| Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Air Force | | | | | | | | | | | Date: May 2021 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Appropriation/Budget Activity<br>3600: *Research, Development, Test & Evaluation, Air Force* / BA 5: *System Development & Demonstration (SDD)* | | | | | R-1 Program Element (Number/Name)<br>PE 1206442F / *Next Generation OPIR* | | | | | | | |
| **COST ($ in Millions)** | **Prior Years** | **FY 2020** | **FY 2021** | **FY 2022 Base** | **FY 2022 OCO** | **FY 2022 Total** | **FY 2023** | **FY 2024** | **FY 2025** | **FY 2026** | **Cost To Complete** | **Total Cost** |
| Total Program Element | - | 1,470.278 | 0.000 | 0.000 | 0.000 | 0.000 | - | - | - | - | - | - |
| 657009: *Space Mod Initiative* | - | 201.717 | 0.000 | 0.000 | 0.000 | 0.000 | - | - | - | - | - | - |
| 657106: *Next-Gen OPIR Ground* | - | 156.232 | 0.000 | 0.000 | 0.000 | 0.000 | - | - | - | - | - | - |
| 657120: *Next-Gen OPIR Space, Block 0 GEO* | - | 1,009.270 | 0.000 | 0.000 | 0.000 | 0.000 | - | - | - | - | - | - |
| 657121: *Next-Gen OPIR Space, Block 0 Polar* | - | 103.059 | 0.000 | 0.000 | 0.000 | 0.000 | - | - | - | - | - | - |

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

In FY 2021, PE 1206442F, Next Generation OPIR efforts were transferred to Appropriation 3620, Research, Development, Test & Evaluation, Space Force, PE 1206442SF, Next Generation OPIR from Appropriation 3600, Budget Activity 05 due to the creation of a new Appropriation for Space Force.

The Next-Generation Overhead Persistent Infrared (Next-Gen OPIR) RDT&E FY 2021 budget justification exhibits describe the Next-Gen OPIR Space, Ground, and Space Modernization Initiative (SMI) programs.

1. Next-Gen OPIR Space Modernization Initiative (SMI) (Project 657009): SMI supports Next-Gen OPIR by assessing and demonstrating new technologies better enabling the detection of emerging global missile threats, material obsolescence, designing space and ground modifications focused on affordability and capability,and maximizing the effectiveness of existing system data products. SMI funds engineering activities to reduce both production and future system costs through manufacturing and producibility enhancements, and technology insertion. SMI will also mature potential technology upgrades at the component and system level for space and ground architecture enhancements. SMI includes studies and risk reduction activities to evolve the current Program of Record (PoR) constellation, reduce production timelines, and reduce recurring production costs. SMI activities are balanced and phased to enable an expanded trade space and improve the competitive environment. The three major thrust areas under SMI are Demonstrations, Technology Maturation and Data Exploitation. The Demonstrations mature and demonstrate technologies with ground and on-orbit prototypes. Demonstrations advance system performance and algorithms for tactical and strategic applications to enhance PoR capabilities. Finally, demonstrations reduce program risks for future OPIR systems, whether new systems or evolutions of the current PoR. Technology Maturation assesses and addresses needs to support resiliency of PoR assets and future architectures that must respond to an evolving threat environment. Data Exploitation enables access to OPIR data sources to expand technical intelligence and battlespace awareness processing and data dissemination tools to support warfighters and other data users.

2. Next-Gen OPIR Ground (Project 657106): Next-Gen OPIR Ground, also known as Future Operationally Resilient Ground Evolution (FORGE), will consist of Command and Control (C2) migration to Air Force Space Command's (AFSPC) Enterprise Ground Services (EGS), modernization of Mission Data Processing (MDP) to implement an open framework, and required development and/or upgrades to Relay Ground Stations (RGS) to meet AFSPC guidance on the current and future space domain demands. FORGE and EGS efforts combined will provide the flexibility and scalability to integrate new satellites, sensors and capabilities more rapidly and

efficiently in order to meet evolving threats and warfighter needs. The Next-Gen OPIR ground efforts enable cyber enhancements for both space and ground systems. EGS will introduce common ground services such as Telemetry, Tracking and Command (TT&C), mission management, and automation. To support initial Next-Gen OPIR Space satellite launches without driving risks into the FORGE development schedule, the program will establish a risk reduction ground Next-Gen OPIR Interim Operations (NIO) capability based on a limited SBIRS Block 20 solution that can be utilized if FORGE becomes delayed.

3. Next-Gen OPIR Space: Is a transition from the legacy SBIRS program. Next-Gen OPIR implements the direction of the Joint Requirements Oversight Council Memorandum (JROCM) 130-17, dated 21 December 2017, by developing the next generation of strategically survivable space-based missile warning OPIR platforms in both GEO and Polar orbits. This program will deliver improved core missile warning capabilities that are more survivable against emerging threats. The full Next-Gen OPIR constellation will consist of a minimum of GEO and Polar satellites in sufficient number to meet global warning coverage with no exploitable holes (5 GEO + 2 Polar) plus required backup and attrition and reconstitution reserve. The Air Force intends to acquire Next-Gen systems in block procurements. The Block 0 acquisition strategy consists of three GEO and two Polar satellites. The first GEO satellite is required no later than FY 2025 and the first Polar satellite is required in FY2027. All five Block 0 satellites need to be on orbit by FY2029. Follow-on blocks will be addressed in future acquisition strategies. Next-Gen OPIR Space, Block 0 Geosynchronous Earth Orbit (GEO)(NGG) (Project 657120): The Program Office intends to acquire the NGG capability in two contract actions. Phase 1 was awarded in August 2018 and encompasses requirements analysis, design/development, critical path flight hardware procurement, and risk reduction efforts leading to a System CDR. Phase 2 will be awarded in FY2021 for the manufacturing, assembly, system integration and test, launch and early on-orbit test through the delivery of NGG satellites 1-3 for operational acceptance of each space vehicle.

