Exhibit R-2, RDT&E Budget Item Justification: PB 2025 Air Force											Date: March 2024	
Appropriation/Budget Activity 3620F: *Research, Development, Test & Evaluation, Space Force* / BA 5: *System Development & Demonstration (SDD)*					R-1 Program Element (Number/Name) PE 1206442SF / *Next Generation OPIR*							
COST ($ in Millions)	**Prior Years**	**FY 2023**	**FY 2024**	**FY 2025 Base**	**FY 2025 OCO**	**FY 2025 Total**	**FY 2026**	**FY 2027**	**FY 2028**	**FY 2029**	**Cost To Complete**	**Total Cost**
Total Program Element	-	251.601	222.178	202.951	0.000	202.951	204.238	203.707	214.191	217.471	Continuing	Continuing
657009: *Space Mod Initiative*	-	196.884	191.144	170.717	0.000	170.717	173.509	172.343	181.696	184.335	Continuing	Continuing
657123: *Integration*	-	54.717	31.034	32.234	0.000	32.234	30.729	31.364	32.495	33.136	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Overhead Persistent Infrared (OPIR) program succeeds the current Space Based Infrared System (SBIRS) and will provide improved missile warning, missile defense, battlespace awareness, and technical intelligence collection capabilities that are more survivable against emerging adversary threats. The program will deliver satellites in a diverse set of orbits to meet mission coverage needs; a modular, extensible, and cyber-hardened ground system to operate and process mission data downlinked from on-orbit assets; an on-ramp to demonstrate novel infrared technologies; and an integration effort will identify, plan, manage and execute integration activities at the enterprise level. Due to funding transfers to segregate Next-Gen OPIR into other Program Elements, PE 1206442SF is now comprised of two projects: 1. Next-Gen OPIR Space Modernization Initiative (SMI) and 2. Integration.

1. SMI (Project 657009/Program Element 1206442SF): To better enable response to emerging global missile threats, SMI advances capabilities and reduces risk through three major thrust areas: Demonstrations/Prototypes, Technology Maturation, and Data Exploitation. Demonstrations mature technologies by delivering ground and on-orbit prototypes. They advance OPIR capabilities for missile warning and tracking, ensuring a low risk, smooth transition of advanced technology to future operational systems. Each year, Space System Command (SSC) conducts a review of all technical development needs for future OPIR systems across the stakeholder community to include the Missile Defense Agency, Space Development Agency, Air Force Research Lab, and mission partners to prioritize technical investment and develop transition roadmaps. The investments described align to the OPIR technology needs published in the Portfolio Decision Support Tool (PDST). Technology Maturation focuses development on advanced infrared sensing optics and electronics, resiliency hardware and software, and on-board processing algorithms and on-board computers. Data Exploitation provides return-on-investment aimed at ingest and fusion of current and future multiple sensor program data to enhance missile warning, missile defense, battlespace awareness and technical intelligence mission capabilities. This includes the processing and exploitation of the Wide Field of View (WFOV) Geosynchronous Earth Orbit (GEO) wideband sensor data focused on dimmer threat targets, as well as future program data including Next-Gen GEO, Missile Track Custody (MTC), Medium-Earth Orbit (MEO), Resilient Missile Warning/Missile Tracking (MW/MT), and others. Data Exploitation includes maintaining the Tool, Applications, and Processing (TAP) Lab facility where enhanced software applications and algorithms for detection, tracking and visualization are developed and delivered in support of the Space Operations Command, Delta 4, 11th Space Warning Center and Air Combat Command (ACC)/26th Intelligence Squadron operators within the OPIR Battlespace Awareness Center (OBAC) at Buckley Space Force Base (SFB). The TAP Lab facility is also host to current SBIRS program Contract Logistics Support (CLS) activities, Future Operationally Resilient Ground Evolution (FORGE) mission data processing development and testing, and is expected to host Next-Generation Interim Control Center (NICC)-Next-Gen Interim Operations (NIO) Command and Control (C2) for GEO and potentially MTC Mission Data Processing (MDP) and C2. Data Exploitation also supports other mission areas to include Civil Support such as wildland fire tracking solutions. SMI supports Next-Gen OPIR by maturing new technologies to enable detection of new and challenging missile threats. SMI funds engineering activities to reduce both production and future system costs through manufacturing and producibility enhancements, and technology insertion. SMI includes risk reduction for Program of Record (PoR) to deliver capabilities on threat-relevant timelines to include FORGE, Next-Gen GEO and Polar, and Resilient MW/MT MEO.

Exhibit R-2, RDT&E Budget Item Justification: PB 2025 Air Force	Date: March 2024
Appropriation/Budget Activity 3620F: *Research, Development, Test & Evaluation, Space Force I* BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 1206442SF *I Next Generation OPIR*

2. Integration (Project 657123/Program Element 1206442SF): The Next-Gen OPIR Integration project includes efforts associated with the Government's primary role in, and tasks necessary to accomplish, the critical lead system integration function between the OPIR enterprise segments (Next-Gen GEO, Next-Gen Polar, Next-Gen Ground, and the Resilient MW/MT MEO/Low Earth Orbit (LEO) architecture). This includes Enterprise Systems Engineering and Integration (SE&I) activities, Modeling and Simulation activities, and Digital Engineering activities, to include Model Based System Engineering (MBSE). The focus of the Integration project is on system-level integration activities, between the Next-Gen OPIR segments, such as Space to Ground. This differs from integration within the individual program segments, which refers to subsystem-level integration between subsystems such as a spacecraft bus to the mission payload. The Government Integrator directs the Next-Gen OPIR current enterprise architecture and system definition, controls and validates interfaces, ensures compatibility of Next-Gen systems, and develops/manages plans for execution and fielding of the Next-Gen OPIR Enterprise. Further, the Integrator, through various Federally Funded Research and Development Centers (FFRDCs), government partners, and contractors, executes unique MBSE and integration requirements of each segment by providing modeling, simulation, and technical analyses of Government-directed enterprise level trades among the Next-Gen OPIR segments. These trades lead to definition, management, maintenance, and evolution of the Next-Gen OPIR Enterprise requirements and interface technical documents to ensure the integrity of the enterprise technical baseline.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver Next-Gen OPIR weapon system capabilities. The use of such program funds would be in addition to the civilian pay expenses budgeted in program elements 1206392SF and 1206389SF.

This program is in Budget Activity 5, System Development and Demonstration (SDD) because the majority of Projects under PE 1206442SF have been declared Section 804 Rapid Prototype efforts conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full rate production.

