Plug Service Life Extension Program (FRBP SLEP).

MM III Baseline Support program replaces or upgrades obsolete/unsupportable flight test unique equipment installed on the missile during flight test, used to test MM III systems on the ground, or located at test facilities to collect, process, and analyze test data. Flight test equipment supports test and evaluation of MM III capabilities, and MM III Operational Test Launches (OTLs) to determine ICBM force readiness, reliability and capability shortfalls. Efforts include development, qualification, integration and testing of replacement equipment such as LGM-30G Flight Test Telemetry and Termination System (FT3) and LGM-30G Higher Authority Command Test System (HACTS) 2.0. These programs will also implement processes, procedures and data systems to mitigate the transition risk from MM III to Sentinel. As other similar equipment is identified for replacement, it will be added to this program. MM III Baseline Support also provides for other MM III unique government costs, studies of system performance, contract closeout costs, cost trades and acquisition planning activities, up to and including proposal preparation, for future capabilities. Efforts also include any minor needs required to prepare for full acquisition purposes.

MM Support Equipment program designs, develops, and tests replacement of obsolete/non-serviceable weapon system support equipment. These programs will also implement processes, procedures and data systems to mitigate the transition risk from MM III to Sentinel. Efforts include design, development, and testing of support equipment such as MM III Acquisition of Transportation and Handling (T&H) and Support Equipment (MATH) effort. Programs will execute Diminishing Manufacturing Sources and Material Shortages/Program Management Administration support through the ISC 2.0 contract established to support the ICBM enterprise through the life of MM III.

MM Crypto Mods executes United States Strategic Command, Air Force Global Strike Command, and Air Force Safety Center requirements by implementing the KS-60 capabilities in LGM-30G ICBM Cryptography Upgrade II (ICU II) of remote key/code change and irreversible transformation as mandated in the approved Capabilities Development Document (dated 4 Jan 05) and addresses Nuclear Weapon System Safety Group Operational Safety Review requirements 98-2, 00-1, and 02-2. It also incorporates continuous signal lockout capabilities to prevent the widespread loss of status monitoring. These features will greatly increase security during code changes by reducing the frequency of open sites by 75 days annually and will reduce associated resource costs for 450 LFs and 45 LCCs.

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force	<b>Date:</b> March 2023
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<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0101213F / <i>Minuteman Squadrons</i>
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This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605827F, 0605828F, 0605829F, 0605831F, 0605832F, 0605833F, 0605898F, 0606398F. In FY2022 \$0.697M was expended for civilian pay expenses in this program element, and in FY 2023 \$0.708M is forecasted for civilian pay expenses in this program element.

This program is in Budget Activity 7, Operational System Development because this budget activity includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate production funding in the current or subsequent fiscal year.

<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024 Base</b>	<b>FY 2024 OCO</b>	<b>FY 2024 Total</b>
Previous President's Budget	113.622	69.650	33.005	0.000	33.005
Current President's Budget	111.754	73.650	33.237	0.000	33.237
Total Adjustments	-1.868	4.000	0.232	0.000	0.232
• 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	1.979	0.000			
• SBIR/STTR Transfer	-3.847	0.000			
• Other Adjustments	0.000	0.000	0.232	0.000	0.232

**Change Summary Explanation**

FY 2022 decrease of \$3.847M for SBIR.

FY 2023 Congressional Add for \$4.000M to support Multi-Domain Command and Control.

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**Exhibit R-2A, RDT&E Project Justification:** PB 2024 Air Force **Date:** March 2023

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0101213F / <i>Minuteman Squadrons</i>	<b>Project (Number/Name)</b> 672983 / <i>MM Ground and Comm Equipment</i>
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COST (\$ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
672983: <i>MM Ground and Comm Equipment</i>	0.000	16.128	6.781	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	22.909
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

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

The MM Ground and Comm Equipment program replaces obsolete/unsupportable ground-based weapon system equipment located at Launch Control Centers (LCCs) and Launch Facilities (LFs) necessary to continue Minuteman III operations until replaced by Sentinel. Current efforts include development, qualification, integration, and testing of replacement equipment such as the LGM-30G Fast Rising B-Plug Service Life Extension Program (FRBP SLEP).

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

	FY 2022	FY 2023	FY 2024
<b>Title:</b> LGM-30G Fast Rising B-Plug Service Life Extension Program (FRBP SLEP)	16.128	6.781	0.000
<b>Description:</b> The FRBP provides security functions for the Personnel Access System (PAS) of the LFs. It is a 14,000 pound cylinder with 12 locking pins used to deny/delay access to intruders during LF maintenance activities.			
This effort includes critical hardware and software modifications to address high obsolescence risk and reliability issues affecting the operational wings.			
<b>FY 2023 Plans:</b>			
• Functional Configuration Audit			
• Systems Integration Test			
• Production Readiness Review			
<b>FY 2024 Plans:</b>			
No FY24 planned			
<b>FY 2023 to FY 2024 Increase/Decrease Statement:</b>			
Program projected to complete EMD in FY23			
<b>Accomplishments/Planned Programs Subtotals</b>	16.128	6.781	0.000

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

Line Item	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
• MPAF 03 Line Item	0.000	9.682	11.637	-	11.637	15.380	4.031	0.000	0.000	0.000	40.730
M30MLG: <i>MM III Modifications</i>											