The Program Office is acquiring the NGP capability through three contract phases. Phase 0 awarded in June 2018, encompassed system requirements analysis and risk reduction efforts, which led to a March 2020 System Requirements Review (SRR). Phase 1 awarded May 2020, encompasses design and development, critical path flight hardware procurement, and risk reduction efforts leading to a System Critical Design Review (CDR) in FY 2025. Phase 2 will be awarded in FY 2025 for the manufacturing, assembly, integration and test, and early on orbit test, through operational acceptance of NGP satellites 1 and 2.

Next-Gen OPIR Space, Block 1 (Project 657122): The Air Force plans to acquire subsequent blocks in a competitive environment. The Block 1 satellites will be based on the Enterprise OPIR Capability Development Document (CDD), validated by the Joint Requirements Oversight Council (JROC) in May 2019. The Next Gen OPIR Block 1 program acquisition will begin in FY 2023 in time to deliver its first satellite by FY 2030.

Space acquisition must respond with speed and agility to emerging adversary threats. Space & Missile Systems Center (SMC) has transformed the organization and implementation of space acquisition to an enterprise approach, maximizing innovation and resiliency, leveraging international, commercial, and mission partnerships, and managing program/project priorities according to an integrated unclassified/classified enterprise space architecture. Expanding the appropriate acquisition authorities and contract mechanisms to deliver capability sooner, SMC will strategically execute experimentation, prototyping, risk reduction, and other efforts to develop new or repurpose capabilities.

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 1206392F and 1206398F.

| Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Air Force | Date: May 2021 |
|---|---|
| **Appropriation/Budget Activity**<br>3600: *Research, Development, Test & Evaluation, Air Force* / BA 5: *System Development & Demonstration (SDD)* | **R-1 Program Element (Number/Name)**<br>PE 1206442F / *Next Generation OPIR* |

This program is in Budget Activity 5, System Development and Demonstration (SDD) because the majority of Projects under PE 1206442F 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 2020 | FY 2021 | FY 2022 Base | FY 2022 OCO | FY 2022 Total |
|---|---|---|---|---|---|
| Previous President's Budget | 1,470.278 | 0.000 | 0.000 | 0.000 | 0.000 |
| Current President's Budget | 1,470.278 | 0.000 | 0.000 | 0.000 | 0.000 |
| Total Adjustments | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| • 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 | 0.000 | 0.000 | 0.000 |

| Congressional Add Details ($ in Millions, and Includes General Reductions) | FY 2020 | FY 2021 |
|---|---|---|
| **Project:** 657120: *Next-Gen OPIR Space, Block 0 GEO* | | |
| Congressional Add: *Congressional Add* | 75.000 | - |
| Congressional Add Subtotals for Project: 657120 | 75.000 | - |
| Congressional Add Totals for all Projects | 75.000 | - |

**Change Summary Explanation**

FY 2020: +$75M Congressional plus-up to support Next-Gen OPIR Space, Block 0 GEO to support 2025 launch timeline of first SV.

| Exhibit R-2A, RDT&E Project Justification: PB 2022 Air Force | | | Date: May 2021 |
|---|---|---|---|
| Appropriation/Budget Activity<br>3600 / 5 | R-1 Program Element (Number/Name)<br>PE 1206442F / *Next Generation OPIR* | Project (Number/Name)<br>657009 / *Space Mod Initiative* | |

| COST ($ in Millions) | Prior Years | FY 2020 | FY 2021 | FY 2022 Base | FY 2022 OCO | FY 2022 Total | FY 2023 | FY 2024 | FY 2025 | FY 2026 | Cost To Complete | Total Cost |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 657009: *Space Mod Initiative* | - | 201.717 | 0.000 | 0.000 | 0.000 | 0.000 | - | - | - | - | - | - |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |

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

In FY 2021, PE 1206442F, Next Generation OPIR efforts were transferred to Appropriation 3620, Research, Development, Test & Evaluation, Space Force, PE 1206442SF, Next Generation OPIR from Appropriation 3600, Budget Activity 05 due to the creation of a new Appropriation for Space Force.

Next-Generation Overhead Persistent Infrared (OPIR) Space Modernization Initiative (SMI) (Project 657009): SMI supports Next-Gen OPIR by assessing and demonstrating new technologies to better enable detection of emerging global missile threats and awareness of material obsolescence. Additionally, SMI supports space and ground design efforts focused on delivering affordable capabilities, maximizing the effectiveness of existing system data products. SMI funds engineering activities to reduce both production and future system costs through manufacturing improvements, producibility enhancements, and technology insertion. SMI will also mature potential technology upgrades at the component and system level for space and ground architecture enhancements. SMI includes studies and risk reduction activities to evolve the current SBIRS Program of Record (PoR) constellation, reduce production timelines, and reduce recurring production costs. SMI activities are balanced and phased to enable an expanded trade space and improve the competitive environment. The three major thrust areas under SMI are Demonstrations, Technology Maturation and Data Exploitation. The Demonstrations mature and demonstrate technologies with ground and on-orbit prototypes. Demonstrations advance system performance and algorithms for tactical and strategic applications to enhance PoR capabilities. Finally, demonstrations reduce program risks for future OPIR systems, whether new systems or evolutions of the current PoR. Technology Maturation assesses and addresses needs to support resiliency of PoR assets and future architectures that must respond to an evolving threat environment. Data Exploitation enables access to OPIR data sources to expand technical intelligence products, battlespace awareness processing, and data dissemination tools to support warfighters and other data users.