B. Program Change Summary ($ in Millions)	FY 2023	FY 2024	FY 2025 Base	FY 2025 OCO	FY 2025 Total
Previous President's Budget	226.601	222.178	227.501	0.000	227.501
Current President's Budget	251.601	222.178	202.951	0.000	202.951
Total Adjustments	25.000	0.000	-24.550	0.000	-24.550
• 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	25.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	0.000	0.000	-24.550	0.000	-24.550

Change Summary Explanation

FY 2023: $25.000M: ATR for Tactical Surveillance Reconnaissance & Tracking Commercial Pilot

FY 2025: -$24.957M; Higher Priority USSF Investments

Exhibit R-2A, RDT&E Project Justification: PB 2025 Air Force			Date: March 2024
Appropriation/Budget Activity 3620F / 5	R-1 Program Element (Number/Name) PE 1206442SF / *Next Generation OPIR*	Project (Number/Name) 657009 / *Space Mod Initiative*	

COST ($ in Millions)	Prior Years	FY 2023	FY 2024	FY 2025 Base	FY 2025 OCO	FY 2025 Total	FY 2026	FY 2027	FY 2028	FY 2029	Cost To Complete	Total Cost
657009: *Space Mod Initiative*	-	196.884	191.144	170.717	0.000	170.717	173.509	172.343	181.696	184.335	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Next-Gen OPIR Space Modernization Initiative (SMI) (Project 657009): To better enable response to emerging global missile threats, SMI advances critical capabilities and reduces risk through three major thrust areas: Demonstrations/Prototypes, Technology Maturation, and Data Exploitation. Demonstrations rapidly prototype new game-changing technologies for the broader mission warning enterprise by delivering ground and on-orbit prototypes. Demonstrations advance OPIR capabilities for missile warning and tracking ensuring a low risk, smooth transition of advanced technology to future operational systems. Technology Maturation focuses investments on high pay-off critical components to reduce production risks and development costs. Technology Maturation focuses development on advanced IR sensing optics and electronics, resiliency hardware and software, and on-board processing algorithms and on-board computers. Data Exploitation provides return-on-investment aimed at ingest and fusion of current and future multiple sensor program data to enhance Missile Warning (MW), Missile Defense (MD), Battlespace Awareness (BA) and Technical Intelligence (TI) mission capabilities. This includes the processing and exploitation of the Wide Field of View (WFOV) Geosynchronous Earth Orbit (GEO) wideband sensor data focused on dimmer threat targets, as well as future programs data including Next-Gen GEO and Polar, Missile Track Custody (MTC), Medium-Earth Orbit (MEO), Resilient Missile Warning/Missile Tracking (MW/MT), and others. Data Exploitation includes maintaining the Tool, Applications, and Processing (TAP) Lab facility where enhanced software applications and algorithms for detection, tracking and visualization are developed and delivered in support of the Space Operations Command, Delta 4, 11th Space Warning Center and Air Combat Command (ACC)/26th Intelligence Squadron operators within the Overhead Persistent Infrared Battlespace Awareness Center (OBAC) at Buckley Space Force Base (SFB). Data Exploitation also supports other mission areas to include Civil Support such as wildland fire tracking solutions. Data Exploitation also funds facilities and integration to support initial prototype operations until a transition to a space force operational unit is feasible. SMI supports Next-Gen OPIR by maturing new technologies to enable detection of new and challenging missile threats. SMI funds engineering activities to reduce both production and future system costs through manufacturing and producibility enhancements, and technology insertion. SMI includes studies and risk reduction activities to evolve the current Program of Record (PoR) constellation and/or simultaneously mature breakthrough technologies to create a leap in capability for follow-on systems to include FORGE, Next-Gen GEO and Polar, and Resilient MW/MT MEO.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2023	FY 2024	FY 2025
Title: Demonstrations/Prototypes	100.093	32.295	28.643
Description: Demonstrations and prototypes provide time-critical OPIR technologies, missions, and performance with ground and on-orbit prototypes. They enable transition of improved capabilities to full scale architectures and inform critical decisions for future fielding as well as support maturation of Mission Data Processing (MDP) algorithms for tactical and strategic applications by providing additional sensors and algorithms to advance detection and tracking. The SMI effort is critical to competing, maturing, designing, testing, and validating a system capable of tracking emerging missile threats outlined in the Missile Warning Missile Defense Capability Development Document (CDD).			

Exhibit R-2A, RDT&E Project Justification: PB 2025 Air Force		Date: March 2024
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B. Accomplishments/Planned Programs ($ in Millions)	FY 2023	FY 2024	FY 2025
FY 2024 Plans: WFOV Program will transition to Data Exploitation in FY 2024. In the execution of the MEO/Low Earth Orbit (LEO) pivot, Space Systems Command (SSC) was designated as the lead end-to-end systems integrator and chartered to contribute to establishing a combined program office with the Space Development Agency (SDA) and Missile Defense Agency (MDA). As the SSC MEO and SDA LEO programs deploy capabilities in spiral increments, a centralized Digital Engineering Environment is necessary to capture MBSE requirements management and system level performance in support of multiple programs. In FY 2024, the OPIR Digital Engineering Demo will capture performance across sensors in development, current program of record sensors, and future government reference sensors to feed the requirements baseline for future OPIR spirals. This digital engineering effort will build upon the force design for a high-fidelity Government Reference MBSE Model (GRMM) that performs full system requirements traceability and detailed performance modeling of system in build. This effort will also demonstrate the use of cloud-based tools and models to share across SDA, MDA, Space Warfighting Analysis Center (SWAC), and others. There are two efforts that are on contract as of FY 2022. The first is the MEO specific transition to Secret Collateral Cloud using the Air Force's Cloud 1. The MEO program will leverage expertise to support a contract in FY 2024 to perform digital engineering and integration. The second is the OPIR Modeling and Simulation Center of Excellence established in FY 2022 to determine constellations and performance level trades using MEO, LEO, GEO, Highly Elliptical Orbit (HEO), and FORGE detailed models. To improve communication path diversity and delivery of low latency data without significantly ramping up ground entry points, development and test of Low Size Weight and Power (SWaP), high bandwidth, agile crosslinks for Medium Earth Orbit systems are necessary. Additionally, there is increasing demand for resiliency and communication path diversity of OPIR data driving the need for MEO to participate in enterprise networking of missile warning/tracking information. MEO Epoch 1 crosslinks were simplified in scope to preserve schedule and lower technical risks for initial performance/demonstration of utility. Epoch 2 must expand crosslink performance to pass and route tracking and warning data for correlation and fusion in multiple locations. As such, a demo is required prior to the start of Epoch 2 satellite development to enable a technology on-ramp. The Resilient MW/MT MEO Program Management Office (PMO) plans to combine funds with other mission partners to develop an enterprise capability.			
FY 2025 Plans: To ready MEO MW/MT mission architecture needs for FY 2026 Epoch 1 launches and FY 2025 Epoch 2 acquisition, continue investment in GRMM, secret collateral processing Impact Level 6 (IL6) space, the OPIR Modelling and Simulation Center, and invest in contractor secret intra-connectivity to the collateral space. Efforts enable both the infrastructure and licenses required for using classified tools as well as the expertise to run the tools and models and assess end to end system performance and operations.			

