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

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0605238F / <i>Ground Based Strategic Deterrent EMD</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	0.000	3,614.290	3,746.935	0.000	3,746.935	3,401.679	3,246.870	2,610.928	1,855.302	2,168.865	20,644.869
655238: <i>GROUND BASED STRATEGIC DETERRENT (GBSD)</i>	0.000	0.000	3,614.290	3,746.935	0.000	3,746.935	3,401.679	3,246.870	2,610.928	1,855.302	2,168.865	20,644.869
Quantity of RDT&E Articles	-	-	5	3	-	3	6	7	-	-		

Program MDAP/MAIS Code: 493

Note

In FY 2023, Program 0605230F, Ground Based Strategic Deterrent, Project 641025, Ground Based Strategic Deterrent, efforts were transferred to Program 0605238F, Ground Based Strategic Deterrent EMD, Project 655238, Ground Based Strategic Deterrent, in order to account for program transition to System Development and demonstration. (Budget Activity 5).

A. Mission Description and Budget Item Justification

The Sentinel (GBSD) program has been designated as LGM-35A Sentinel. The Sentinel (GBSD) program will design, develop, produce and deploy a replacement for the current Minuteman III (MM III) Intercontinental Ballistic Missile (ICBM) weapon system in order to maintain a safe, secure, reliable, and effective nuclear deterrent. The Sentinel (GBSD) program will deliver a fully integrated weapon system beginning in Fiscal Year 2029 that will lower lifecycle costs and close key capability gaps and vulnerabilities identified in the Sentinel (GBSD) Capabilities Based Assessment, Sentinel (GBSD) Capabilities Development Document, and the Sentinel (GBSD) Analysis of Alternatives. Sentinel (GBSD) will also mitigate ground-based deterrent degradation due to MM III component age-out and attrition.

The Sentinel (GBSD) program will include prime contractor development of applicable support equipment, data, flight test hardware and infrastructure, and training systems while examining and mitigating risk during the MM III to Sentinel (GBSD) transition. The Sentinel (GBSD) program office has partnered with MM III program office to facilitate communication and integration of the weapon system recapitalization during the MM III to Sentinel (GBSD) transition. This program includes any needed nuclear surety and certification and system vulnerability assessments.

During the Engineering and Manufacturing Development (EMD) phase, the Sentinel (GBSD) program will execute 1) government system engineering, analytics, and test capability development; 2) air vehicle equipment development; 3) command & launch systems development; 4) infrastructure and deployment development; 5) support systems development; and 6) weapon system integration.

Government systems engineering investments include development in model-based systems engineering (MBSE), integration, test software, product life-cycle management framework, and modernization of existing system engineering/integration labs and infrastructure. Air vehicle equipment is an integrated missile stack including the propulsion, post-boost, guidance, and re-entry systems sub-components. Command & launch encompasses all command and control components and interfaces, associated ground hardware, ground control equipment and associated software directly related to the survivability, monitoring, and launch of the

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<p>replacement flight system. Launch systems include launch centers, launch facilities, and associated structures and ground mechanical systems. Support systems include operator and maintainer training systems hardware and software, security system architecture, transport support equipment, program office and weapon system facilities, and peculiar/common support equipment. Weapon system integration risk reduction includes non-proprietary open systems architecture with well-defined interfaces and a modular design at the weapon system level to allow future modification and technology insertion. As Sentinel (GBSD) progresses toward Critical Design Review (CDR), the Sentinel (GBSD) weapon system design will dictate the parameters for the MILCON real property requirements and their integration with the weapon system component requirements as these are inextricably linked.</p> <p>The funding required for Fiscal Year 2024 will be used to continue the execution of the EMD contract to advance Sentinel (GBSD) program major activities to include systems engineering , information technology, data management, analytical capabilities and to deliver a flexible, integrated weapon system critical design. The program will modify, modernize, and expand the analytic environment and labs to support EMD activities to enable full execution of the program's capability to own the technical baseline throughout the program life cycle. This involves establishing a digital engineering system including a supporting environment / infrastructure to perform digital activities, to collaborate with, and to communicate across stakeholders. The Sentinel (GBSD) program will continue to examine and mature air vehicle equipment, command and launch, cybersecurity, operator and maintenance training systems hardware and software, security system architecture, transport sub-systems, Peculiar/Common Support Equipment and associated ground technologies. The program will also continue to mature and refine weapon system and non-operational software, software integration and development, modular system architecture requirements, and product life-cycle management. This will continue to require execution and improvement to the unified certification strategy facilitating system validation and verification for nuclear surety, cyber security, and nuclear safety requirements. The program will also expand and mature the analytical, information technology, test, and data management capabilities to ensure access to weapon system design information is properly controlled and securely transmitted between government and contractors. The program will continue to develop Vandenberg Space Force Base (VSFB) test capabilities and provision Western Range Test capabilities for the Flight Test Program. Additionally, the Sentinel (GBSD) program funds all required developmental and operational test and evaluation activities to meet initial and full operational capability milestones including, but not limited to, developing, improving and modernizing test capabilities essential to reaching those milestones when existing test capabilities are inadequate or non-existent. The program will also continue integrating the capability to meet the requirement for dual-capable, air based, survivable launch . Finally, the program will establish a government-owned and government-operated DevSecOps / software stack within a cloud environment.</p> <p>FY24 PE 0605238F is submitting a Technical Adjustment to realign \$7.650 million to MGBSD1 Aircraft Procurement, Air Force for SLP-A kit procurement. MGBSD1 will be a new start in FY24.</p> <p>This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program element 0605833F or 0605831F. In FY2022 0.000M was expended for civilian pay expenses in this program element, and in FY2023 50.000M is forecasted for civilian pay expenses in this program element.</p> <p>This program is in Budget Activity 5, System Development and Demonstration (SDD) because it has passed Milestone B approval and is conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full rate production.</p>		

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B. Program Change Summary (\$ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	0.000	3,614.290	3,614.629	0.000	3,614.629
Current President's Budget	0.000	3,614.290	3,746.935	0.000	3,746.935
Total Adjustments	0.000	0.000	132.306	0.000	132.306
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	0.000	0.000	132.306	0.000	132.306

Change Summary Explanation

FY 2024 increase due to the Sentinel (GBSD) program continuing to advance its EMD Development as well as identifying and reducing program transition risks. The program continues to advance its test series for Development Test & Evaluation (DT&E) and Operational Test & Evaluation (OT&E) for the air vehicle, launch facility, launch center, and all other test support assets.