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force	<b>Date:</b> March 2023
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<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0101213F / <i>Minuteman Squadrons</i>	<b>Project (Number/Name)</b> 672983 / <i>MM Ground and Comm Equipment</i>
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**C. Other Program Funding Summary (\$ in Millions)**

<u>Line Item</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u> <u>Base</u>	<u>FY 2024</u> <u>OCO</u>	<u>FY 2024</u> <u>Total</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>FY 2028</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• MPAF 04 Line Item 00098A: <i>Msl Sprs / Repair Parts (Initial)</i>	0.000	0.778	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	0.778

**Remarks**

**D. Acquisition Strategy**

Ground and communication equipment replacement efforts are reviewed to determine the best method for execution; including vendor qualification and procurement with no development required; develop and/or modify organic depot capabilities with industry. Industry development for ground and communication equipment efforts will be executed through contracts under the Future ICBM Sustainment and Acquisition Construct (FISAC) or competitive source selections. Nuclear Surety Cross Check Analysis (NSCCA) and Independent Verification and Validation (IV&V) efforts are contracted separately. Nuclear Surety and Vulnerability analysis requirements are covered in the Acquisition Strategy.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0101213F / Minuteman Squadrons	<b>Project (Number/Name)</b> 672983 / MM Ground and Comm Equipment
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<b>Product Development (\$ in Millions)</b>				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 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			
LGM-30G Fast Rising B-plug Service Life Extension Program (FRBP SLEP) EMD SIBR	C/CPAF	Select Engineering Serv : Layton, UT	0.000	0.762	May 2022	4.722	Oct 2022	-		-		-	Continuing	Continuing	-
LGM-30G Fast Rising B-Plug Service Life Extension Program (FRBP SLEP) EMD	C/CPFF	Northrop Grumman : Salt Lake City, UT	0.000	12.683	Oct 2021	-		-		-		-	Continuing	Continuing	21.949
<b>Subtotal</b>			0.000	13.445		4.722		-		-		-	Continuing	Continuing	N/A

<b>Test and Evaluation (\$ in Millions)</b>				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 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			
LGM-30G Fast Rising B-Plug Service Life Extension Program (FRBP SLEP) Test & Evaluation	Various	Various : Various	0.000	0.123	Oct 2021	0.198	Oct 2022	-		-		-	Continuing	Continuing	0.000
<b>Subtotal</b>			0.000	0.123		0.198		-		-		-	Continuing	Continuing	N/A

<b>Management Services (\$ in Millions)</b>				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 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			
LGM-30G Fast Rising B-Plug Service Life Extension Program (FRBP SLEP) A&AS	C/FP	BAE : Layton, UT	0.000	1.229	Oct 2021	1.162	Oct 2022	-		-		-	Continuing	Continuing	3.692
LGM-30G Fast Rising B-Plug Service Life Extension Program (FRBP SLEP) PSC	Various	Various : Various	0.000	1.331	Jan 2022	0.699	Jan 2023	-		-		-	Continuing	Continuing	0.000
<b>Subtotal</b>			0.000	2.560		1.861		-		-		-	Continuing	Continuing	N/A





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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2024 Air Force		<b>Date:</b> March 2023
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0101213F / <i>Minuteman Squadrons</i>	<b>Project (Number/Name)</b> 672983 / <i>MM Ground and Comm Equipment</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>MM Ground and Comm Equipment</i></b>				
FRBP SLEP Engineering & Manufacturing Development Phase	3	2022	2	2024
FRBP SLEP Milestone C (Aug 2023)	4	2023	4	2023
FRBP SLEP Production & Deployment Phase	1	2024	4	2026
FRBP SLEP FOC (Sept 2026)	4	2026	4	2026

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force										<b>Date:</b> March 2023		
<b>Appropriation/Budget Activity</b> 3600 / 7					<b>R-1 Program Element (Number/Name)</b> PE 0101213F / <i>Minuteman Squadrons</i>				<b>Project (Number/Name)</b> 672984 / <i>MM III Baseline Support</i>			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024 Base</b>	<b>FY 2024 OCO</b>	<b>FY 2024 Total</b>	<b>FY 2025</b>	<b>FY 2026</b>	<b>FY 2027</b>	<b>FY 2028</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
672984: <i>MM III Baseline Support</i>	0.000	92.623	53.414	33.237	0.000	33.237	3.133	3.148	3.148	3.261	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

**Note**

Project 672984, LGM-30G Arm/Disarm Switch Replacement (ADSR), is expected to complete EMD by 3QFY23.

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

MM III Baseline Support program replaces or upgrades obsolete/unsupportable flight test unique equipment installed on the missile during flight test, used to test MM III systems on the ground, or located at test facilities to collect, process, and analyze test data. Flight test equipment supports test and evaluation of MM III capabilities, and MM III Operational Test Launches (OTLs) to determine ICBM force readiness, reliability and capability shortfalls. Efforts include development, qualification, integration and testing of replacement equipment such as LGM-30G Flight Test Telemetry and Termination System (FT3) and LGM-30G Higher Authority Command Test System (HACTS) 2.0. As other similar equipment is identified for replacement, it will be added to this program. MM III Baseline Support also provides for other MM III unique government costs, studies of system performance, contract closeout costs, cost trades and acquisition planning activities, up to and including proposal preparation, for future capabilities.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605827F, 0605828F, 0605829F, 0605831F, 0605832F, 0605833F, 0605898F, 0606398F. In FY 2022 \$0.697M was expended for civilian pay expenses in this program element, and in FY 2023 \$0.708M is forecasted for civilian pay expenses in this program element.