Exhibit R-2A, RDT&E Project Justification: PB 2025 Air Force		Date: March 2024
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B. Accomplishments/Planned Programs ($ in Millions)	FY 2023	FY 2024	FY 2025
Continue the development and test of Low Size Weight and Power (SWaP), high bandwidth, agile crosslinks for MEO Epoch 2 engineering designs in FY 2026 in order to bolster resilience and communication path diversity of OPIR data and import of MEO data into enterprise networks. MEO Epoch 2 is expected to require expanded crosslink performance to pass and route tracking and warning data for correlation and fusion in multiple locations which will benefit from crosslinks testing in laboratory test beds to validate performance and increase the technology maturity of multiple vendor solutions. ***FY 2024 to FY 2025 Increase/Decrease Statement:*** FY 2025 decreased due to a reduction in MEO digital engineering and OPIR Center of Excellence activities.			
Title: Technology Maturation	16.683	39.037	31.440
Description: Assess technology needs to support resiliency of PoR assets and future architectures that are responsive to the evolving threat environment. Perform trade and design studies to assess obsolescence, affordability, capability design modifications, and concept of operations (CONOPS) for the OPIR mission. Mature technologies and manufacturability to reduce cost, schedule, and technical risk for new component and subsystem designs that may be used in the future systems. Mature technologies including algorithms, Focal Plane Arrays (FPA), optical filters, on-board processors, auxiliary resiliency payloads, and other payload components for future missile warning satellites, and reconstitution capabilities. Develop modeling and simulation (M&S) capabilities, and engineering model prototypes for hardware/software integration and testing. These efforts will reduce risk and mature technologies applicable to future systems and architectures. Additionally, develop test beds to validate/verify requirements and ensure technical maturity for next-generation payload technologies as well as threat mitigation components and techniques. As a result of the SWAC AoA and Force Design, several key technologies areas were highlighted to execute the MEO/LEO pivot. A detailed manufacturability study was conducted in coordination with the SWAC during the AoA that recommend several critical technology maturation areas. ***FY 2024 Plans:*** Technology maturation will develop the next generation of FPAs that have higher dynamic range and increased resiliency. SSC will work with vendors to improve FPA manufacturing capability for larger format focal plane arrays to support the growing demands from sensor builders. FY 2024 funds will also support development of optimized intelligent tasking management. This effort will enhance the minimum-viable product for MEO Epoch 1 with scalability for future MEO growth to account for optimal tasking of area collection and real-time hypersonic containment. Furthermore, technical maturation will target investments in three-dimensional (3D) track correlation using artificial intelligence and machine learning for multi-orbit, higher volume sensor constellations. Additionally, funding will support filter technology and manufacturability to improve protection of sensors. Technology maturation will continue to invest in resilient processing algorithms and testbeds to support the hardware focused			

Exhibit R-2A, RDT&E Project Justification: PB 2025 Air Force		Date: March 2024
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B. Accomplishments/Planned Programs ($ in Millions)	FY 2023	FY 2024	FY 2025
investments. Finally, additional technical maturation is required to support the crosslink demonstration in support of Epoch 2. Advances in technology should enable backwards compatibility in Epoch 2. ***FY 2025 Plans:*** Technology maturation will continue the next generation FPA development for higher dynamic range and increased resiliency maturing them to approximately Technology Readiness Level 5 in FY 2025. Continue to work with vendors to improve FPA manufacturing capability for larger format focal plane arrays to support the critical needs necessary to deliver the proliferated MW/MT systems on threat relevant timelines. Continue development of optimized intelligent tasking management. This effort will enhance the MEO Epoch 1 solution by adding and comparing performance against artificial intelligence-based tasking. Furthermore, technical maturation will continue proving novel methodologies leveraging phenomenology unique to hypersonic weapons. Additionally, funding will continue to support filter technology and manufacturability to improve protection of sensors from ground and on-orbit threats. FY 2025 investments will ensure the MEO Epoch 2 systems will be developed on schedule due to the maturation of key system components. ***FY 2024 to FY 2025 Increase/Decrease Statement:*** FY 2025 decreased due to a reduction in resilient algorithm testbed and 3D track correlation activities.			
Title: Data Exploitation	80.108	119.812	110.634
Description: Data exploitation efforts will exploit existing and future OPIR, environmental weather, and ground radar data sources including Defense Support Program (DSP), SBIRS HEO, SBIRS GEO Scanner, SBIRS GEO Starer, WFOV demonstration (launched 01 Jul 2022), Geostationary Operational Environmental Satellites-R series (GOES-R) East/West, prototypes, and future program data sources. Exploitation efforts include RDT&E and integrating multiple sensor data through collection, processing, fusion, data dissemination, application and algorithm development and testing, network connectivity, and sensor performance assessments. SBIRS, WFOV and other space and ground-based sensors provide rich data sets for exploitation and fusion with the objective of filling sensor capability gaps in support of the new dim target threats. The SMI Data Exploitation TAP Lab provides researchers and developers access to raw and processed data and advanced DevSecOps (Development/Security/Operations) tools to develop applications and algorithms for delivery to the Buckley SFB OBAC in support of MW, MD, BA and TI mission areas. SMI data exploitation efforts are complementary to, and enhance, the exploitation capabilities delivered by the PoR and prototypes while pathfinding for future sensor PoRs. While performing data exploitation, the TAP Lab will serve as the primary software factory DevSecOps pipeline and subject matter experts to on-board new sensors into known operational fusion and correlation capabilities. SSC, SDA, and MDA will collaborate for future ground reference architecture for MEO and LEO that relies on sensors delivering formatted data to the Real-Time Transfer Service (RTS). Once published to the RTS, operational warning and defense software could then fuse and correlate data across sensors from all orbits to generate a 3D track. The 3D track will allow warning and defense operational systems to distribute and message appropriately. The TAP Lab will work with both the MEO MTC program office and SDA for early integration and testing using the FORGE framework. The TAP Lab is a critical piece			

Exhibit R-2A, RDT&E Project Justification: PB 2025 Air Force		Date: March 2024
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B. Accomplishments/Planned Programs ($ in Millions)	FY 2023	FY 2024	FY 2025
in the future sensor proliferation as it provides a test and demo suite of resources to streamline sensor acceptance into certified warning and defense operations. Data exploitation efforts also evaluate tools for C2, mission management, and MDP to reduce risk to current and future programs. Data exploitation has also focused on pathfinding and evolving PoR ground systems to an open architecture framework. By incorporating C2, the TAP Lab offers the capability for launch and early orbit support as well operations and integration of future government owned, contractor operated OPIR prototypes. SMI ground system development activities seek to demonstrate the performance of an evolved ground system architecture capable of supporting multiple satellites, payloads, and missions through management and data processing. These efforts seek to lower operating costs with enhanced net-centric and service-oriented features with a new flexible expansion capability. Data exploitation efforts also support demonstration and prototype architecture planning and experimentation to include WFOV and other future sensor programs. ***FY 2024 Plans:*** Continue to innovate wildland fire tracking capabilities and incorporate applications into national fire tracking solutions. Deliver High Altitude Dim Event Stalker (HADES) suite of applications and algorithms that include target detection, track fusion and common operating picture visualization along with near-real-time recording capabilities to enhance ability to report on PACOM Joint Emergent Operational Need/Joint Urgent Operational Need (JEON/JUON) threats. This includes ingesting and tuning the HADES suite of applications to exploit the recently launched WFOV sensor data. Develop CONOPS for the WFOV 6-degree starer sensor over USINDOPACOM and participate in demonstrations and exercises with the community to ensure timely data delivery. Refine and improve WFOV calibration, experimentation, exploitation and data delivery as user requests increase and more stakeholders find utility with the new sensor data. WFOV data will be used to path find new algorithm processing chains at the TAP Lab, transition to the OBAC, and deliver new products to the warfighter community. Develop capabilities for HADES to ingest ground radar data as well as other available platform data available on RTS to fuse, evolve, and enhance the ability to detect and track missile, air, and other emerging threats. Expand exploitation lab sources and OBAC applications to support development of experimental operations. Develop prototype processes for managing an open framework architecture. Develop applications for the OBAC that transition to the FORGE. Support deployment, testing, and integration of the FORGE framework and all updates. Enhance mission resiliency and data exploitation of SBIRS and other OPIR data using BAAs and OTAs. Continue to collaborate with the IC and MDA to enhance JOG study initiatives. Continue to develop and demonstrate the performance of a Government owned open and extensible evolved ground system architecture to support multiple satellites, payloads, and missions, as required. Evolve data processing for infrared payload applications with enhanced net-centric and service-oriented features.			