| B. Accomplishments/Planned Programs ($ in Millions) | FY 2020 | FY 2021 | FY 2022 Base | FY 2022 OCO | FY 2022 Total |
|---|---|---|---|---|---|
| ***Title:*** Demonstrations | 111.621 | 0.000 | 0.000 | 0.000 | 0.000 |
| ***Description:*** Demonstrations mature and demonstrate OPIR technologies with ground and on-orbit prototypes advance system performance, algorithms, and resiliency for future OPIR systems. The demonstrations explore technology maturation, qualification of new components, and subsystem/component prototyping to evolve the OPIR architecture. The demonstrations support maturation of Mission Data Processing (MDP) algorithms for tactical and strategic applications which are critical efforts to enhance PoR capabilities and to reduce program risks for future OPIR systems.<br><br>The Wide Field Of View (WFOV) demonstration matures WFOV technology and validates multi-mission capabilities including the potential for a single sensor to simultaneously perform strategic and tactical missions. WFOV is ready for launch in FY 2021. Collection of on-orbit WFOV data is critical to develop algorithms to | | | | | |

| Exhibit R-2A, RDT&E Project Justification: PB 2022 Air Force | | Date: May 2021 |
|---|---|---|
| **Appropriation/Budget Activity**<br>3600 / 5 | **R-1 Program Element (Number/Name)**<br>PE 1206442F / *Next Generation OPIR* | **Project (Number/Name)**<br>657009 / *Space Mod Initiative* |

| B. Accomplishments/Planned Programs ($ in Millions) | FY 2020 | FY 2021 | FY 2022 Base | FY 2022 OCO | FY 2022 Total |
|---|---|---|---|---|---|
| process large data sets generated by emerging large format focal planes and reduce risk for future architectures. The WFOV payload and bus are separate development efforts. The WFOV testbed program provides a bus capable of demonstrating on-orbit mission performance and mitigating the development risks for employing WFOV sensors. The testbed program will integrate, test, and launch a prototype WFOV payload with a government-owned free-flyer spacecraft. The WFOV testbed will host the WFOV payload. As an integrated Space Vehicle, the WFOV system will prove on-orbit mission performance of WFOV sensors. The WFOV payload will provide the critical on-orbit data required to develop and validate WFOV algorithms, as well as on-board MDP throughput requirements for strategic missile warning.<br><br>The Block 1 Prototype (space vehicle) is under development and will be responsive to emerging missile types and threats to the current missile warning architecture as well as evolving threats to the enterprise. The Block 1 Prototype will inform future OPIR architecture to include those achieved by the Space Force, Missile Defense Agency (MDA), and other mission partners. The Block 1 Prototype has a Class-C mission assurance with a 3-5 year designed mission life. The Block 1 Prototype is targeting an initial launch capability beginning in 2025. The technology demonstrations will incorporate resiliency capabilities while advancing the state of the art performance technology. The demonstrations will focus on the rapid advancement, technology insertion, and launch of future generations of missile warning technologies. These assets will incorporate threat mitigation technologies and other resiliency features with the goal of demonstrating these technologies in ground and on-orbit. These demonstrations will facilitate tech insertion, validate technical performance, inform future OPIR requirements, and reduce technical risk to the enterprise.<br><br>***FY 2021 Plans:***<br>N/A<br><br>***FY 2022 Base Plans:***<br>N/A<br><br>***FY 2022 OCO Plans:***<br>N/A | | | | | |
| ***Title:*** Technology Maturation<br><br>***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 CONOPS for the OPIR mission. Mature technologies and manufacturability to reduce cost, schedule, and technical risk for new component and subsystem designs that | 31.493 | 0.000 | 0.000 | 0.000 | 0.000 |

| Exhibit R-2A, RDT&E Project Justification: PB 2022 Air Force | | Date: May 2021 |
|---|---|---|
| **Appropriation/Budget Activity**<br>3600 / 5 | **R-1 Program Element (Number/Name)**<br>PE 1206442F / *Next Generation OPIR* | **Project (Number/Name)**<br>657009 / *Space Mod Initiative* |