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2022	FY 2023	FY 2024
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Title: Engineering & Manufacturing Development (EMD) Product Development	0.000	3,048.121	3,042.691
Description: The EMD Product Development major thrust captures the planned events and activities of the EMD prime contractor in the design, development and test activities of the Sentinel (GBSD) weapon system. The primary objectives on contract are to develop, manufacture, test, and deliver an affordable, integrated WS that meets the WSS requirements; incorporate modularity in the WS design to ensure Sentinel (GBSD) can adapt to meet the challenges of a dynamic threat environment, technological changes, and budget uncertainty, and reduce technical, engineering, integration, test, and lifecycle cost risk. The EMD Product Development includes the completion of detailed design for all hardware and software, the build and test of prototypes and first articles to verify compliance with capability requirements, and preparations for production and deployment. It also includes the execution of engineering design reviews, development test & evaluation, audits, and readiness reviews at the system and subsystem levels. These reviews include subsystem and system Critical Design Reviews (CDR), Full Functional Test, System Qualification and Verification Review, Functional Configuration Audits, Physical Configuration Audits, and Test Readiness Reviews. The EMD Product Development major thrust activities are linked with the corresponding EMD Government Support major thrust activities to ensure the government owns the technical baseline for the system acquisition. The objectives are: 1) advance Sentinel (GBSD) major activities, systems engineering activities, information technology, data management, analytical capabilities and deliver a flexible, integrated weapon system critical design, 2) prototype and test mature technologies related to			

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C. Accomplishments/Planned Programs (\$ in Millions)		FY 2022	FY 2023	FY 2024
<p>the major activities and demonstrate performance of sub-system and system capabilities through prototyping and testing and 3) engage in rapid prototyping events to mature future design increments.</p> <p>FY 2023 Plans:</p> <ul style="list-style-type: none"> • Conduct sub-system critical design reviews (CDRs) for multiple elements of the weapon system including all three stages of the booster stack, guidance computer, and payload shroud. • Continue to execute the EMD Contract to advance Sentinel (GBSD) major activities to include systems engineering activities, information technology, data management, analytical capabilities and deliver a flexible, integrated weapon system critical design. • Continue to examine and mature air vehicle equipment, command and launch, cybersecurity, operator and maintenance training systems hardware and software, security system architecture, transport sub-systems, and associated ground technologies. Refine requirements and modular architectures through trade studies, prototyping, demonstration, and analysis. • Continue to build and refine Mission Modeling Framework (MMF) by incorporating higher-fidelity weapon system designs and updates to threat landscape to facilitate ongoing assessment of weapon system performance against the authoritative threat. • Continue to mature the assessment of the current MM III infrastructure to determine, through onsite assessments and analysis, the extent of degradation and evaluate for future upgrade, replacement, preparation, and modernization of operational and test facilities. • Continue to mature the weapon system by conducting trade studies, system engineering, test activities, and system modeling and simulation. • Continue to assess fielding requirements for air vehicle equipment, command & launch, and infrastructure and appropriate timelines to transition from MM III to Sentinel (GBSD) solution. • Conduct planning for the use of MBSE tools during Operations and Sustainment phase in order to transform ICBM sustainment and supply chain management. • Continue to mature and refine weapon system and non-operational software, software integration and development, modular system architecture requirements, and product life-cycle management. • Continue to further develop analytical, information technology, and data management capabilities. • Continue to procure, design, expand, and prepare information technology equipment and network access for new Sentinel (GBSD) facilities to support program personnel. • Continue to implement information systems and information technology design to support EMD execution; onboard program personnel into all Sentinel (GBSD) cloud networks, and provide applications needed in the cloud to execute the program. • Continue to plan and execute critical software risk reduction activities. • Continue to expand and mature the analytical, information technology, test, and data management capabilities to ensure access to weapon system design information is properly controlled and securely transmitted between government and contractors. • Continue to expand large data ingest capabilities to support consumption of flight test and Model Based Architecture and Software Engineering data. 				

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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2022	FY 2023	FY 2024
<ul style="list-style-type: none"> • Continue to execute and improve the unified certification strategy facilitating system validation and verification for nuclear surety, cyber security, and nuclear safety requirements. • Continue to plan, develop, mature capability integration with the Nuclear Command, Control, and Communications (NC3) Center for future command, control, and communication requirements. • Continue to collaborate with the National Nuclear Security Administration to ensure seamless integration of Department of Energy assets into the Sentinel (GBSD) weapon system. • Continue to integrate the Mk21A Reentry Vehicle (Program 0101328F), ICBM Fuze Modernization (Program 0604933F), and Sentinel (GBSD) test programs. • Continue to integrate the capability to meet the requirement for dual-capable, air-based, survivable launch. • Continue to develop and test reentry vehicles to meet joint Department of Energy and Department of Defense specific requirements. • Continue to conduct studies and initiatives to build schedule margin, reduce risk in the MM III to Sentinel (GBSD) transition, and reduce life cycle costs as the program progresses through the EMD phase to the Production phase. • Continue activities necessary to plan, program, and execute weapon system structures needed to support program milestones and test objectives. • Continue facility and infrastructure conversions and fit-out at Vandenberg SFB, Hill AFB, and F.E. Warren to support First Flight developmental test operations and facility prototypes to support Sentinel (GBSD) Operations and Deployment. • RDT&E quantities are built and delivered by the prime contractor to utilize in prototyping and design testing as the prime contractor progresses toward the final design solution and hardware needed for First Flight. • Complete the solid rocket motor development tests (1 per stage). • Complete LF-04 and LF-26 construction and weapon system install. • Continue the design maturation of the Transporter Erector, Payload Transporter, Missile Transporter, Post Boost Attitude Control Module Transporter, and other common / peculiar support equipment via numerous incremental design reviews. • Conduct the critical design reviews for Transporter Erector, Payload Transporter, Missile Transporter, and Post Boost Attitude Control Module Transporter. • Complete the design, manufacturing, and delivery of the Limited Effectivity Test Support Equipment required for Pathfinder and First Flight. • Continued Training development with completion of Sentinel Objectives & Media Analysis Report (OMAR), Training Systems Basis Analysis Report (TSBAR) and final Training Systems Requirement Analysis (TSRA). • Develop courseware for first flight informal training and formal courseware review software. 			