Exhibit R-2A, RDT&E Project Justification: PB 2025 Air Force		Date: March 2024
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B. Accomplishments/Planned Programs ($ in Millions)	FY 2023	FY 2024	FY 2025
In preparation for MEO and LEO Tracking Tranche 1 sensors, the TAP Lab will demonstrate a pipeline to on-board sensors into operations using a 3D track correlation and fusion ground capability, which will expedite transition of new sensors into operational systems. Additionally, it will create test, calibration, and tuning routines necessary for MEO and LEO performance validation to ensure downstream warning and defense operations can ingest sensor data. Collaborating with the FORGE MDP Application Provider, the TAP Lab will develop and incorporate 3D tracks for observers in hybrid constellations into a M&S tool to allow enterprise-level tracking performance prediction against multiple scenarios based on data and analysis from multiple flight demo systems. Rapidly respond to implement system resiliency and situational awareness necessary to operate in the contested space domain. Activities may include, but are not limited to, program office support, studies, technical analysis, modeling, simulation, experimentation, prototyping.			
FY 2025 Plans: Transition matured High Altitude Dim Event Stalker (HADES) suite of applications and algorithms to FORGE framework. This includes ability to ingest and exploit the WFOV data as well as legacy SBIRS narrowband/wideband data and track not JEON/ JUON threats but other targets within the United States Indo-Pacific Command (USIDNOPACOM) Area of Responsibility (AOR). This activity will support FORGE delivering incremental capabilities to the framework in FY 2025 beyond their Mission Data Processing Application Provider (MDPAP) non-degradation requirements. Re-focus on the 5-10 year out problems associated with proliferated constellations producing large volumes of data and target detections that could potentially overwhelm ground communications, networks, infrastructure common operation picture, and operators. Continue to implement potential solutions such as Artificial Intelligence and Machine Learning (AI/ML) to these problems. Continue to innovate wildland fire tracking capabilities and incorporate applications into national fire tracking solutions. Continue capability enhancements of HADES and to ingest additional sensor sources to include not only ground radar but intelligence data as well as other available platform data available on RTS to fuse, evolve, and enhance the ability to detect and track missile, air, and other emerging threats. Expand exploitation lab sources and OBAC applications to support development of experimental operations. Enhance prototype processes for managing an open framework architecture. Develop applications for the OBAC that transition to the FORGE. Support application deployment, testing, and integration into the FORGE MDPAP framework and all updates. Enhance mission resiliency and data exploitation of SBIRS and other OPIR data using Broad Agency Announcements (BAAs) and Other Transaction Agreements (OTAs). Continue to collaborate with the Intelligence Community (IC) and MDA to enhance Joint OPIR Ground (JOG) study initiatives. Continue to develop and demonstrate the performance of a Government owned open and extensible evolved ground system architecture to support multiple satellites, payloads, and missions, as required. Evolve data processing for infrared payload applications with enhanced net-centric and service-oriented features.			

Exhibit R-2A, RDT&E Project Justification: PB 2025 Air Force		Date: March 2024
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B. Accomplishments/Planned Programs ($ in Millions)	FY 2023	FY 2024	FY 2025
For MEO and LEO Tracking Tranche 1 sensors, the TAP Lab will continue to demonstrate a pipeline to on-board sensors into operations using a 3D track correlation and fusion ground capability, which will expedite transition of new sensors into operational systems in FY 2025 and beyond. Additionally, it will continue test, calibration, and tuning routines necessary for MEO and LEO performance validation to ensure downstream warning and defense operations can ingest sensor data. Continue collaboration with the FORGE MDPAP. The TAP Lab will improve 3D tracks for observers in hybrid constellations into a M&S tool to allow enterprise-level tracking performance prediction against multiple scenarios based on data and analysis from multiple flight demo systems. Rapidly respond to implement system resiliency and situational awareness necessary to operate in the contested space domain. Activities may include, but are not limited to program office support, studies, technical analysis, experimentation, prototyping, and activities that may leverage commercial and international opportunities. ***FY 2024 to FY 2025 Increase/Decrease Statement:*** FY 2025 decreased due to a reduction in OBAC application development.			
Accomplishments/Planned Programs Subtotals	196.884	191.144	170.717

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2023	FY 2024	FY 2025 Base	FY 2025 OCO	FY 2025 Total	FY 2026	FY 2027	FY 2028	FY 2029	Cost To Complete	Total Cost
• SPAF 01 MSSBIR: *SBIR High (Space)*	0.000	-	0.000	-	0.000	0.000	-	-	-	0.000	0.000