| B. Accomplishments/Planned Programs ($ in Millions) | FY 2020 | FY 2021 | FY 2022 Base | FY 2022 OCO | FY 2022 Total |
|---|---|---|---|---|---|
| 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-gen payload technologies as well as threat mitigation components and techniques.<br><br>***FY 2021 Plans:***<br>N/A<br><br>***FY 2022 Base Plans:***<br>N/A<br><br>***FY 2022 OCO Plans:***<br>N/A | | | | | |
| ***Title:*** Data Exploitation<br><br>***Description:*** Data exploitation efforts support demonstration and prototype architecture planning and experimentation as well as provide the critical on-orbit data required to develop and validate Wide Field of View (WFOV) algorithms, as well as on-board MDP throughput requirements for strategic missile warning. Data exploitation efforts will exploit existing OPIR data sources including Defense Support Program (DSP), SBIRS Highly Elliptical Orbit (HEO), SBIRS GEO Scanner, SBIRS GEO Starer, prototypes, and other sources. Efforts will exploit data through collection, processing, fusion, data dissemination, algorithm development and testing, network connectivity, and sensor performance assessments. SBIRS and other sensors provide a rich data set for exploitation. SMI data exploitation enables access to raw and processed data for data analysts and application developers, from the government and industry, to expand capabilities for battlespace awareness and other applications. SMI data exploitation efforts are complementary to, and enhance, the exploitation capabilities delivered by the PoR. These efforts will develop tools and algorithms to enable users to apply OPIR data to support their mission needs. Data exploitation efforts also evaluate tools for C2, mission management, and MDP to reduce risk. Data exploitation efforts evolve the PoR ground system to an open architecture that could support PoR and other future satellite alternatives. SMI ground system development activities seek to demonstrate the performance of an evolved, next-generation, open-architecture ground system 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. | 58.603 | 0.000 | 0.000 | 0.000 | 0.000 |

| Exhibit R-2A, RDT&E Project Justification: PB 2022 Air Force | | Date: May 2021 |
|---|---|---|
| **Appropriation/Budget Activity**<br>3600 / 5 | **R-1 Program Element (Number/Name)**<br>PE 1206442F / *Next Generation OPIR* | **Project (Number/Name)**<br>657009 / *Space Mod Initiative* |

| B. Accomplishments/Planned Programs ($ in Millions) | FY 2020 | FY 2021 | FY 2022 Base | FY 2022 OCO | FY 2022 Total |
|---|---|---|---|---|---|
| ***FY 2021 Plans:***<br>N/A<br>***FY 2022 Base Plans:***<br>N/A<br>***FY 2022 OCO Plans:***<br>N/A | | | | | |
| **Accomplishments/Planned Programs Subtotals** | 201.717 | 0.000 | 0.000 | 0.000 | 0.000 |

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

| Line Item | FY 2020 | FY 2021 | FY 2022 Base | FY 2022 OCO | FY 2022 Total | FY 2023 | FY 2024 | FY 2025 | FY 2026 | Cost To Complete | Total Cost |
|---|---|---|---|---|---|---|---|---|---|---|---|
| • SPAF 01 Line 13: *MSSBIR: SBIR High (Space)* | 226.952 | - | - | - | - | - | - | - | - | - | - |
| • RDTE 05 1206441F: *Space Based Infrared System (SBIRS) High EMD* | - | - | - | - | - | - | - | - | - | | |

**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 Battlespace Awareness center 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. Broad Agency Announcements (BAAs) and Other Transaction Authorities are planned in collaboration with Air Force Research Lab (AFRL) and other government agencies. Where practical, other efforts are competed. An SMC 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. Funding in execution years will be realigned within the Next-Gen OPIR program element to respond to execution requirements. To accelerate contracting actions and program execution, a local SMC contract vehicle will be utilized for the OPIR Battlespace Awareness Center (OBAC) and government lab services.

| Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Air Force | | | Date: May 2021 |
|---|---|---|---|
| Appropriation/Budget Activity<br>3600 / 5 | R-1 Program Element (Number/Name)<br>PE 1206442F / *Next Generation OPIR* | Project (Number/Name)<br>657009 / *Space Mod Initiative* | |

**Product Development ($ in Millions)**

| Cost Category Item | Contract Method & Type | Performing Activity & Location | Prior Years | FY 2020 Cost | FY 2020 Award Date | FY 2021 Cost | FY 2021 Award Date | FY 2022 Base Cost | FY 2022 Base Award Date | FY 2022 OCO Cost | FY 2022 OCO Award Date | FY 2022 Total Cost | Cost To Complete | Total Cost | Target Value of Contract |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Demonstrations | Various | Various : Various | - | 90.952 | Dec 2019 | - | | - | | - | | - | - | - | - |
| Technology Maturation | Various | Various : Various | - | 27.226 | Jan 2020 | - | | - | | - | | - | - | - | - |
| Data Exploitation | Various | Various : Various | - | 54.055 | Jan 2020 | - | | - | | - | | - | - | - | - |
| Technical Mission Analysis | RO | Aerospace : El Segundo, CA | - | 8.349 | Nov 2019 | - | | - | | - | | - | - | - | - |
| Enterprise SE&I | C/CPAF | Not specified. : TBD | - | 2.914 | Dec 2019 | - | | - | | - | | - | - | - | - |
| | | **Subtotal** | - | 183.496 | | - | | - | | - | | - | - | - | N/A |