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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2022	FY 2023	FY 2024
<p>• Completion of level 3 specifications for Maintenance Training Facility, Security Forces Tactics Trainer, Collaborative Procedures Trainer, Ground Test Missile (Trainer), Security Systems Controller Trainer, Integrated Command Center Trainer, and Cyber Operations Trainer.</p> <p><i>FY 2024 Plans:</i></p> <ul style="list-style-type: none"> • Conduct remaining sub-system Critical Design Reviews (CDR) in the lead-up to Weapon System (WS) CDR in 3QFY24. • Continue to execute the EMD Contract to advance Sentinel (GBSD) major activities to include first development flight test milestone, systems engineering activities, test activities, information technology, data management, analytical capabilities and deliver a flexible, integrated weapon system critical design. Establish an initial product baseline at CDR for the weapon system. • Continue to examine and mature air vehicle equipment, command and launch, cybersecurity, operator and maintenance training systems hardware and software, security system architecture, transport sub-systems, and associated ground technologies. • Continue to build and refine Mission Modeling Framework (MMF) by incorporating higher-fidelity weapon system designs and updates to threat landscape to facilitate ongoing assessment of weapon system performance against the authoritative threat. • Continue to mature the assessment of the current MM III infrastructure to determine, through onsite assessments and analysis, the extent of degradation and evaluate for future upgrade, replacement, preparation, and modernization of operational and test facilities. • Continue to mature the weapon system by conducting trade studies, system engineering, test activities, and system modeling and simulation. • Continue to assess fielding requirements for air vehicle equipment, command & launch, and infrastructure and appropriate timelines to transition from MM III to Sentinel (GBSD) solution. • Conduct planning for the use of MBSE tools during Operations and Sustainment phase in order to transform ICBM sustainment and supply chain management. • Continue to mature and refine weapon system and non-operational software, software integration and development, modular system architecture requirements, and product life-cycle management. • Continue to further develop analytical, information technology, and data management capabilities. • Continue to procure, design, expand, and prepare information technology equipment and network access for new Sentinel facilities to support program personnel. • Continue to implement information systems and information technology design to support EMD execution; onboard program personnel into all Sentinel cloud networks, and provide applications needed in the cloud to execute the program. • Continue to plan and execute critical software risk reduction activities. • Continue to expand and mature the analytical, information technology, test, and data management capabilities to ensure access to weapon system design information is properly controlled and securely transmitted between government and contractors. • Continue to expand large data ingest capabilities to support consumption of flight test and Model Based Architecture and Software Engineering data. 			

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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2022	FY 2023	FY 2024
<ul style="list-style-type: none"> • Continue to execute and improve the unified certification strategy facilitating system validation and verification for nuclear surety, cyber security, and nuclear safety requirements. • Continue to plan, develop, mature capability integration with the Nuclear Command, Control, and Communications (NC3) Center for future command, control, and communication requirements. • Continue to collaborate with the National Nuclear Security Administration to ensure seamless integration of Department of Energy assets into the Sentinel (GBSD) weapon system. • Continue to integrate the Mk21A Reentry Vehicle (Program 0101328F), ICBM Fuze Modernization (Program 0604933F), and Sentinel (GBSD) test programs. • Continue to integrate the capability to meet the requirement for dual-capable, air-based, survivable launch. • Continue to develop and test reentry vehicles to meet joint Department of Energy and Department of Defense specific requirements. • Continue to plan, develop, and mature support systems to include Common Support Equipment/Peculiar Support Equipment and all transportation equipment. • Continue to conduct studies and initiatives to build schedule margin, reduce risk in the MM III to Sentinel (GBSD) transition, and reduce life cycle costs as the program progresses through the EMD phase to the Production phase. • Continue facility and infrastructure conversions and fit-out at Vandenberg SFB, Hill AFB, and F.E. Warren to support First Flight developmental test operations and facility prototypes to support Sentinel (GBSD) Operations and Deployment. • Continue facility and infrastructure conversions and fit-out at Vandenberg SFB to support First Flight developmental test operations. • RDT&E quantities are built and delivered by the prime contractor to utilize in prototyping and design testing as the prime contractor progresses toward the final design solution and hardware needed for First Flight. <p><i>FY 2023 to FY 2024 Increase/Decrease Statement:</i> FY 2024 funding remains constant due to the Sentinel (GBSD) program continuing to advance its EMD Development as well as identifying and reducing program transition risks. The program continues to advance its test series for Development Test & Evaluation (DT&E) and Operational Test & Evaluation (OT&E) for the air vehicle, launch facility, launch center, and all other test support assets.</p>			
<p><i>Title:</i> EMD Government Support</p> <p><i>Description:</i> The EMD Government Support major thrust captures planned events and activities for government agencies, Federally Funded Research and Development Centers (FFRDCs), University Affiliated Research Centers (UARCs), and other partners in the support of the EMD prime contractor efforts in design, development, and test of the weapon system. The EMD Government Support major thrust activities are linked with the corresponding EMD Product Development major thrust activities to ensure the government owns the technical baseline for the system acquisition. The objectives are: 1) advance Sentinel (GBSD)</p>	0.000	566.169	704.244