Remarks

D. Acquisition Strategy

The program office will use a variety of acquisition approaches to execute various concept studies, technology maturation efforts, testbed/prototype demonstrations, and data exploitation initiatives and projects. The program office will collaborate with appropriate contracting agencies to support each individual effort. Data exploitation efforts in the laboratory and the OBAC will leverage existing external contracts, as well as new internal competitive contracts. Activities, such as SBIRS obsolescence and affordability enhancements to the existing satellite design, will leverage existing Program of Record contracts. Technology maturation and component prototyping and/or qualification could leverage existing contracts. BAAs and OTAs are planned in collaboration with AFRL and other government agencies. Where practical, other efforts are competed. A SSC BAA will be used to acquire and mature high priority technology items. Federally Funded Research and Development Center (FFRDC), University Affiliated Research Centers (UARCs), and Systems Engineering and Technical Assistance (SETA) contractors will also be used to conduct and support studies. New technology, replacement components, and system designs will be acquired with government data rights to the maximum extent, allowing incorporation into future OPIR satellite production or system development. Contracting partnerships with other agencies will also be used to study, develop, demonstrate, and prove emerging capabilities. To accelerate contracting actions and program execution, the Space Enterprise Consortium (SpEC) will be utilized to execute OTAs to conduct data exploitation improvements at the OBAC and TAP Lab. A local SSC contract is being utilized for services at the OBAC and TAP Lab.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2025 Air Force			Date: March 2024
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Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2023 Cost	FY 2023 Award Date	FY 2024 Cost	FY 2024 Award Date	FY 2025 Base Cost	FY 2025 Base Award Date	FY 2025 OCO Cost	FY 2025 OCO Award Date	FY 2025 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Demonstrations/Prototypes (Demos)	Various	Various : Various	-	88.343	Dec 2022	-		-		-		-	Continuing	Continuing	-
Demos - MEO Digital Engineering	Various	Various : Various	-	-		7.830	Dec 2023	4.946	Dec 2024	-		4.946	Continuing	Continuing	-
Demos - OPIR Center of Excellence	Various	Various : Various	-	-		3.524	Dec 2023	2.226	Dec 2024	-		2.226	Continuing	Continuing	-
Demos - Low SWaP Crosslink	Various	Various : Various	-	-		14.529	Dec 2023	14.965	Dec 2024	-		14.965	Continuing	Continuing	-
Technology Maturation (Tech Mat)	Various	Various : Various	-	14.725	Jan 2023	-		-		-		-	Continuing	Continuing	-
Tech Mat - Resilient FPAs	MIPR	SAF/FMBIB : Washington, DC	-	-		14.400	Jan 2024	14.832	Jan 2025	-		14.832	Continuing	Continuing	-
Tech Mat - Intelligent Tasking	Various	Various : Various	-	-		3.848	Jan 2024	3.963	Jan 2025	-		3.963	Continuing	Continuing	-
Tech Mat - 3D Correlation/ Fusion	Various	Various : Various	-	-		3.848	Jan 2024	-		-		-	Continuing	Continuing	-
Tech Mat - Filters and Coating	MIPR	Various : Various	-	-		1.931	Jan 2024	1.989	Jan 2025	-		1.989	Continuing	Continuing	-
Tech Mat - Resilient Algorithms/Test Bed	MIPR	Various : Various	-	-		3.848	Jan 2024	-		-		-	Continuing	Continuing	-
Tech Mat - Crosslink Enabling Tech	Various	Various : Various	-	-		3.412	Jan 2024	3.514	Jan 2025	-		3.514	Continuing	Continuing	-
Data Exploitation (Data Ex)	Various	Various : Various	-	70.704	Jan 2023	74.851	Jan 2024	50.264	Jan 2025	-		50.264	Continuing	Continuing	-
Data Ex - TAP Lab and OBAC Support Services (TLOSS)	RO	Parsons : Pasadena, CA	-	-		18.000	Jan 2024	20.623	Jan 2025	-		20.623	Continuing	Continuing	-
Data Ex - TAP Lab - Other Activites	RO	AFRL : Albuquerque, NM	-	-		-		7.414	Jan 2025	-		7.414	Continuing	Continuing	-
Data Ex - Wide Field of View (WFOV) Activities	MIPR	Various : Various	-	-		19.040	Jan 2024	20.863	Jan 2025	-		20.863	Continuing	Continuing	-
Enterprise SE&I	MIPR	Booz Allen Hamilton : El Segundo, CA	-	6.633	Dec 2022	6.500	Dec 2023	6.776	Dec 2024	-		6.776	Continuing	Continuing	-

Exhibit R-3, RDT&E Project Cost Analysis: PB 2025 Air Force			Date: March 2024
Appropriation/Budget Activity 3620F / 5	R-1 Program Element (Number/Name) PE 1206442SF / *Next Generation OPIR*	Project (Number/Name) 657009 / *Space Mod Initiative*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2023 Cost	FY 2023 Award Date	FY 2024 Cost	FY 2024 Award Date	FY 2025 Base Cost	FY 2025 Base Award Date	FY 2025 OCO Cost	FY 2025 OCO Award Date	FY 2025 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Technical Mission Analysis	RO	Aerospace Corporation : El Segundo, CA	-	3.202	Oct 2022	3.298	Jan 2024	3.654	Jan 2025	-		3.654	Continuing	Continuing	-
		Subtotal	-	183.607		178.859		156.029		-		156.029	Continuing	Continuing	N/A

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2023 Cost	FY 2023 Award Date	FY 2024 Cost	FY 2024 Award Date	FY 2025 Base Cost	FY 2025 Base Award Date	FY 2025 OCO Cost	FY 2025 OCO Award Date	FY 2025 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
FFRDC	Various	Various : Various	-	7.493	Dec 2022	8.080	Oct 2023	8.754	Oct 2024	-		8.754	Continuing	Continuing	-
A&AS	Various	Various : Various	-	5.384	Oct 2022	3.805	Oct 2023	5.634	Oct 2024	-		5.634	Continuing	Continuing	-
Other Support	Various	Various : Various	-	0.400	Jan 2023	0.400	Oct 2023	0.300	Oct 2024	-		0.300	Continuing	Continuing	-
		Subtotal	-	13.277		12.285		14.688		-		14.688	Continuing	Continuing	N/A

	Prior Years	FY 2023		FY 2024		FY 2025 Base		FY 2025 OCO		FY 2025 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	196.884		191.144		170.717		-		170.717	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2025 Air Force		Date: March 2024
Appropriation/Budget Activity 3620F / 5	**R-1 Program Element (Number/Name)** PE 1206442SF / *Next Generation OPIR*	**Project (Number/Name)** 657009 / *Space Mod Initiative*