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

	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024</b>
<b>Title:</b> LGM-30G Arm Disarm Switch Replacement (ADSR)	1.612	0.000	0.000
<p><b>Description:</b> The ADSR program designs, develops, fabricates and tests replacements for the aging Arm/Disarm (A/D) switches currently on the MM III Missile fleet. The A/D switch is responsible for completing or interrupting ordnance electrical circuits. A/D switches are placed at five key locations in the system: Interstage I-II, Stage II Liquid Injection Thrust Vector Control (LITVC) and Roll Control, Interstage II-III, PSRE Staging, and PSRE Isolation Valves. Aging and surveillance is an ongoing study to generate a trade-off curve between reliability/availability and cost.</p> <p>Reliability/availability are monitored by periodic testing to discover unforeseen issues. Because not all existing A/D switches can be repaired/refurbished, the number in inventory will eventually be inadequate to meet the need of the PDM cycle. Supply is estimated to deplete by approximately FY24 with repair/refurbish mitigation. Repair/refurbish is a reliable mitigation plan to meet the ongoing needs of the fleet while a manufacturer is selected and the manufacturing system is selected to develop a replacement A/D switch that meets requirements and production quantities through 2036.</p>			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force	<b>Date:</b> March 2023
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<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0101213F / <i>Minuteman Squadrons</i>	<b>Project (Number/Name)</b> 672984 / <i>MM III Baseline Support</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024</b>
<p><b>FY 2023 Plans:</b> N/A</p> <p><b>FY 2024 Plans:</b> N/A</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b> N/A</p>			
<p><b>Title:</b> LGM-30G Flight Test Telemetry and Termination System (FT3)</p> <p><b>Description:</b> The FT3 Program replaces the Mod 7 Instrumentation Wafer and associated Signal Conditioner Monitor Group, and All Ordnance Destruct System (AODS) with a flight test kit. In addition, a replacement of the Launch Support System (LSS) is required to deploy the flight test kit. The flight test kit which consists of the Flight Destruct System (FDS) and an Integrated Instrumentation System (IIS). In addition, replacement of the IIS is necessary to meet Space Launch Delta 30th Space Wing Range Safety and Air Force Global Strike Command (AFGSC) requirements and resolve obsolescence concerns/issues.</p> <p>The AODS, Mod 7 Instrumentation Wafer, and LSS include components that are not economically available, are no longer compliant with applicable Range Safety requirements, or are in need of technical modernization. Replacement of the Vandenberg Space Force Base (VSFB) flight test unique equipment is necessary to sustain future AFGSC Operational Test Launches (OTL), supporting USSTRATCOM requirements starting in FY22.</p> <p>The OTLs are critical to validating the continued accuracy and reliability of the MMIII ICBM Weapon System until the Sentinel is fielded by providing valuable data to ensure a safe, secure, and effective nuclear deterrent. The FT3 systems will perform the same function as the existing systems with upgraded design features in order to comply with U.S. Space Force Range Safety User Requirements, Range Commander's Council (RCC) 319, Flight Termination Systems Commonality Standard, and RCC 324, Global Positioning and Inertial Measurements Range Safety Tracking Systems' Commonality Standard.</p> <p>As of February 2020, the FT3 Program is executing to a Rapid Fielding plan to meet a requirement to be first launch ready, September 2022. Rapid Fielding requires concurrent activities in order to meet required first launch ready date; failure to be first flight ready in September 2022 jeopardizes the MMIII OTL schedule. Rapid Fielding execution has increased concurrency of technical milestones, delaying some noncritical activities to post first flight (September 2022). Successful first flight (GT 244) on 7 September 2022.</p> <p><b>FY 2023 Plans:</b></p> <ul style="list-style-type: none"> <li>• Review post flight studies/reports of system performance</li> <li>• Obtain Milestone C Production Decision</li> <li>• Obtain Full Rate Production Decision</li> </ul>	85.222	34.539	26.800