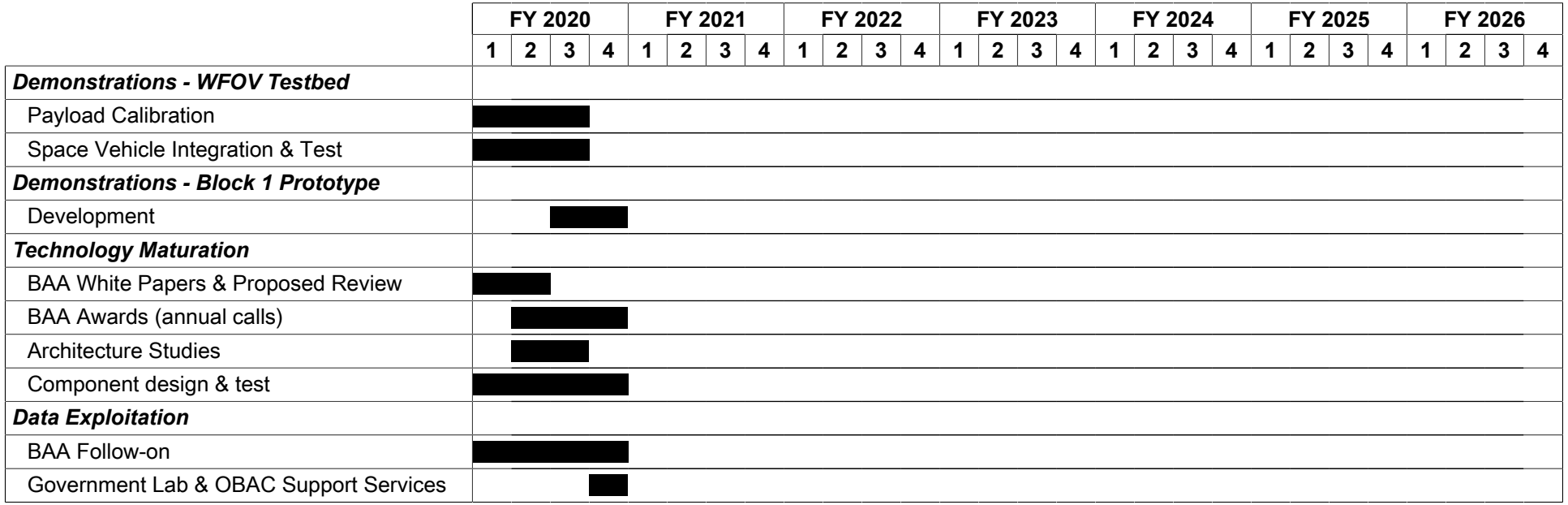
**Management Services ($ in Millions)**

| Cost Category Item | Contract Method & Type | Performing Activity & Location | Prior Years | FY 2020 Cost | FY 2020 Award Date | FY 2021 Cost | FY 2021 Award Date | FY 2022 Base Cost | FY 2022 Base Award Date | FY 2022 OCO Cost | FY 2022 OCO Award Date | FY 2022 Total Cost | Cost To Complete | Total Cost | Target Value of Contract |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FFRDC | Various | Various : Various | - | 7.734 | Dec 2019 | - | | - | | - | | - | - | - | - |
| A&AS | Various | Various : Various | - | 3.790 | Nov 2019 | - | | - | | - | | - | - | - | - |
| Other Support | Various | Various : Various | - | 6.697 | Jan 2020 | - | | - | | - | | - | - | - | - |
| | | **Subtotal** | - | 18.221 | | - | | - | | - | | - | - | - | N/A |

| | Prior Years | FY 2020 | | FY 2021 | | FY 2022 Base | | FY 2022 OCO | | FY 2022 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Project Cost Totals** | - | 201.717 | | 0.000 | | - | | - | | - | - | - | N/A |

**Remarks**

| Exhibit R-4, RDT&E Schedule Profile: PB 2022 Air Force | | Date: May 2021 |
|---|---|---|
| **Appropriation/Budget Activity**<br>3600 / 5 | **R-1 Program Element (Number/Name)**<br>PE 1206442F / *Next Generation OPIR* | **Project (Number/Name)**<br>657009 / *Space Mod Initiative* |



| Exhibit R-4A, RDT&E Schedule Details: PB 2022 Air Force | | Date: May 2021 |
|---|---|---|
| **Appropriation/Budget Activity**<br>3600 / 5 | **R-1 Program Element (Number/Name)**<br>PE 1206442F / *Next Generation OPIR* | **Project (Number/Name)**<br>657009 / *Space Mod Initiative* |

## Schedule Details

| | Start | | End | |
|---|---|---|---|---|
| **Events by Sub Project** | **Quarter** | **Year** | **Quarter** | **Year** |
| ***Demonstrations - WFOV Testbed*** | | | | |
| Payload Calibration | 1 | 2020 | 3 | 2020 |
| Space Vehicle Integration & Test | 1 | 2020 | 3 | 2020 |
| ***Demonstrations - Block 1 Prototype*** | | | | |
| Development | 3 | 2020 | 4 | 2020 |
| ***Technology Maturation*** | | | | |
| BAA White Papers & Proposed Review | 1 | 2020 | 2 | 2020 |
| BAA Awards (annual calls) | 2 | 2020 | 4 | 2020 |
| Architecture Studies | 2 | 2020 | 3 | 2020 |
| Component design & test | 1 | 2020 | 4 | 2020 |
| ***Data Exploitation*** | | | | |
| BAA Follow-on | 1 | 2020 | 4 | 2020 |
| Government Lab & OBAC Support Services | 4 | 2020 | 4 | 2020 |

| Exhibit R-2A, RDT&E Project Justification: PB 2022 Air Force | | | Date: May 2021 |
|---|---|---|---|
| Appropriation/Budget Activity<br>3600 / 5 | R-1 Program Element (Number/Name)<br>PE 1206442F / *Next Generation OPIR* | Project (Number/Name)<br>657106 / *Next-Gen OPIR Ground* | |

| COST ($ in Millions) | Prior Years | FY 2020 | FY 2021 | FY 2022 Base | FY 2022 OCO | FY 2022 Total | FY 2023 | FY 2024 | FY 2025 | FY 2026 | Cost To Complete | Total Cost |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 657106: *Next-Gen OPIR Ground* | - | 156.232 | 0.000 | 0.000 | 0.000 | 0.000 | - | - | - | - | - | - |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |

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

In FY 2021, PE 1206442F, Next Generation OPIR efforts were transferred to Appropriation 3620, Research, Development, Test & Evaluation, Space Force, PE 1206442SF, Next Generation OPIR from Appropriation 3600, Budget Activity 05 due to the creation of a new Appropriation for Space Force.