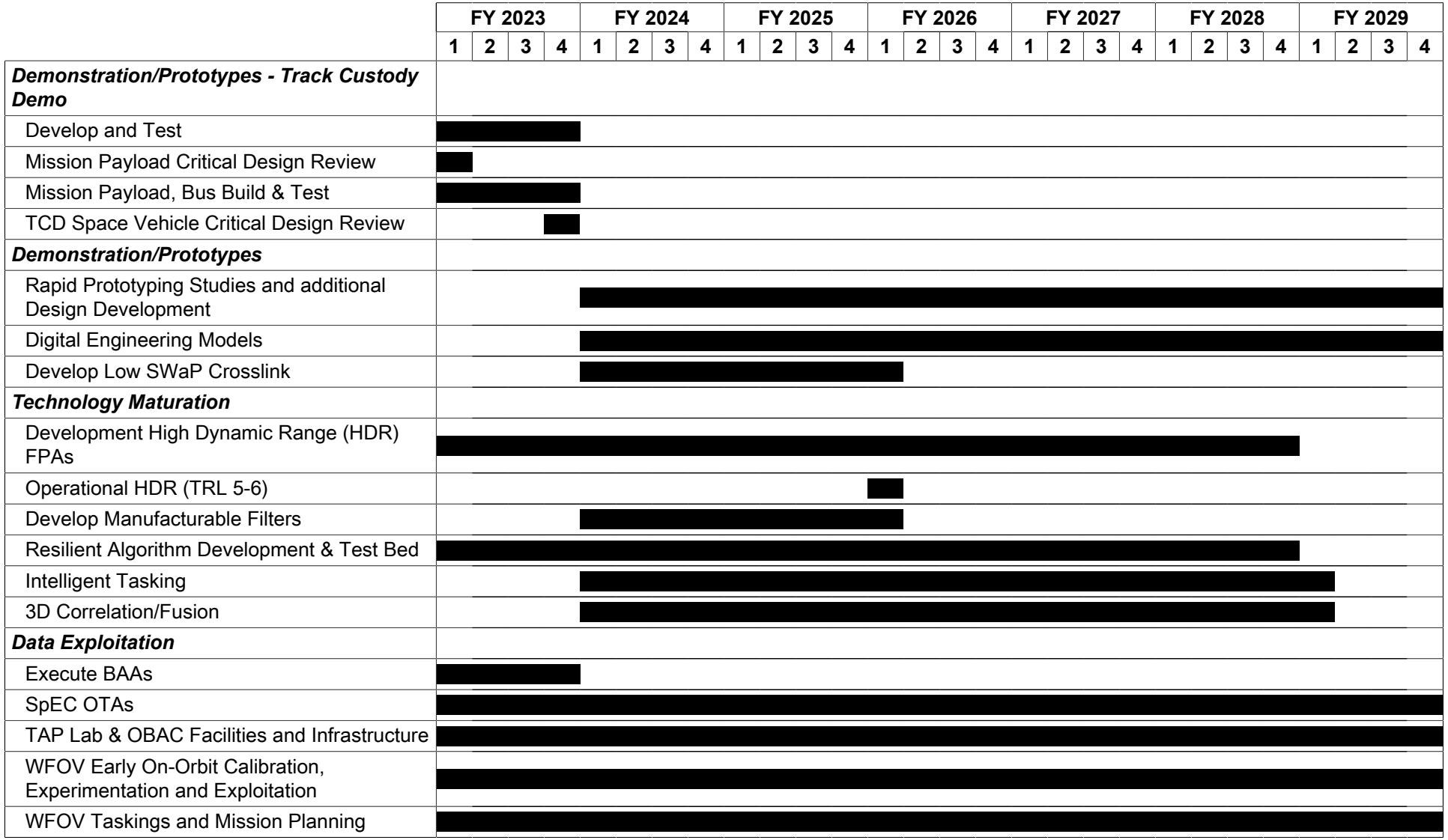

Exhibit R-4, RDT&E Schedule Profile: PB 2025 Air Force		Date: March 2024
Appropriation/Budget Activity 3620F / 5	**R-1 Program Element (Number/Name)** PE 1206442SF / *Next Generation OPIR*	**Project (Number/Name)** 657009 / *Space Mod Initiative*

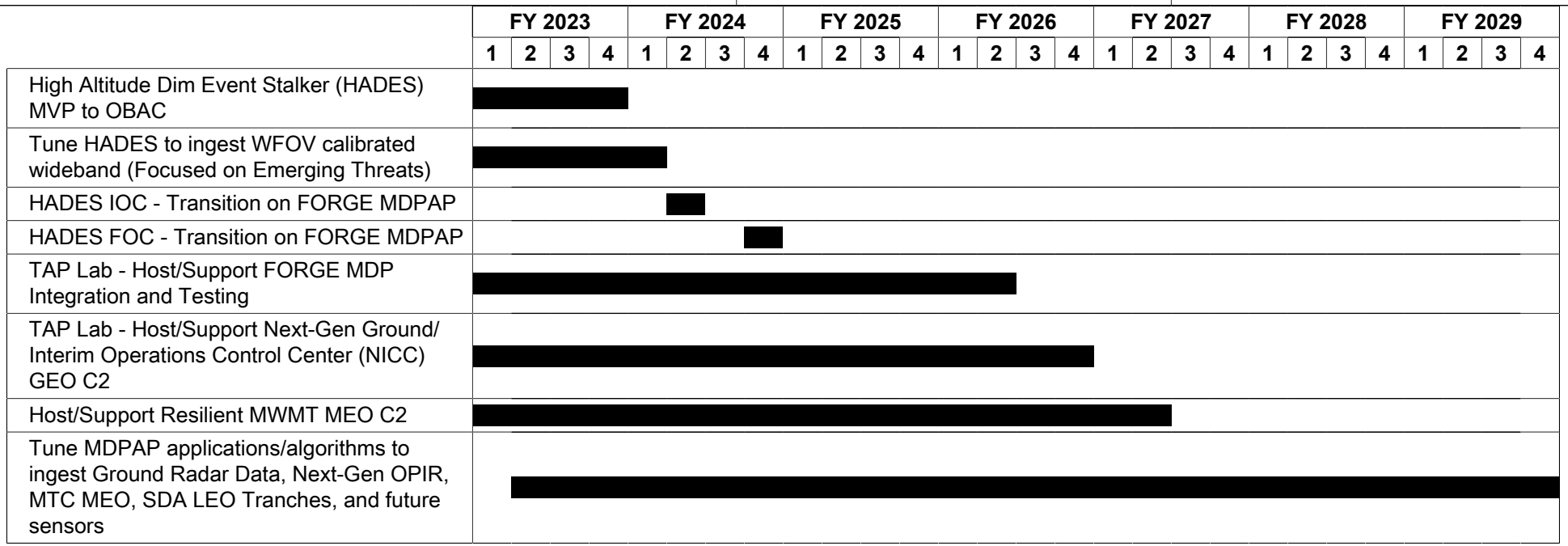

Exhibit R-4A, RDT&E Schedule Details: PB 2025 Air Force		Date: March 2024
Appropriation/Budget Activity 3620F / 5	**R-1 Program Element (Number/Name)** PE 1206442SF / *Next Generation OPIR*	**Project (Number/Name)** 657009 / *Space Mod Initiative*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Demonstration/Prototypes - Track Custody Demo				
Develop and Test	1	2023	4	2023
Mission Payload Critical Design Review	1	2023	1	2023
Mission Payload, Bus Build & Test	1	2023	4	2023
TCD Space Vehicle Critical Design Review	4	2023	4	2023
Demonstration/Prototypes				
Rapid Prototyping Studies and additional Design Development	1	2024	4	2029
Digital Engineering Models	1	2024	4	2029
Develop Low SWaP Crosslink	1	2024	1	2026
Technology Maturation				
Development High Dynamic Range (HDR) FPAs	1	2023	4	2028
Operational HDR (TRL 5-6)	1	2026	1	2026
Develop Manufacturable Filters	1	2024	1	2026
Resilient Algorithm Development & Test Bed	1	2023	4	2028
Intelligent Tasking	1	2024	1	2029
3D Correlation/Fusion	1	2024	1	2029
Data Exploitation				
Execute BAAs	1	2023	4	2023
SpEC OTAs	1	2023	4	2029
TAP Lab & OBAC Facilities and Infrastructure	1	2023	4	2029
WFOV Early On-Orbit Calibration, Experimentation and Exploitation	1	2023	4	2029
WFOV Taskings and Mission Planning	1	2023	4	2029
High Altitude Dim Event Stalker (HADES) MVP to OBAC	1	2023	4	2023