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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2022	FY 2023	FY 2024
<p>major activities, systems engineering activities, information technology, data management, analytical capabilities and deliver a flexible, integrated weapon system critical design, 2) prototype and test mature technologies related to the major activities and demonstrate performance of sub-system and system capabilities through prototyping and testing and 3) engage in rapid prototyping events to mature future design increments.</p> <p>FY 2023 Plans:</p> <ul style="list-style-type: none"> • Continue to modify, modernize, and expand the analytic environment and labs to support EMD activities to enable full execution of the program's capability to own the technical baseline throughout the program life cycle. This involves establishing a digital engineering system including a supporting environment/infrastructure to perform digital activities, collaborate with, and communicate across stakeholders. • Continue to examine and mature air vehicle equipment, command and launch, cybersecurity, operator and maintenance training systems hardware and software, security system architecture, transport sub-systems, and associated ground technologies. Refine requirements and modular architectures through trade studies, prototyping, demonstration, and analysis. • Continue to assess fielding requirements for air vehicle equipment, command and launch, infrastructure and appropriate timelines to transition from MM III to Sentinel (GBSD) solution. • Continue to conduct studies and initiatives to build schedule margin, reduce risk in the Minuteman III to Sentinel (GBSD) transition, and reduce life cycle costs as the program progresses through the EMD phase to the Production phase. • Continue to mature and refine weapon system and non-operational software, software integration and development, modular system architecture requirements, and product life-cycle management. • Continue to mature the assessment of the current MM III infrastructure to determine, through onsite assessments and analysis, the extent of degradation and evaluate for future upgrade, replacement, preparation, and modernization of operational and test facilities. • Continue to execute all government critical path activities to include, but not limited to, Preliminary Draft Environmental Impact Statement (PDEIS), Coordinating Draft Environmental Impact Studies (EIS), Environmental Baseline Surveys, and Section 106 Programmatic Agreement. • Continue to mature the weapon system by conducting trade studies, system engineering, test activities, and system modeling and simulation. • Continue to build and refine Mission Modeling Framework (MMF) by incorporating higher-fidelity weapon system designs and updates to threat landscape to facilitate ongoing assessment of weapon system performance against the authoritative threat. • Continue to expand large data ingest capabilities to support consumption of flight test and Model Based Architecture and Software Engineering data. • Conduct planning for the use of MBSE tools during Operations and Sustainment phase in order to transform ICBM sustainment and supply chain management. • Continue to further develop analytical, information technology, and data management capabilities. 			

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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2022	FY 2023	FY 2024
<ul style="list-style-type: none"> • Continue to procure, design, expand, and prepare information technology equipment and network access for new Sentinel facilities to support program personnel. • Continue to implement information systems and information technology design to support EMD execution; onboard program personnel into all Sentinel cloud networks, and provide applications needed in the cloud to execute the program. • Continue to expand and mature the analytical, information technology, test, and data management capabilities to ensure access to weapon system design information is properly controlled and securely transmitted between government and contractors. • Continue to build and establish an industrial base for innovation around the Sentinel (GBSD) enterprise to maintain modularity and adaptability for the life cycle of the weapon system. • Continue to plan and execute critical software risk reduction activities. • Continue to expand the Information Systems/Information Technology/Information Assurance infrastructure networks and personnel required to support Top Secret, Special Access Programs, and collateral activities and expand capability at mission partner operating locations and network access points. • Continue to expand government-owned and government-operated DevSecOps/software stack to include data and software artifact transport between classified environments using cross domain solutions. • Continue to implement cloud network infrastructure improvements to increase network reliability, availability, provide continued security and reduce latency across the networks. • Continue to refine Security Classification Guide, update impacts, and implement updates and changes through all Government and contractor programmatic activities. • Continue to integrate the Mk21A Reentry Vehicle (Program 0101328F), ICBM Fuze Modernization (Program 0604933F), and Sentinel (GBSD) test programs. • Continue to execute and improve the unified certification strategy which meets nuclear surety, cyber security, and nuclear safety requirements. • Continue to develop a common cryptographic device and supporting equipment for use in multiple subsystems and/or networks throughout the Sentinel (GBSD) weapon system. • Continue to plan, develop, and mature capability integration with the NC3 Center for future command, control, and communication requirements. • Continue to increase FFRDC/UARC support to maintain the ability to own the technical baseline in EMD. • Continue to collaborate with National Nuclear Security Administration to ensure seamless integration of Department of Energy (DoE) assets into Sentinel (GBSD) weapon system. • Continue to develop test re-entry vehicles to meet joint DoE/DoD specific requirements. • Continue to integrate requirement for dual-capable, air-based, survivable launch capability. • Continue to develop, improve & modernize government test capabilities required for successful Developmental Test (DT) and Operational Test (OT) including but not limited to, Vandenberg SFB test capabilities, Western Range Test capabilities, Broad Ocean Area Terminal Area Scoring Test Capability, and various noise, vibration and harshness and nuclear hardness 			