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force		<b>Date:</b> March 2023		
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0101213F / <i>Minuteman Squadrons</i>	<b>Project (Number/Name)</b> 672984 / <i>MM III Baseline Support</i>		
<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024</b>
<ul style="list-style-type: none"> <li>• Plan and initiate Launch Facility 09 installation activities</li> <li>• Complete Missile Alert Facility 01-A Launch Support System (LSS) install</li> <li>• Conduct and complete Technical Order Validation/Verification and Type I Training</li> <li>• Complete Maintenance Mockup Trainer build and install</li> <li>• Component requalification efforts</li> <li>• Conduct and close out SVR #2</li> <li>• Take Delivery of LRIPs 3 and 4 (of 8)</li> <li>• Support LRIP flights 2 and 3 (GT 245 and GT 247)</li> </ul> <p><b>FY 2024 Plans:</b></p> <ul style="list-style-type: none"> <li>• Take Delivery of LRIPs 5 through 8 (of 8)</li> <li>• Support LRIP flights 4 and 5 (GT 249 and GT 250)</li> <li>• Continue component requalification efforts</li> <li>• Transition to Sustainment</li> <li>• Contract close-out activities</li> </ul> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b> Funding decreased due to ramp-down of program activities and EMD contract close-out actions.</p>				
<p><b>Title:</b> LGM-30G Higher Authority Command Test System (HACTS) 2.0</p> <p><b>Description:</b> The MM HACTS 2.0 program replaces obsolete/unsupportable communication system test equipment located at test facilities. HACTS laptops are past their vendor support life and require battery replacement. Due to its battery being non-user serviceable, the need for battery factory service makes the laptop units candidates for replacement. Although the HACTS laptop processor is "ruggedized", its design life is only approximately four years. The replacement must be compatible with Operating System updates as mandated by the Risk Management Framework. Incorporating the Weapons System Console Equipment Simulator into the HACTS enables a single hardware platform to execute both software functions thus reducing the number of hardware devices the Government must maintain.</p> <p><b>FY 2023 Plans:</b></p> <ul style="list-style-type: none"> <li>• Award Engineering Manufacturing and Development (EMD) contract</li> <li>• Complete Milestone B</li> </ul> <p><b>FY 2024 Plans:</b> Not receiving 3600 funding in FY24</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b></p>		0.000	9.875	0.000

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<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0101213F / <i>Minuteman Squadrons</i>	<b>Project (Number/Name)</b> 672984 / <i>MM III Baseline Support</i>
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**B. Accomplishments/Planned Programs (\$ in Millions)**

	FY 2022	FY 2023	FY 2024
HACTS 2.0 is planning to receive all of it's funding in FY23 and none in FY24. This drives the decrease from 9.875M to 0.0M from FY23 to FY24			
<b>Title:</b> LGM-30G Baseline Support	5.789	9.000	6.437
<b>Description:</b> This program provides for other MM III unique government costs, studies of system performance, contract closeout costs, cost trades, and acquisition planning activities, up to and including proposal preparation, for future capabilities.			
<b>FY 2023 Plans:</b>			
<ul style="list-style-type: none"> <li>• Conduct studies of system performance.</li> <li>• Conduct cost trades and acquisition planning activities, up to and including proposal preparation, technology for future capabilities.</li> <li>• Congressional add</li> </ul>			
<b>FY 2024 Plans:</b>			
<ul style="list-style-type: none"> <li>• Conduct studies of system performance.</li> <li>• Conduct cost trades and acquisition planning activities, up to and including proposal preparation, technology for future capabilities.</li> </ul>			
<b>FY 2023 to FY 2024 Increase/Decrease Statement:</b>			
Funding increased due to increase in number of system performance studies and acquisition planning activities			
<b>Accomplishments/Planned Programs Subtotals</b>	92.623	53.414	33.237

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

<u>Line Item</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u> <u>Base</u>	<u>FY 2024</u> <u>OCO</u>	<u>FY 2024</u> <u>Total</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>FY 2028</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• MPAF 03 Line Item	3.901	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	3.901
M30MLG: <i>MM III Modifications</i>											
• MPAF 01 00099L: <i>Missile Replacement Eq-Ballistic</i>	0.000	0.000	0.000	-	0.000	4.338	0.000	0.000	0.000	0.000	4.338
• MPAF 04 000999: <i>Initial Spares/Repair Parts</i>	20.415	17.531	19.745	-	19.745	28.563	28.486	31.731	32.563	Continuing	Continuing
• MPAF 04 Line Item 00098A: <i>Msl Sprs/Repair Parts (Initial)</i>	0.000	0.860	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	0.860

**Remarks**

**UNCLASSIFIED**

<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force		<b>Date:</b> March 2023
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0101213F / <i>Minuteman Squadrons</i>	<b>Project (Number/Name)</b> 672984 / <i>MM III Baseline Support</i>

**D. Acquisition Strategy**

Baseline Support equipment replacement efforts are reviewed to determine the best method for execution; including vendor qualification and procurement with no development required; develop and/or modify organic depot capabilities with industry. Industry development for ground and communication equipment efforts will be executed through contracts under the Future ICBM Sustainment and Acquisition Construct (FISAC) or competitive source selections. Nuclear Surety Cross Check Analysis (NSCCA) and Independent Verification and Validation (IV&V) efforts are contracted separately. Nuclear Surety and Vulnerability analysis requirements are covered in the Acquisition Strategy.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0101213F / Minuteman Squadrons	<b>Project (Number/Name)</b> 672984 / MM III Baseline Support
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<b>Product Development (\$ in Millions)</b>				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 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			
LGM-30G Arm Disarm Switch Replacement (ADSR)	C/CPFF	MOOG/ BIONETICS/ EBAD : Moorpark, CA. Blacksburg VA. Heath OH, CA	0.000	1.360		-		-		-		-	0.000	1.360	8.587
LGM-30G Flight Test Telemetry and Termination System (FT3) TMRR/EMD	C/CPIF	Boeing : Clearfield, UT	0.000	70.577	Dec 2021	26.014	Dec 2022	22.202	Nov 2023	-		22.202	0.000	118.793	387.071
LGM-30G Higher Authority Command Test System (HACTS) 2.0	C/CPAF	TBD : TBD	0.000	-		9.875	Oct 2022	-		-		-	0.000	9.875	-
<b>Subtotal</b>			0.000	71.937		35.889		22.202		-		22.202	0.000	130.028	N/A