Exhibit R-4A, RDT&E Schedule Details: PB 2025 Air Force		Date: March 2024
Appropriation/Budget Activity 3620F / 5	**R-1 Program Element (Number/Name)** PE 1206442SF / *Next Generation OPIR*	**Project (Number/Name)** 657009 / *Space Mod Initiative*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Tune HADES to ingest WFOV calibrated wideband (Focused on Emerging Threats)	1	2023	1	2024
HADES IOC - Transition on FORGE MDPAP	2	2024	2	2024
HADES FOC - Transition on FORGE MDPAP	4	2024	4	2024
TAP Lab - Host/Support FORGE MDP Integration and Testing	1	2023	2	2026
TAP Lab - Host/Support Next-Gen Ground/Interim Operations Control Center (NICC) GEO C2	1	2023	4	2026
Host/Support Resilient MWMT MEO C2	1	2023	2	2027
Tune MDPAP applications/algorithms to ingest Ground Radar Data, Next-Gen OPIR, MTC MEO, SDA LEO Tranches, and future sensors	2	2023	4	2029

Exhibit R-2A, RDT&E Project Justification: PB 2025 Air Force			Date: March 2024
Appropriation/Budget Activity 3620F / 5	R-1 Program Element (Number/Name) PE 1206442SF / *Next Generation OPIR*	Project (Number/Name) 657123 / *Integration*	

COST ($ in Millions)	Prior Years	FY 2023	FY 2024	FY 2025 Base	FY 2025 OCO	FY 2025 Total	FY 2026	FY 2027	FY 2028	FY 2029	Cost To Complete	Total Cost
657123: *Integration*	-	54.717	31.034	32.234	0.000	32.234	30.729	31.364	32.495	33.136	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Government works with the Enterprise System Engineering & Integration (SE&I) contractor as a team to define the Next-Gen OPIR enterprise architecture, control and validate interfaces, ensure compatibility of Next-Gen OPIR systems, and develop/manage plans for fielding the Next-Gen OPIR segments. Further, the Enterprise SE&I executes system-level integration requirements between segments such as Space to Ground. This differs from integration within each segment; integration within segments refers to subsystem-level integration between subsystems such as a spacecraft bus to the mission payload. The Government Integrator is responsible for defining the Next-Gen OPIR enterprise architecture, controls and validates interfaces, ensures compatibility of Next-Gen OPIR systems, and develops/manages plans for fielding the Next-Gen OPIR Enterprise. Further, the Integrator executes Model Based System Engineering (MBSE) through modeling, simulation, and technical analyses of Government-directed enterprise level trades among the Next-Gen OPIR segments. These trades lead to definition, management, maintenance, and evolution of the Next-Gen OPIR Enterprise technical requirements and interface documents to ensure the integrity of the enterprise technical baseline.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2023	FY 2024	FY 2025
Title: Next-Gen OPIR Space, Integration	54.717	31.034	32.234
Description: The Integration (Project 657123) project includes the efforts associated with the Government's primary role and tasks necessary to accomplish the critical lead system integration function with the OPIR enterprise material segments (Next-Gen Geosynchronous Earth Orbit (GEO) (NGG), Next-Gen Polar (NGP), Next-Gen Ground, and the Resilient Missile Warning/ Missile Track (MW/MT) architecture). The Next-Gen OPIR Program Manager is responsible for directing the Next-Gen OPIR current Enterprise architecture, system definition, controls and validates interfaces, ensures compatibility of Next-Gen systems, and develops/manages plans for execution and fielding of the Next-Gen OPIR Enterprise.			
FY 2024 Plans: Continue to plan and execute the critical lead system integration function across the System of Systems. Activities include NGG space-to-ground compatibility testing and planning for major pre-launch enterprise integration events such as NGG pre-launch readiness testing. Continue development of Space/Ground interface, analysis for the Future Operationally Resilient Ground Evolution (FORGE) Next-Gen GEO Transition, analysis and integration for NGG space vehicle 2 bus integration and intersegment testing. Conduct NGP System level Critical Design Review (CDR) with NGP prime contractor. Conduct System Requirements Review for Survivable/Endurable Next-Gen OPIR requirements. Continue management of missile warning technical baseline and cross-segment requirement verification and test activities. Rapidly respond to implement system resiliency and situational awareness necessary to operate in the contested space domain. Activities may include, but are not limited to program office support, studies, technical analysis experimentation, and prototyping.			
FY 2025 Plans:			

Exhibit R-2A, RDT&E Project Justification: PB 2025 Air Force		Date: March 2024
Appropriation/Budget Activity 3620F / 5	**R-1 Program Element (Number/Name)** PE 1206442SF / *Next Generation OPIR*	**Project (Number/Name)** 657123 / *Integration*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2023	FY 2024	FY 2025
Plan and execute the critical lead system integration function across the Next Gen Missile Warning System of Systems, to include systems engineering, process development and execution, requirements analysis and verification, and vertical and horizontal integration, at the system, ground, space, segment, and element levels. Integration supports across the enterprise Next Gen OPIR, to include NGG SV1 final Space to Ground interface testing, launch base confidence testing, launch planning and NGG SV2 mission payload and bus integration, as well as NGP SV1 & SV2 Bus and mission payload development, and Assembly, Integration and Test (AI&T) activities. It also includes integration, test, and evaluation activities to transition SBIRS HEO and GEO onto the Future Operationally Resilient Ground Evolution (FORGE), as well as the planning, development, and integration efforts associated with the Endurable FORGE (E-FORGE) system, which are required to enable the Next Gen OPIR assets to be part of the survivable and endurable architecture. Rapidly respond to implement system resiliency and situational awareness necessary to operate in the contested space domain. Activities may include, but are not limited to program office support, studies, technical analysis, experimentation, prototyping, and activities that may leverage commercial and international opportunities ***FY 2024 to FY 2025 Increase/Decrease Statement:*** FY2024 increased due to inflation and an increase in Integration and Test activities for NGG, NGP and FORGE.			
Accomplishments/Planned Programs Subtotals	54.717	31.034	32.234

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

The Space Force will exercise complete ownership of the architecture, system definition, technical baseline, and integration of Next-Gen OPIR space and ground segments. While this complex intersegment integration is traditionally performed by a prime contractor under a systems development contract, for Next-Gen OPIR, this approach requires the government to be the integrator. To execute this responsibility, the government leverages systems engineering and integration expertise from the SE&I contractor. The Program Office has been executing this effort through an SSC managed SE&I contract, for which the final option period concludes in 4th Quarter 2023. A new SE&I support contract (one-year base with 6 one-year options) was awarded to Booz Allen Hamilton by GSA in Jan 2022, however two protests delayed the award. Following GAO dismissals of the protest and proposal review activities, GSA provided Authority to Proceed (ATP) on 19 June 2023. The period of performance overlap in the two contracts provides the required time to enable an efficient transition. In this effort, the contractor will be tightly integrated with the government team to assist in executing the government lead system integration and validation function. This function requires system analysis, integration planning, integration execution, leveraging that expertise from the Prime Contractors for NGG, NGP, and FORGE. These prime contractors have System Engineering, Integrations and Test (SEIT) scope on the respective contracts.