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<p>and survivability test sites/beds as required. Prepare & verify test capabilities' readiness to support the flight test campaign commencing in FY24. Leverage digital engineering tools & physical test data to mature Modeling & Simulation tools toward authoritative virtualization.</p> <ul style="list-style-type: none"> • Continue activities necessary to plan, program, and execute weapon system structures needed to support program milestones and test objectives. • Continue to modify and expand GBSD workspace at all operating locations to accommodate a growing workforce and provide the tools for the workforce to own the technical baseline. • Complete the solid rocket motor development tests (1 per stage). • Complete LF-04 and LF-26 construction and weapon system install. • Continue the development, manufacturing, and qualification of the first end units for the Transporter Erector, Payload Transporter, Missile Transporter, Post Boost Attitude Control Module Transporter, and all other common and peculiar support equipment. • Continue Limited Effectivity Test Support Equipment gap analysis and verification process; and continue to transition Limited Effectivity Test Support Equipment to Operational-level support equipment. • Special Contractor/Type 1 courseware and training development, to include Secondary Launch Platform - Airborne Operators Airborne Procedures Trainer delivery. <p>FY 2024 Plans:</p> <ul style="list-style-type: none"> • Continue to modify, modernize, and expand the analytic environment and labs to support EMD activities to enable full execution of the program's capability to own the technical baseline throughout the program life cycle. This involves establishing a digital engineering system including a supporting environment/infrastructure to perform digital activities, collaborate with, and communicate across stakeholders. • Continue to examine and mature air vehicle equipment, command and launch, cybersecurity, operator and maintenance training systems hardware and software, security system architecture, transport sub-systems, and associated ground technologies. Refine requirements and modular architectures through trade studies, prototyping, demonstration, and analysis. • Continue to assess fielding requirements for air vehicle equipment, command and launch, infrastructure and appropriate timelines to transition from MM III to Sentinel (GBSD) solution. • Continue to conduct studies and initiatives to build schedule margin, reduce risk in the Minuteman III to Sentinel (GBSD) transition, and reduce life cycle costs as the program progresses through the EMD phase to the Production phase. • Continue to mature and refine weapon system and non-operational software, software integration and development, modular system architecture requirements, and product life-cycle management. • Continue to mature the assessment of the current MM III infrastructure to determine, through onsite assessments and analysis, the extent of degradation and evaluate for future upgrade, replacement, preparation, and modernization of operational and test facilities. 				

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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2022	FY 2023	FY 2024
<ul style="list-style-type: none"> • Continue to execute all government critical path activities to include, but not limited to, Environmental Impact Statement (EIS), Environmental Baseline Surveys, and Section 106 Programmatic Agreement. • Continue to mature the weapon system by conducting trade studies, system engineering, test activities, and system modeling and simulation. • Continue to build and refine MMF by incorporating higher-fidelity weapon system designs and updates to threat landscape to facilitate ongoing assessment of weapon system performance against the authoritative threat. • Continue to expand large data ingest capabilities to support consumption of flight test and Model Based Architecture and Software Engineering data. • Conduct planning for the use of MBSE tools during Operations and Sustainment phase in order to transform ICBM sustainment and supply chain management. • Continue to further develop analytical, information technology, and data management capabilities. • Continue to procure, design, expand, and prepare information technology equipment and network access for new Sentinel facilities to support program personnel. • Continue to implement information systems and information technology design to support EMD execution; onboard program personnel into all Sentinel cloud networks, and provide applications needed in the cloud to execute the program. • Continue to expand and mature the analytical, information technology, test, and data management capabilities to ensure access to weapon system design information is properly controlled and securely transmitted between government and contractors. • Continue to build and establish an industrial base for innovation around the Sentinel (GBSD) enterprise to maintain modularity and adaptability for the life cycle of the weapon system as well as to continue the digital transformation to support the Sentinel (GBSD) program. • Continue to plan and execute critical software risk reduction activities. • Continue to expand the Information Systems/Information Technology/Information Assurance infrastructure networks and personnel required to support Top Secret, Special Access Programs, and collateral activities and maintain and expand capability at mission partner operating locations and network access points. • Continue to expand government-owned and government-operated DevSecOps/software stack to include data and software artifact transport between classified environments using cross domain solutions. • Continue to implement cloud network infrastructure improvements to increase network reliability, availability, provide continued security, begin implementing cloud agnostic approach, and reduce latency across the networks. • Continue to refine Security Classification Guide, update impacts, and implement updates and changes through all Government and contractor programmatic activities. • Continue to integrate the Mk21A Reentry Vehicle (Program 0101328F), ICBM Fuze Modernization (Program 0604933F), and Sentinel (GBSD) test programs. • Continue to execute and improve the unified certification strategy which meets nuclear surety, cyber security, and nuclear safety requirements. 			

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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Air Force	Date: March 2023
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0605238F / <i>Ground Based Strategic Deterrent EMD</i>
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2022	FY 2023	FY 2024
<ul style="list-style-type: none"> • Continue to develop a common cryptographic device and supporting equipment for use in multiple subsystems and/or networks throughout the Sentinel (GBSD) weapon system. • Continue to plan, develop, and mature capability integration with the NC3 Center for future command, control, and communication requirements. • Continue to increase FFRDC/UARC support to maintain the ability to own the technical baseline in EMD. • Continue to increase Government Sustainment organizational support to maintain the ability to own and sustain the Hardware and Software technical baseline. • Continue to plan, develop, and mature the sustainment strategies including Digital sustainment, Software Sustainment, and Hardware Sustainment. • Continue to collaborate with National Nuclear Security Administration to ensure seamless integration of Department of Energy (DoE) assets into Sentinel (GBSD) weapon system. • Continue to develop test re-entry vehicles to meet joint DoE/DoD specific requirements. • Continue to integrate requirement for dual-capable, air-based, survivable launch capability. • Continue to develop, improve & modernize government test capabilities required for successful Developmental Test (DT) and Operational Test (OT) including but not limited to, Vandenberg SFB test capabilities, Western Range Test capabilities, Broad Ocean Area Terminal Area Scoring Test Capability, and various noise, vibration and harshness and nuclear hardness and survivability test sites/beds as required. Prepare & verify test capabilities' readiness to support the flight test campaign commencing in FY24. Leverage digital engineering tools & physical test data to mature Modeling & Simulation tools toward authoritative virtualization. • Continue activities necessary to plan, program, and execute weapon system structures needed to support program milestones and test objectives. • Continue to plan, develop, and mature support systems to include Common Support Equipment/Peculiar Support Equipment and all transportation equipment. • Continue to modify and expand Sentinel (GBSD) workspace at all operating locations to accommodate a growing workforce and provide the tools for the workforce to own the technical baseline. <p><i>FY 2023 to FY 2024 Increase/Decrease Statement:</i> FY 2024 increase due to the Sentinel (GBSD) program continuing to advance its EMD Development with government agencies, FFRDC, UARCs, and other partners to support the EMD prime contractor efforts. The program continues to advance its test series for Development Test & Evaluation (DT&E) and Operational Test & Evaluation (OT&E) for the air vehicle, launch facility, launch center, and all other test support assets.</p>			
Accomplishments/Planned Programs Subtotals	0.000	3,614.290	3,746.935