Next-Gen OPIR Ground (Project 657106): Next-Gen OPIR Ground, also known as Future Operationally Resilient Ground Evolution (FORGE), will consist of Command and Control (C2) migration to US Space Force (USSF) HQ's Enterprise Ground Services (EGS), modernization of Mission Data Processing (MDP) to implement an open framework, and required development and/or upgrades to Relay Ground Stations (RGS) to meet USSF HQ guidance on the current and future space domain demands. FORGE and EGS efforts combined will provide the flexibility and scalability to integrate new satellites, sensors and capabilities more rapidly and efficiently in order to meet evolving threats and warfighter needs. The Next-Gen OPIR ground efforts enable cyber enhancements for both space and ground systems. EGS will introduce common ground services such as Telemetry, Tracking, and Command (TT&C); mission management; and automation. To support initial Next-Gen OPIR Space satellite launches without driving risks into the FORGE development schedule, the program will establish a risk reduction ground Next-Gen OPIR Interim Operations (NIO) capability based on a limited Space Based Infrared System (SBIRS) Block 20 solution.

| B. Accomplishments/Planned Programs ($ in Millions) | FY 2020 | FY 2021 | FY 2022 Base | FY 2022 OCO | FY 2022 Total |
|---|---|---|---|---|---|
| ***Title:*** Next-Gen OPIR Ground<br>***Description:*** Infrastructure modernization and implementation of a Government owned open framework for MDP, migration for C2 of satellite operations onto EGS, and required development and/or upgrades to Relay Ground Stations (RGS).<br>***FY 2021 Plans:***<br>N/A<br>***FY 2022 Base Plans:***<br>N/A | 156.232 | 0.000 | 0.000 | - | 0.000 |
| **Accomplishments/Planned Programs Subtotals** | 156.232 | 0.000 | 0.000 | - | 0.000 |

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

N/A

**Remarks**

| Exhibit R-2A, RDT&E Project Justification: PB 2022 Air Force | | Date: May 2021 |
|---|---|---|
| **Appropriation/Budget Activity**<br>3600 / 5 | **R-1 Program Element (Number/Name)**<br>PE 1206442F / *Next Generation OPIR* | **Project (Number/Name)**<br>657106 / *Next-Gen OPIR Ground* |

**D. Acquisition Strategy**

The Next Gen OPIR Ground program is executing an acquisition strategy using Middle Tier of Acquisition (MTA) authority for Rapid Prototyping approved via Acquisition Decision Memorandum on 5 Dec 19.

To support this acquisition strategy, the program will follow an agile approach to develop capabilities and a robust DevSecOps (Development/Security/Operations) solution to deliver capabilities. The FORGE program is pursuing a rapid prototyping approach founded primarily on software and infrastructure reuse, partnerships with other programs, limited scope, use of existing contracts where necessary, and maximizing competition where possible. For the MDP thrust, the FORGE program will competitively use Other Transaction (OT) authorities to develop the framework and the applications. For the C2 thrust, the program team will use existing SMC contracts with an emphasis to an on-ramp to Enterprise Ground Services as soon as practical. For the NIO effort the program is using the Next Gen GEO contract with the prime contractor. For RGS thrust, the program is using traditional acquisition authorities.

| Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Air Force | | | Date: May 2021 |
|---|---|---|---|
| Appropriation/Budget Activity<br>3600 / 5 | R-1 Program Element (Number/Name)<br>PE 1206442F / *Next Generation OPIR* | Project (Number/Name)<br>657106 / *Next-Gen OPIR Ground* | |

**Product Development ($ in Millions)**

| Cost Category Item | Contract Method & Type | Performing Activity & Location | Prior Years | FY 2020 Cost | FY 2020 Award Date | FY 2021 Cost | FY 2021 Award Date | FY 2022 Base Cost | FY 2022 Base Award Date | FY 2022 OCO Cost | FY 2022 OCO Award Date | FY 2022 Total Cost | Cost To Complete | Total Cost | Target Value of Contract |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FORGE - EGS/C2 | Various | Various : Various | - | 23.967 | Apr 2020 | - | | - | | - | | - | - | - | - |
| FORGE - MDP | Various | Various : Various | - | 45.325 | Apr 2020 | - | | - | | - | | - | - | - | - |
| FORGE - NIO (Risk Reduction Option) | Various | Various : Various | - | 42.951 | Nov 2019 | - | | - | | - | | - | - | - | - |
| FORGE - RGS | Various | Various : Various | - | 0.844 | Sep 2020 | - | | - | | - | | - | - | - | - |
| Enterprise SE&I | C/CPAF | Engility Corp. : Andover, MA | - | 5.847 | Nov 2019 | - | | - | | - | | - | - | - | - |
| Technical Mission Analysis | RO | Aerospace Corporation : El Segundo, CA | - | 8.315 | Oct 2019 | - | | - | | - | | - | - | - | - |
| | | **Subtotal** | - | 127.249 | | - | | - | | - | | - | - | - | N/A |