The new SE&I contract encompass two functions: first, it primarily supports the Enterprise SE&I effort captured in this Integration Project. Secondly, the contract includes scope to execute SE&I requirements internal to each segment.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2025 Air Force			Date: March 2024
Appropriation/Budget Activity 3620F / 5	R-1 Program Element (Number/Name) PE 1206442SF / *Next Generation OPIR*	Project (Number/Name) 657123 / *Integration*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2023 Cost	FY 2023 Award Date	FY 2024 Cost	FY 2024 Award Date	FY 2025 Base Cost	FY 2025 Base Award Date	FY 2025 OCO Cost	FY 2025 OCO Award Date	FY 2025 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Enterprise SE&I Direct Support	Various	Various : Various	-	46.700	Jun 2023	17.988	Jun 2024	18.910	Jun 2025	-		18.910	Continuing	Continuing	-
OPIR Modeling & Simulation	Various	Various : Various	-	6.185	May 2023	12.000	Jan 2024	12.185	Jan 2025	-		12.185	Continuing	Continuing	-
		Subtotal	-	52.885		29.988		31.095		-		31.095	Continuing	Continuing	N/A

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2023 Cost	FY 2023 Award Date	FY 2024 Cost	FY 2024 Award Date	FY 2025 Base Cost	FY 2025 Base Award Date	FY 2025 OCO Cost	FY 2025 OCO Award Date	FY 2025 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
A&AS	Various	Various : Various	-	1.732	Feb 2023	1.024	Oct 2023	1.064	Dec 2024	-		1.064	Continuing	Continuing	-
Other Support	Various	Various : Various	-	0.100	Jan 2023	0.022	Oct 2023	0.075	Dec 2024	-		0.075	Continuing	Continuing	-
		Subtotal	-	1.832		1.046		1.139		-		1.139	Continuing	Continuing	N/A

	Prior Years	FY 2023		FY 2024		FY 2025 Base		FY 2025 OCO		FY 2025 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	54.717		31.034		32.234		-		32.234	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2025 Air Force		Date: March 2024
Appropriation/Budget Activity 3620F / 5	**R-1 Program Element (Number/Name)** PE 1206442SF / *Next Generation OPIR*	**Project (Number/Name)** 657123 / *Integration*

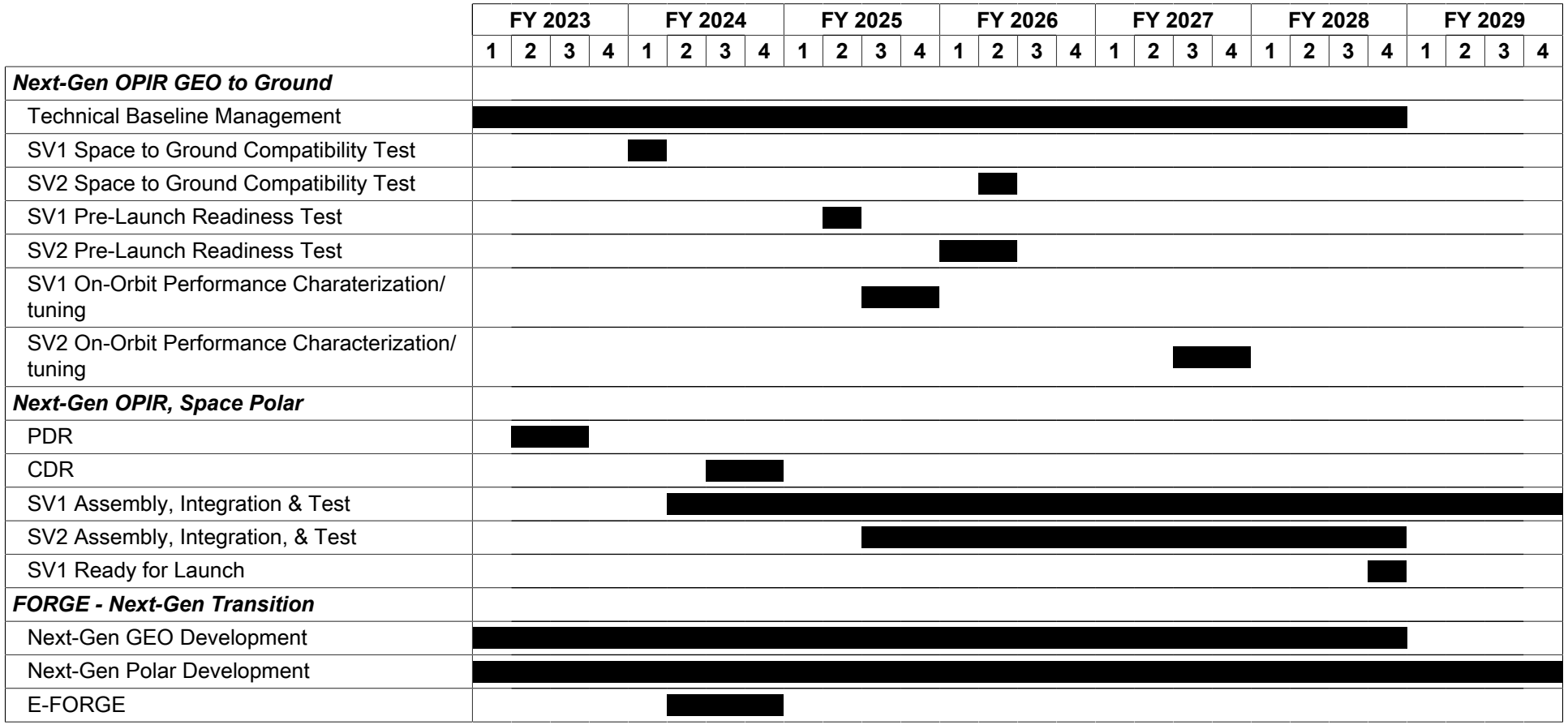

Exhibit R-4A, RDT&E Schedule Details: PB 2025 Air Force		Date: March 2024
Appropriation/Budget Activity 3620F / 5	**R-1 Program Element (Number/Name)** PE 1206442SF / *Next Generation OPIR*	**Project (Number/Name)** 657123 / *Integration*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Next-Gen OPIR GEO to Ground				
Technical Baseline Management	1	2023	4	2028
SV1 Space to Ground Compatibility Test	1	2024	1	2024
SV2 Space to Ground Compatibility Test	2	2026	2	2026
SV1 Pre-Launch Readiness Test	2	2025	2	2025
SV2 Pre-Launch Readiness Test	1	2026	2	2026
SV1 On-Orbit Performance Charaterization/tuning	3	2025	4	2025
SV2 On-Orbit Performance Characterization/tuning	3	2027	4	2027
Next-Gen OPIR, Space Polar				
PDR	2	2023	3	2023
CDR	3	2024	4	2024
SV1 Assembly, Integration & Test	2	2024	4	2029
SV2 Assembly, Integration, & Test	3	2025	4	2028
SV1 Ready for Launch	4	2028	4	2028
FORGE - Next-Gen Transition				
Next-Gen GEO Development	1	2023	4	2028
Next-Gen Polar Development	1	2023	4	2029
E-FORGE	2	2024	4	2024