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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Air Force	Date: March 2023
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0605238F / <i>Ground Based Strategic Deterrent EMD</i>
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D. 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>
• RDTE 04 PE 0605230F: <i>Ground Based Strategic Deterrent</i>	2,464.875	-	-	-	-	-	-	-	-	0.000	2,464.875
• RDTE 04 PE 0603851F: <i>Intercontinental Ballistic Missile - Dem/Val</i>	73.897	46.100	45.319	-	45.319	56.756	-	-	-	Continuing	Continuing
• MPAF 01 Line Item MGBSD0: <i>Ground Based Strategic Deterrent</i>	10.895	0.000	539.300	-	539.300	502.720	5,735.106	6,456.735	6,172.571	42,175.778	61,593.105
• MILCON PE 0101233F: <i>GBSD SQUADRONS</i>	168.099	457.920	198.040	-	198.040	601.000	699.387	722.469	736.919	5,568.503	9,152.337
• OPAF 03 WSC 834130: <i>AF Physical Security System</i>	0.000	2.839	4.172	-	4.172	5.685	0.000	0.000	0.000	0.000	12.696

Remarks

E. Acquisition Strategy

The objective of the Sentinel (GBSD) program acquisition strategy is to deliver a full, integrated weapon system capability that meets Air Force Global Strike Command's Capability Development Document requirements beginning in Fiscal Year 2029. For the Engineering and Manufacturing Development (EMD) phase of this strategy, the Program Office awarded an EMD contract in the 4th quarter of Fiscal Year 2020. The objectives of EMD for Sentinel (GBSD) are as follows: 1) to deliver low-risk, technologically mature, integrated weapon system baseline design; 2) develop flexible system architecture with options for future on-ramps and off-ramps to mitigate program risks; 3) embrace MBSE/digital engineering to streamline system development activities and timelines; 4) align contract incentives to mitigate schedule and performance risk; 5) utilize MBSE processes and tools to create schedule margin and accelerate surety, safety, cyber, and test activities for time certain delivery; 6) ensure government owns key interfaces and data rights; and 7) pursue "smart commonality" with U.S. Navy, U.S. Space Force, and Missile Defense Agency. The EMD phase includes an EMD Baseline Review, Critical Design Review, First Flight Test, Full Functional System Test, System Qualification/System Verification Review, Nuclear Certification, Developmental Test, Operational Test, and culminates with early production and weapon system deployment. The program will also assess the cost and schedule risks associated with every requirement. The EMD contract includes 5 options for early production and deployment. The period of performance, to include the production and deployment options, is fourth quarter of Fiscal Year 2020 to the second quarter of Fiscal Year 2028. These efforts will ultimately extend the capabilities of the ground-based leg of the nuclear triad through 2075.

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

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0605238F / <i>Ground Based Strategic Det errent EMD</i>	Project (Number/Name) 655238 / <i>GROUND BASED STRATEGIC DETERRENT (GBSD)</i>
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Product Development (\$ in Millions)				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			
GBSD EMD Contract	C/CPIF	Northrop Grumman Sys Corp : El Segundo, CA	0.000	-		3,048.121	Oct 2022	3,042.691	Oct 2023	-		3,042.691	3,773.430	9,864.242	13,293.563
Subtotal			0.000	-		3,048.121		3,042.691		-		3,042.691	3,773.430	9,864.242	N/A

Remarks
 Prior to Fiscal Year 2023, funding for these efforts was included under Program 0605230F, Ground Based Strategic Deterrent.
 GBSD EMD Contract Total Cost is anticipated to be \$13,293.563 million. Funding is split between programs 0605230F, Ground Based Strategic Deterrent and 0605238F, Ground Based Strategic Deterrent EMD.

Support (\$ in Millions)				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			
Integration Support Contract	C/FFP	TBD : Hill AFB, UT	0.000	-		112.700	Oct 2022	112.700	Oct 2023	-		112.700	427.993	653.393	519.735
Naval Surface Warfare Center Crane Support	MIPR	Naval Surface Warfare Center Crane : Crane, IN	0.000	-		7.600	Nov 2022	7.800	Nov 2023	-		7.800	24.170	39.570	-
Aerospace FFRDC Support	MIPR	Aerospace Corporation : El Segundo, CA	0.000	-		24.656	Nov 2022	25.126	Nov 2023	-		25.126	83.315	133.097	-
MITRE FFRDC Support	MIPR	MITRE : Bedford, MA	0.000	-		16.200	Nov 2022	16.200	Nov 2023	-		16.200	75.800	108.200	-
Carnegie Mellon Software Engineering Institute Support	MIPR	Carnegie Mellon : Pittsburgh, PA	0.000	-		2.000	Nov 2022	5.353	Nov 2023	-		5.353	8.153	15.506	-
Sandia FFRDC Reentry Systems Analysis Support	MIPR	Sandia National Laboratories : Various	0.000	-		4.000	Oct 2022	3.750	Oct 2023	-		3.750	51.089	58.839	-
MIT Lincoln Labs FFRDC Reentry Systems Analysis Support	MIPR	MIT Lincoln Labs : Lexington, MA	0.000	-		1.600	Oct 2022	1.300	Oct 2023	-		1.300	8.110	11.010	-