<b>Support (\$ in Millions)</b>				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 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			
LGM-30G Arm Disarm Switch Replacement (ADSR) Support	C/Variou	Hill AFB : Clearfield, UT	0.000	-		-		-		-		-	0.000	0.000	-
LGM-30G Arm Disarm Switch Replacement (ADSR) Civilian Pay	C/FP	Hill AFB : Clearfield, UT	0.000	0.182		-		-		-		-	0.000	0.182	-
LGM-30G Flight Test Telemetry and Termination System (FT3) Support	C/Variou	Various : Clearfield, UT	0.000	5.599	Nov 2021	3.757	Nov 2022	1.094	Mar 2024	-		1.094	0.000	10.450	-
LGM-30G Flight Test Telemetry and Termination System (FT3) Civilian Pay	C/FP	Hill AFB : Clearfield, UT	0.000	0.515		1.090	Oct 2022	1.117	Oct 2023	-		1.117	0.000	2.722	-
LGM-30G Baseline Support	C/Variou	Various : Various	0.000	5.789	Mar 2022	9.000	Mar 2023	6.437	Mar 2024	-		6.437	0.000	21.226	-
<b>Subtotal</b>			0.000	12.085		13.847		8.648		-		8.648	0.000	34.580	N/A

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0101213F / Minuteman Squadrons	<b>Project (Number/Name)</b> 672984 / MM III Baseline Support
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<b>Test and Evaluation (\$ in Millions)</b>				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 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			
LGM-30G Flight Test Telemetry and Termination System (FT3) Lead Developmental Test Organization	MIPR	AEDC/TST : AAFB, TN	0.000	0.344	Nov 2021	0.099	Nov 2022	0.008	Nov 2023	-		0.008	0.000	0.451	-
<b>Subtotal</b>			0.000	0.344		0.099		0.008		-		0.008	0.000	0.451	N/A

<b>Management Services (\$ in Millions)</b>				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 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			
LGM-30G Arm Disarm Switch Replacement (ADSR) PSC	Various	Various : Various	0.000	0.070		-		-		-		-	0.000	0.070	-
LGM-30G Flight Test Telemetry and Termination System (FT3) PSC	Various	Various : Various	0.000	6.436	Nov 2021	1.653	Nov 2022	1.835		-		1.835	0.000	9.924	-
LGM-30G Flight Test Telemetry and Termination System (FT3) A&AS	TBD	Various : Clearfield, UT	0.000	1.751	Nov 2021	1.926	Nov 2022	0.544		-		0.544	0.000	4.221	-
<b>Subtotal</b>			0.000	8.257		3.579		2.379		-		2.379	0.000	14.215	N/A

	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract	
<b>Project Cost Totals</b>		0.000	92.623	53.414	33.237	-	33.237	0.000	179.274	N/A

**Remarks**

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**Exhibit R-4, RDT&E Schedule Profile: PB 2024 Air Force** **Date:** March 2023

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0101213F / <i>Minuteman Squadrons</i>	<b>Project (Number/Name)</b> 672984 / <i>MM III Baseline Support</i>
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FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

<b>MM III Baseline Support</b>	
ADSR Engineering and Manufacturing Development Phase	
ADSR Milestone C (May 2023)	
ADSR Production and Deployment Phase	
FT3 Engineering and Manufacturing Development Phase	
FT3 Milestone C (Mar 2023)	
FT3 Production and Deployment Phase	
FT3 Operations and Support Phase	
HACTS 2.0 Milestone B (May 2023)	
HACTS 2.0 Engineering and Manufacturing Development Phase (May 2023)	
HACTS 2.0 Milestone C (Jun 2025)	
HACTS 2.0 Production and Deployment (Jun 2025)	
HACTS 2.0 Full Operational Capability (Feb 2026)	

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**Exhibit R-4A, RDT&E Schedule Details:** PB 2024 Air Force **Date:** March 2023

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0101213F / <i>Minuteman Squadrons</i>	<b>Project (Number/Name)</b> 672984 / <i>MM III Baseline Support</i>
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>MM III Baseline Support</i></b>				
ADSR Engineering and Manufacturing Development Phase	1	2022	4	2022
ADSR Milestone C (May 2023)	3	2023	3	2023
ADSR Production and Deployment Phase	3	2023	4	2023
FT3 Engineering and Manufacturing Development Phase	1	2022	3	2024
FT3 Milestone C (Mar 2023)	2	2023	2	2023
FT3 Production and Deployment Phase	1	2023	4	2025
FT3 Operations and Support Phase	2	2023	4	2028
HACTS 2.0 Milestone B (May 2023)	3	2023	3	2023
HACTS 2.0 Engineering and Manufacturing Development Phase (May 2023)	3	2023	3	2025
HACTS 2.0 Milestone C (Jun 2025)	3	2025	3	2025
HACTS 2.0 Production and Deployment (Jun 2025)	3	2025	3	2026
HACTS 2.0 Full Operational Capability (Feb 2026)	2	2026	2	2026