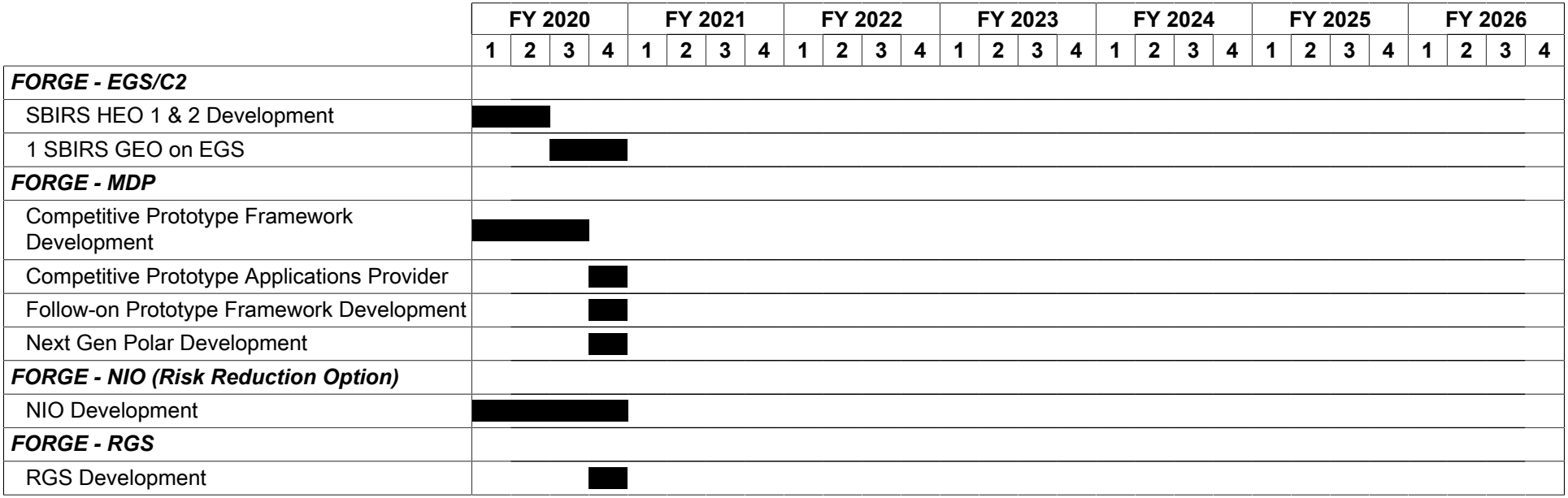
**Management Services ($ in Millions)**

| Cost Category Item | Contract Method & Type | Performing Activity & Location | Prior Years | FY 2020 Cost | FY 2020 Award Date | FY 2021 Cost | FY 2021 Award Date | FY 2022 Base Cost | FY 2022 Base Award Date | FY 2022 OCO Cost | FY 2022 OCO Award Date | FY 2022 Total Cost | Cost To Complete | Total Cost | Target Value of Contract |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FFRDC | RO | Aerospace Corporation : El Segundo, CA | - | 4.319 | Oct 2019 | - | | - | | - | | - | - | - | - |
| A&AS | Various | Various : Various | - | 21.466 | Feb 2020 | - | | - | | - | | - | - | - | - |
| Other Support | Various | Various : Various | - | 3.198 | Oct 2019 | - | | - | | - | | - | - | - | - |
| | | **Subtotal** | - | 28.983 | | - | | - | | - | | - | - | - | N/A |

| | Prior Years | FY 2020 | | FY 2021 | | FY 2022 Base | | FY 2022 OCO | | FY 2022 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Project Cost Totals** | - | 156.232 | | 0.000 | | - | | - | | - | - | - | N/A |

**Remarks**

| Exhibit R-4, RDT&E Schedule Profile: PB 2022 Air Force | | Date: May 2021 |
|---|---|---|
| **Appropriation/Budget Activity**<br>3600 / 5 | **R-1 Program Element (Number/Name)**<br>PE 1206442F / *Next Generation OPIR* | **Project (Number/Name)**<br>657106 / *Next-Gen OPIR Ground* |



| Exhibit R-4A, RDT&E Schedule Details: PB 2022 Air Force | | Date: May 2021 |
|---|---|---|
| **Appropriation/Budget Activity**<br>3600 / 5 | **R-1 Program Element (Number/Name)**<br>PE 1206442F / *Next Generation OPIR* | **Project (Number/Name)**<br>657106 / *Next-Gen OPIR Ground* |

## Schedule Details

| | Start | | End | |
|---|---|---|---|---|
| **Events by Sub Project** | **Quarter** | **Year** | **Quarter** | **Year** |
| ***FORGE - EGS/C2*** | | | | |
| SBIRS HEO 1 & 2 Development | 1 | 2020 | 2 | 2020 |
| 1 SBIRS GEO on EGS | 3 | 2020 | 4 | 2020 |
| ***FORGE - MDP*** | | | | |
| Competitive Prototype Framework Development | 1 | 2020 | 3 | 2020 |
| Competitive Prototype Applications Provider | 4 | 2020 | 4 | 2020 |
| Follow-on Prototype Framework Development | 4 | 2020 | 4 | 2020 |
| Next Gen Polar Development | 4 | 2020 | 4 | 2020 |
| ***FORGE - NIO (Risk Reduction Option)*** | | | | |
| NIO Development | 1 | 2020 | 4 | 2020 |
| ***FORGE - RGS*** | | | | |
| RGS Development | 4 | 2020 | 4 | 2020 |