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

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0605238F / <i>Ground Based Strategic Det errent EMD</i>	Project (Number/Name) 655238 / <i>GROUND BASED STRATEGIC DETERRENT (GBSD)</i>
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Support (\$ in Millions)				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			
Nuclear Surety & Certification Support	MIPR	Various : Various	0.000	-		5.300	Nov 2022	8.000	Nov 2023	-		8.000	12.332	25.632	-
Operations Research Analyst Support	C/FFP	TBD : Hill AFB, UT	0.000	-		4.020	Oct 2022	7.840	Oct 2023	-		7.840	16.112	27.972	35.487
Common Cryptographic Equipment	MIPR	Sandia National Labs : Various	0.000	-		4.200	Nov 2022	3.075	Nov 2023	-		3.075	41.697	48.972	-
Mantech Support	RO	Man Tech International : Herndon, VA	0.000	-		12.440	Dec 2022	12.742	Dec 2023	-		12.742	52.287	77.469	-
GBSD Direct Cite Civilian Pay	Various	US Gov Civilians : Hill AFB, UT	0.000	-		50.000	Oct 2022	49.200	Oct 2023	-		49.200	125.367	224.567	-
NEPA Analysis Support	MIPR	Various : Various	0.000	-		3.000	Nov 2022	7.749	Nov 2023	-		7.749	0.000	10.749	-
Reentry Vehicle Sustainment Support	C/CPAF	Lockheed Martin Corp : Bethesda, MD	0.000	-		2.000	Dec 2022	3.000	Dec 2023	-		3.000	9.444	14.444	-
Sandia Integration Support	MIPR	Sandia National Labs : Various	0.000	-		2.000	Jan 2023	2.000	Jan 2024	-		2.000	2.000	6.000	-
GBSD Facility Execution Support	MIPR	Various : Various	0.000	-		2.500	Jan 2023	5.081	Jan 2024	-		5.081	5.081	12.662	-
Space Dynamics Lab Support	C/CPFF	USU Space Dynamics Lab : Logan, UT	0.000	-		2.000	Nov 2022	12.800	Nov 2023	-		12.800	7.000	21.800	-
NC3 Terrestrial Integration Support	Various	Various : Various	0.000	-		0.000		3.239	Nov 2023	-		3.239	4.620	7.859	-
Secondary Launch Platform - Airborne	MIPR	Naval Air Systems Command : Patuxent River, MD	0.000	-		0.000		1.783	Dec 2023	-		1.783	3.217	5.000	-
Test Range Support	Various	Various : Various	0.000	-		0.000		15.062	Dec 2023	-		15.062	4.938	20.000	-
GBSD Enterprise Support	C/Various	Various : Various	0.000	-		1.434	Dec 2022	1.494	Dec 2023	-		1.494	887.993	890.921	-
Subtotal			0.000	-		257.650		305.294		-		305.294	1,850.718	2,413.662	N/A

Remarks
Prior year's funding included under Program 0605230F, Ground Based Strategic Deterrent.

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

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0605238F / Ground Based Strategic Det errent EMD	Project (Number/Name) 655238 / GROUND BASED STRATEGIC DETERRENT (GBSD)
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Support (\$ in Millions)				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			

GBSD is spearheading the Owning The Technical Baseline (OTTB) approach for system acquisition. This approach utilizes additional support efforts that would typically be performed by a Prime Contractor thus increasing costs within Cost Category Items. Integration Support Contractor will be defined upon follow-on contract award. Operations Research Analyst Support will be defined upon follow-on contract award 4th Qtr FY23. Additional Items:
 - Secondary Launch Platform-Airborne
 - Test Range Support

Test and Evaluation (\$ in Millions)				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			
Johns Hopkins - Applied Physics Lab Support	MIPR	Johns Hopkins University-Applied Physics Lab : Laurel, MD	0.000	-		25.000	Oct 2022	33.000	Oct 2023	-		33.000	113.390	171.390	-
Arnold Engineering Development Complex - Integrated Test Team	PO	Arnold Engineering Development Complex : Arnold AFB, TN	0.000	-		20.340	Oct 2022	21.562	Oct 2023	-		21.562	197.524	239.426	-
Air Force Operational Test and Evaluation Center - Integrated Test Team	PO	Air Force Operational Test and Evaluation Center : Hill AFB, UT	0.000	-		3.500	Oct 2022	7.108	Oct 2023	-		7.108	192.419	203.027	-
Missile & Intelligence Center - Integrated Threat Analysis and Simulation Environment	MIPR	DIA-Missile and Space Intelligence Center : Redstone Arsenal, AL	0.000	-		5.000	Nov 2022	4.000	Nov 2023	-		4.000	22.259	31.259	-
National Air and Space Intelligence Center - Integrated Threat Analysis and Simulation Environment	MIPR	National Air and Space Intelligence Center : Fairborn, OH	0.000	-		1.000	Nov 2022	1.000	Nov 2023	-		1.000	3.260	5.260	-
309th SMXG Software Engineering Support	PO	309th / 517th SWEG : Hill AFB, UT	0.000	-		29.282	Oct 2022	29.282	Oct 2023	-		29.282	246.608	305.172	-

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

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0605238F / Ground Based Strategic Det errent EMD	Project (Number/Name) 655238 / GROUND BASED STRATEGIC DETERRENT (GBSD)
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Test and Evaluation (\$ in Millions)				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			
309th SMXG Nuclear Safety Cross Check Analysis	PO	309th / 516th SWES : Hill AFB, UT	0.000	-		13.500	Oct 2022	23.733	Oct 2023	-		23.733	51.092	88.325	-
Silo Fly-out Modeling and Simulation	MIPR	Various : Various	0.000	-		5.500	Nov 2022	5.500	Nov 2023	-		5.500	11.764	22.764	-
Rapid Assessment Technology	MIPR	Various : Various	0.000	-		5.115	Mar 2023	10.564	Mar 2024	-		10.564	20.000	35.679	-
Sandia Flight Test Vehicle Development	MIPR	Sandia National Labs : Various	0.000	-		16.200	Dec 2022	13.000	Dec 2023	-		13.000	11.483	40.683	-
Naval Surface Warfare Center Corona Support	MIPR	Naval Surface Warfare Center : Corona, CA	0.000	-		1.255	Dec 2022	1.294	Dec 2023	-		1.294	7.108	9.657	-
Combined Test Facility Support	MIPR	Various : Various	0.000	-		1.500	Nov 2022	3.670	Nov 2023	-		3.670	3.670	8.840	-
Broad Ocean Area Terminal Area Scoring Test Capability	MIPR	Navy Strat. Sys. Programs : Various	0.000	-		52.310	Nov 2022	52.509	Nov 2023	-		52.509	34.355	139.174	-
Little Mountain Test Facility Radiation Lab Upgrades	C/CPFF	The Boeing Company : Layton, UT	0.000	-		0.000		5.950	Nov 2023	-		5.950	9.050	15.000	-
GBSD Enterprise Test and Assessments	C/Various	Various : Various	0.000	-		2.815	Nov 2022	3.330	Nov 2023	-		3.330	5,447.209	5,453.354	-
Subtotal			0.000	-		182.317		215.502		-		215.502	6,371.191	6,769.010	N/A