**Note**

**FT3 Program:**

- FT3 Acquisition Strategy drives an overlap in the EMD and P&D phases. FT3 uses RDT&E to fund LRIP units. As flight test units are consumed, the program replaces those units with replenishment spares. The order of replenishment spares overlaps EMD to deliver spares at a rate that keeps pace with consumption.
- MS C Decision (previously projected for Jun 22) delayed due to unforeseen changes to cybersecurity profile, delaying the Program's capability to coordinate and obtain approval for both Cybersecurity Strategy and subsequently, Clinger-Cohen Act (CCA) until Dec 22.
- P&D Phase will end when the first FRP unit is delivered and P&D exit criteria are met, 4QFY25.
- O&S Phase begins when FT3 systems sustainment activities begin, 2QFY23.
- Sustainment includes LSS and associated FT3 support equipment (3400) through the life of MMIII OTL Program.
- Plan is to purchase up to 20 replenishment spares (up to 4 per year through 2030) which will support the MMIII OTL mission.

**ADSR Program:**

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Exhibit R-4A, RDT&E Schedule Details: PB 2024 Air Force Date: March 2023

Appropriation/Budget Activity	R-1 Program Element (Number/Name)	Project (Number/Name)
3600 / 7	PE 0101213F / <i>Minuteman Squadrons</i>	672984 / <i>MM III Baseline Support</i>

- Qualification testing took longer than expected due to failures on switch causing a delay to MS C.

HACTS 2.0 Program:

- Previous schedule didn't account for new start funding initial distribution occurring mid Feb.
- Overall program slipped to the right due to RFP contract type change.

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force										<b>Date:</b> March 2023		
<b>Appropriation/Budget Activity</b> 3600 / 7					<b>R-1 Program Element (Number/Name)</b> PE 0101213F / <i>Minuteman Squadrons</i>				<b>Project (Number/Name)</b> 672985 / <i>MM Support Equip</i>			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024 Base</b>	<b>FY 2024 OCO</b>	<b>FY 2024 Total</b>	<b>FY 2025</b>	<b>FY 2026</b>	<b>FY 2027</b>	<b>FY 2028</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
672985: <i>MM Support Equip</i>	0.000	0.000	13.455	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	13.455
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

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

MM Support Equipment program designs, develops, and tests replacement of obsolete/non-serviceable weapon system support equipment. These programs will also implement processes, procedures and data systems to mitigate the transition risk from MM III to Sentinel. Efforts include design, development, and testing of support equipment such as LGM-30G MM III Acquisition of Transportation & Handling (T&H) and Support Equipment (MATH) effort.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605827F, 0605828F, 0605829F, 0605831F, 0605832F, 0605833F, 0605898F, 0606398F. In FY 2022 \$.697M was expended for civilian pay expenses in this program element, and in FY 2023 \$.708M is forecasted for civilian pay expenses in this program element.”

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

	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024</b>
<b>Title:</b> LGM-30G MM III Acquisition of Transportation and Handling and Support Equipment (MATH)	0.000	13.455	0.000
<p><b>Description:</b> The MATH program ensures the sustainment of the MM III and concurrent transition to Sentinel through 2036 without any disruption to the nuclear deterrence mission. The current T&amp;H will not sustain MM III through end of life. Current T&amp;H technical data package (TDP) is out of date; several items have obsolescence issues. Engineering is needed to provide adequate and complete technical data to support acquisition of MM III T&amp;H. Items include the following:</p> <ul style="list-style-type: none"> <li>a. Propulsion System Rocket Engine (PSRE) tractor and trailer (PST);</li> <li>b. Rocket motor semi-trailer;</li> <li>c. Support Equipment (SE)</li> </ul> <p>MATH engineering efforts will include a Critical Design Review (CDR) to evaluate the proposed TDP and first article testing to validate the TDPs. Technical support documents will be updated as necessary.</p> <p><b>FY 2023 Plans:</b></p> <ul style="list-style-type: none"> <li>• Initiate program at Milestone B</li> <li>• Award Engineering and Manufacturing Development contract</li> <li>• Update Technical Data Package</li> </ul>			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force		<b>Date:</b> March 2023
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0101213F / <i>Minuteman Squadrons</i>	<b>Project (Number/Name)</b> 672985 / <i>MM Support Equip</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024</b>
• Complete Critical Design Review (CDR)			
<b>FY 2024 Plans:</b> N/A			
<b>FY 2023 to FY 2024 Increase/Decrease Statement:</b> FY23 funds are sufficient to complete EMD			
<b>Accomplishments/Planned Programs Subtotals</b>	0.000	13.455	0.000

<b>C. Other Program Funding Summary (\$ in Millions)</b>											
<u>Line Item</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u> <u>Base</u>	<u>FY 2024</u> <u>OCO</u>	<u>FY 2024</u> <u>Total</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>FY 2028</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• MPAF 01 Line Item 00099L: <i>Missile Replacement Eq- Ballistic</i>	0.000	0.000	0.000	-	0.000	15.845	17.670	8.012	0.000	0.000	41.527

**Remarks**

**D. Acquisition Strategy**

Support and test equipment efforts are reviewed to determine the best method for execution including vendor qualification and procurement with no development required; develop and/or modify with organic depot capabilities, or development with industry. Industry development efforts for support equipment will be executed through contracts available under the Future ICBM Sustainment and Acquisition Contract (FISAC) or competitive source selections. Nuclear Surety Cross Check Analysis (NSCCA) and Independent Verification and Validation (IV&V) efforts are conducted separately. Nuclear Surety and Vulnerability analysis requirements are covered in the Acquisition Strategy.

The MATH program intends to conduct minimal necessary Engineering and Manufacturing Development (EMD) design work to develop up-to-date Technical Data Packages immediately followed by Production and Deployment (P&D). MATH will prioritize warfighter needs and accelerate design work on individual equipment items as necessary.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0101213F / Minuteman Squadrons	<b>Project (Number/Name)</b> 672985 / MM Support Equip
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<b>Product Development (\$ in Millions)</b>				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 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			
MM III Transportation/ Handling MATH (PSRE Semi Trailer)	TBD	TBD : TBD	0.000	-		7.186	Jun 2023	-		-		-	Continuing	Continuing	-
MM III Transportation/ Handling MATH (Rocket Motor Semitrailer)	TBD	TBD : TBD	0.000	-		5.031	Jun 2023	-		-		-	Continuing	Continuing	-
MM III Transportation/ Handling and Support Equipment MATH (Support Equipment)	TBD	TBD : TBD	0.000	-		0.100	Mar 2023	-		-		-	0.000	0.100	-
<b>Subtotal</b>			0.000	-		12.317		-		-		-	Continuing	Continuing	N/A

<b>Management Services (\$ in Millions)</b>				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 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			
MM III Transportation/ Handling MATH PSC	TBD	TBD : TBD	0.000	-		0.484	Feb 2023	-		-		-	0.000	0.484	-
MM III Transportation/ Handling MATH A&AS	C/FFP	TBD : TBD	0.000	-		0.654	Feb 2023	-		-		-	0.000	0.654	-
<b>Subtotal</b>			0.000	-		1.138		-		-		-	0.000	1.138	N/A

	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
	<b>Project Cost Totals</b>		0.000	-	13.455	-	-	Continuing	Continuing

**Remarks**



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**Exhibit R-4A, RDT&E Schedule Details:** PB 2024 Air Force **Date:** March 2023

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0101213F / <i>Minuteman Squadrons</i>	<b>Project (Number/Name)</b> 672985 / <i>MM Support Equip</i>
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>MM Support Equipment</i></b>				
MATH Milestone B (Mar 2023)	2	2023	2	2023
MATH Engineering and Manufacturing Development Phase	4	2023	4	2025
MATH SE MTA Rapid Prototyping	2	2023	4	2024
MATH SE MTA Rapid Fielding	1	2025	1	2026
MATH Milestone C (Jun 2025)	3	2025	3	2025
MATH Production and Deployment Phase (Actual end 2Q 2029)	3	2025	4	2028
MATH PSRE Trailer IOC (Oct 2025)	1	2026	1	2026
MATH PSRE Trailer FOC (Jun 2027)	3	2027	3	2027
MATH RMS Trailer IOC (Jan 2027)	1	2027	1	2027
MATH RMS Trailer FOC ( Actual FOC Feb 2029)	4	2028	4	2028

**Note**

MATH Program:

- Program transitioned to new PM team in July '22. New PM team discovered all docs required for RFP needed a complete overhaul to support a strong contract. As a result RFP release, and thus contract award, slipped approximately 6-7 months.

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**Exhibit R-2A, RDT&E Project Justification:** PB 2024 Air Force **Date:** March 2023

<b>Appropriation/Budget Activity</b> 3600 / 7					<b>R-1 Program Element (Number/Name)</b> PE 0101213F / Minuteman Squadrons				<b>Project (Number/Name)</b> 672986 / MM Crypto Mods			
COST (\$ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
672986: MM Crypto Mods	0.000	3.003	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.003
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

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

MM Crypto Mods executes United States Strategic Command, Air Force Global Strike Command, and Air Force Safety Center requirements by implementing the KS-60 capabilities in LGM-30G ICBM Cryptography Upgrade II (ICU II) of remote key/code change and irreversible transformation as mandated in the approved Capabilities Development Document (dated 4 Jan 05) and addresses Nuclear Weapon System Safety Group Operational Safety Review requirements 98-2, 00-1 and 02-2. It also incorporates Continuous Signal Lockout capabilities to prevent the widespread loss of status monitoring. These features will greatly increase security during code changes by reducing the frequency of open sites by 75 days annually and will reduce associated resource costs for 450 Launch Facilities (LFs) and 45 Launch Control Centers (LCCs).