Remarks
 Prior year's funding included under Program 0605230F, Ground Based Strategic Deterrent.
 Additional Item: Little Mountain Test Facility Radiation Lab Upgrades

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

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0605238F / Ground Based Strategic Det errent EMD	Project (Number/Name) 655238 / GROUND BASED STRATEGIC DETERRENT (GBSD)
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Management Services (\$ in Millions)				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			
GBSD Administrative Support	C/FFP	Delta Solutions, Inc. : Colorado Springs, CO	0.000	-		0.887	Nov 2022	1.138	Nov 2023	-		1.138	150.925	152.950	277.170
GBSD Enterprise Process Improvement Support	C/FFP	Booz Allen Hamilton : McLean, VA	0.000	-		11.000	Nov 2022	17.961	Nov 2023	-		17.961	44.000	72.961	-
Hardware, Software, IT Resources	C/Various	Various : Various	0.000	-		43.378	Oct 2022	103.199	Oct 2023	-		103.199	104.000	250.577	-
GBSD DevSecOps, Software Factory, Cloud, & Infrastructure	Various	Various : Various	0.000	-		57.947	Nov 2022	50.032	Nov 2023	-		50.032	186.255	294.234	-
Operating Location Support	Various	Various : Various	0.000	-		7.500	Jan 2023	6.391	Jan 2024	-		6.391	14.000	27.891	-
Enterprise PMA	Various	Various : Various	0.000	-		5.490	Oct 2022	4.727	Oct 2023	0.000		4.727	201.778	211.995	-
Subtotal			0.000	-		126.202		183.448		0.000		183.448	700.958	1,010.608	N/A

Remarks
Prior year's funding included under Program 0605230F, Ground Based Strategic Deterrent.

	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	-	3,614.290	3,746.935	0.000	3,746.935	12,696.297	20,057.522	N/A

Remarks
In FY23, GBSD program transitioned from Budget Activity 04 to Budget Activity 05 and EMD efforts transitioned to PE 0605238F, Ground Based Strategic Deterrent EMD, Project 655238, Ground Based Strategic Deterrent from PE 0605230F, Ground Based Strategic Deterrent.

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Exhibit R-4, RDT&E Schedule Profile: PB 2024 Air Force		Date: March 2023
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0605238F / <i>Ground Based Strategic Det errent EMD</i>	Project (Number/Name) 655238 / <i>GROUND BASED STRATEGIC DETERRENT (GBSD)</i>

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

Sentinel (GBSD)	
EMD Phase	[REDACTED]
Payload Shroud Critical Design Review (Dec 2022)	[REDACTED]
Solid Rocket Motor Development Tests (Jan 2023)	[REDACTED]
Boosters Critical Design Review (Jan 2023)	[REDACTED]
LF-04 Construction Complete (Feb 2023)	[REDACTED]
Guidance and Control Critical Design Review (April 2023)	[REDACTED]
LF-26 Construction Complete (April 2023)	[REDACTED]
SLP-A Critical Design Review (July 2023)	[REDACTED]
First Developmental Flight Test (Dec 2023)	[REDACTED]
Critical Design Review (May 2024)	[REDACTED]
Full System Functional Test (Mar 2025)	[REDACTED]
System Qualification/Verification Review (Oct 2025)	[REDACTED]
SLP-A Capability (Jan 2026)	[REDACTED]
Milestone C (May 2026)	[REDACTED]
Production and Deployment Phase	[REDACTED]
Operational Weapon System Article (Sep 2027)	[REDACTED]

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Exhibit R-4A, RDT&E Schedule Details: PB 2024 Air Force		Date: March 2023
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0605238F / <i>Ground Based Strategic Deterrent EMD</i>	Project (Number/Name) 655238 / <i>GROUND BASED STRATEGIC DETERRENT (GBSD)</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Sentinel (GBSD)				
EMD Phase	1	2022	3	2026
Payload Shroud Critical Design Review (Dec 2022)	1	2023	1	2023
Solid Rocket Motor Development Tests (Jan 2023)	2	2023	2	2023
Boosters Critical Design Review (Jan 2023)	2	2023	2	2023
LF-04 Construction Complete (Feb 2023)	2	2023	2	2023
Guidance and Control Critical Design Review (April 2023)	3	2023	3	2023
LF-26 Construction Complete (April 2023)	3	2023	3	2023
SLP-A Critical Design Review (July 2023)	3	2023	3	2023
First Developmental Flight Test (Dec 2023)	1	2024	1	2024
Critical Design Review (May 2024)	3	2024	3	2024
Full System Functional Test (Mar 2025)	2	2025	2	2025
System Qualification/Verification Review (Oct 2025)	1	2026	1	2026
SLP-A Capability (Jan 2026)	2	2026	2	2026
Milestone C (May 2026)	3	2026	3	2026
Production and Deployment Phase	4	2026	4	2028
Operational Weapon System Article (Sep 2027)	4	2027	4	2027

Note

The R-4 event schedule remains unchanged from the FY23 PB submission. Program schedule events are under review due to acquisition strategy revisions. The event schedule updates will be provided once the revisions are completed.