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

	FY 2022	FY 2023	FY 2024
<b>Title:</b> LGM-30G ICBM Cryptography Upgrade II (ICU II)	3.003	0.000	0.000
<b>Description:</b> ICU II completes design and development, and implements KS-60 remote key/code change, irreversible transformation capabilities, and prevents continuous signal lockout.			
<b>FY 2023 Plans:</b> N/A			
<b>FY 2024 Plans:</b> N/A			
<b>FY 2023 to FY 2024 Increase/Decrease Statement:</b> N/A			
<b>Accomplishments/Planned Programs Subtotals</b>	3.003	0.000	0.000

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

Line Item	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
• MPAF 03 Line Item	11.213	7.054	0.000	-	0.000	0.000	0.000	0.000	-	0.000	18.267
M30MLG: MM III Modifications											
• MPAF 04 Line Item 00098A: Msl Spares/Repair Parts (Initial)	1.796	0.000	0.000	-	0.000	0.000	0.000	0.000	-	0.000	1.796

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force	<b>Date:</b> March 2023
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<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0101213F / <i>Minuteman Squadrons</i>	<b>Project (Number/Name)</b> 672986 / <i>MM Crypto Mods</i>
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**C. Other Program Funding Summary (\$ in Millions)**

<u>Line Item</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u> <u>Base</u>	<u>FY 2024</u> <u>OCO</u>	<u>FY 2024</u> <u>Total</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>FY 2028</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
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**Remarks**

**D. Acquisition Strategy**

LGM-30G ICBM Cryptography Upgrade II (ICU II) program utilizes the ICBM Prime Integration Contract (IPIC) services of Northrop Grumman (NG), which were competitively awarded for the design and development of the ICU II capability. The contract type of the ICU II Engineering and Manufacturing Development (EMD) contract is Cost Plus Incentive Fee. Also, ICU II EMD uses a separate contract for Nuclear Safety Cross Check Analysis/Performance Analysis and Technical Evaluation (NSCCA/PATE) Independent Validation & Verification (IV&V). This contract is driven by critical nuclear safety requirements to perform an independent assessment of all modifications to nuclear-certified software. The Support Equipment effort includes EMD development of Depot Support Equipment, Guided Missile Launch Electronic Circuit (GMLEC) interface modification, and Acoustic Microscope System. Nuclear Safety and Vulnerability analysis requirements are covered in the Acquisition Strategy.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0101213F / Minuteman Squadrons	<b>Project (Number/Name)</b> 672986 / MM Crypto Mods
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<b>Product Development (\$ in Millions)</b>				<b>FY 2022</b>		<b>FY 2023</b>		<b>FY 2024 Base</b>		<b>FY 2024 OCO</b>		<b>FY 2024 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>			
LGM-30G ICBM Cryptography Upgrade II EMD	C/CPIF	Northrop Grumman : Clearfield, UT	0.000	-		-		-		-		-	0.000	0.000	160.400
LGM-30G ICBM Cryptography Upgrade II Support Equipment development	C/CPFF	Northrop Grumman : Clearfield, UT	0.000	-		-		-		-		-	0.000	0.000	29.300
LGM-30G ICBM Cryptography Upgrade II Support GMLEC	C/CPFF	Northrop Grumman : Clearfield, UT	0.000	2.226	Jan 2022	-		-		-		-	0.000	2.226	8.367
<b>Subtotal</b>			0.000	2.226		-		-		-		-	0.000	2.226	N/A

<b>Management Services (\$ in Millions)</b>				<b>FY 2022</b>		<b>FY 2023</b>		<b>FY 2024 Base</b>		<b>FY 2024 OCO</b>		<b>FY 2024 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>			
LGM-30G ICBM Cryptography Upgrade II PSC	Various	Various : Various	0.000	0.375	Jan 2022	-		-		-		-	0.000	0.375	-
LGM-30G ICBM Cryptography Upgrade II A&AS	C/FFP	BAE Systems : Clearfield, UT	0.000	0.402	Dec 2021	-		-		-		-	0.000	0.402	0.475
<b>Subtotal</b>			0.000	0.777		-		-		-		-	0.000	0.777	N/A

<b>Project Cost Totals</b>	<b>Prior Years</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024 Base</b>	<b>FY 2024 OCO</b>	<b>FY 2024 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
	0.000	3.003	-	-	-	-	0.000	3.003	N/A

**Remarks**

**UNCLASSIFIED**

**Exhibit R-4, RDT&E Schedule Profile: PB 2024 Air Force** **Date:** March 2023

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0101213F / <i>Minuteman Squadrons</i>	<b>Project (Number/Name)</b> 672986 / <i>MM Crypto Mods</i>
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FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

<b><i>MM Crypto Mods</i></b>	
ICU II Engineering and Manufacturing Development Phase (GMLEC)	
ICU II Production and Deployment Phase	
ICU II Required Assets Available (RAA) for Initial Operational Capability (IOC) (Jan 2022)	
ICU II Required Assets Available (RAA) for Full Operational Capability (FOC) (Jan 2024)	

**UNCLASSIFIED**

**Exhibit R-4A, RDT&E Schedule Details:** PB 2024 Air Force **Date:** March 2023

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0101213F / <i>Minuteman Squadrons</i>	<b>Project (Number/Name)</b> 672986 / <i>MM Crypto Mods</i>
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>MM Crypto Mods</i></b>				
ICU II Engineering and Manufacturing Development Phase (GMLEC)	1	2022	2	2023
ICU II Production and Deployment Phase	1	2022	2	2024
ICU II Required Assets Available (RAA) for Initial Operational Capability (IOC) (Jan 2022)	2	2022	2	2022
ICU II Required Assets Available (RAA) for Full Operational Capability (FOC) (Jan 2024)	2	2024	2	2024