| Exhibit R-2A, RDT&E Project Justification: PB 2022 Air Force | | | Date: May 2021 |
|---|---|---|---|
| Appropriation/Budget Activity<br>3600 / 5 | R-1 Program Element (Number/Name)<br>PE 1206442F / *Next Generation OPIR* | Project (Number/Name)<br>657120 / *Next-Gen OPIR Space, Block 0 GEO* | |

| COST ($ in Millions) | Prior Years | FY 2020 | FY 2021 | FY 2022 Base | FY 2022 OCO | FY 2022 Total | FY 2023 | FY 2024 | FY 2025 | FY 2026 | Cost To Complete | Total Cost |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 657120: *Next-Gen OPIR Space, Block 0 GEO* | - | 1,009.270 | 0.000 | 0.000 | 0.000 | 0.000 | - | - | - | - | - | - |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |

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

In FY 2021, PE 1206442F, Next Generation OPIR efforts were transferred to Appropriation 3620, Research, Development, Test & Evaluation, Space Force, PE 1206442SF, Next Generation OPIR from Appropriation 3600, Budget Activity 05 due to the creation of a new Appropriation for Space Force.

Next-Generation Overhead Persistent Infrared (Next-Gen OPIR) Space Block 0 Geosynchronous Earth Orbit (GEO) (Project 657120): The primary mission is to provide initial missile warning of a ballistic missile attack on the US, deployed forces and allies. The Next-Gen OPIR GEO (NGG) missile warning satellites enhance detection and improve reporting of intercontinental ballistic missile launches, submarine ballistic missile launches, and tactical ballistic missile launches. Development consists of new payloads in a highly resilient bus, providing real-time persistent global infrared coverage to meet validated Joint Requirements Oversight Council (JROC) requirements on current and future space domain demands.

The Program Office intends to acquire the NGG capability in two contract actions. Phase 1 awarded in August 2018 encompasses requirements analysis, design/ development, critical path flight hardware procurement, and risk reduction efforts leading to a System Critical Design Review (CDR). Phase 2 will be awarded in FY 2021 for the manufacturing, assembly, system integration and test, launch, and early on-orbit test through operational acceptance of NGG satellites 1-3.

| B. Accomplishments/Planned Programs ($ in Millions) | FY 2020 | FY 2021 | FY 2022 Base | FY 2022 OCO | FY 2022 Total |
|---|---|---|---|---|---|
| ***Title:*** Next-Gen OPIR Space, Block 0 GEO | 934.270 | 0.000 | 0.000 | - | 0.000 |
| ***Description:*** Development of the Next-Gen OPIR GEO missile warning satellites with a proven bus, new hardened sensors, and auxiliary payloads for increased resilience. The space segment for GEO missile warning satellites consist of a resilient architecture providing real time persistent global equatorial infrared coverage. The first GEO satellite is required in FY 2025.<br>***FY 2021 Plans:***<br>N/A<br>***FY 2022 Base Plans:***<br>N/A | | | | | |
| **Accomplishments/Planned Programs Subtotals** | 934.270 | 0.000 | 0.000 | - | 0.000 |

| Exhibit R-2A, RDT&E Project Justification: PB 2022 Air Force | | Date: May 2021 |
|---|---|---|
| **Appropriation/Budget Activity**<br>3600 / 5 | **R-1 Program Element (Number/Name)**<br>PE 1206442F / *Next Generation OPIR* | **Project (Number/Name)**<br>657120 / *Next-Gen OPIR Space, Block 0 GEO* |

| | FY 2020 | FY 2021 |
|---|---|---|
| ***Congressional Add:*** Congressional Add | 75.000 | - |
| ***FY 2020 Accomplishments:*** FY 2020 Congressional Add of $75M supports Block 0 GEO effort to deliver first Satellite Vehicle by 2025. Specific efforts are provided in Next-Gen OPIR Space, Block 0 GEO Major Thrust. | | |
| **Congressional Adds Subtotals** | 75.000 | - |

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

N/A

**Remarks**

**D. Acquisition Strategy**

The Space Force intends to acquire Next-Gen systems in block developments to deliver the required constellation. The first block, Block 0, consists of 3 Next-Gen GEO and 2 Next-Gen Polar satellites. The Next-Gen OPIR Space program has been declared a Section 804 Rapid Prototype effort under the 2016 National Defense Authorization Act (NDAA). The first GEO satellite is required by FY 2025 and the first Polar satellite is required in FY 2027. All five Block 0 satellites need to be on orbit by FY 2029. The program office awarded two sole source contracts (one to a GEO prime and one to a Polar prime) under the authority of two Justification & Authorization documents. Next-Gen GEO Phase 1 was awarded in FY 2018, encompassing requirements analysis, design/development, critical path flight hardware procurement, and risk reduction efforts leading to a System Critical Design Review for SV #1. Next-Gen GEO Phase 2 will be awarded in FY 2021 as a modification to the Phase 1 contract. This will include material buys for SV #2 and #3, as well as complete the manufacturing, assembly, system integration and test, launch, and early on-orbit test through the delivery of GEOs 1-3 for operational acceptance of each space vehicle. The Space Force plans to acquire subsequent blocks in a competitive environment. The Block 1 satellites will be based on the Missile Warning and Missile Defense OPIR Capability Development Document (CDD), validated by the Joint Requirements Oversight Council (JROC) in May 2019. Funding in execution years will be realigned within the Next-Gen OPIR program element to respond to execution requirements.

| Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Air Force | | Date: May 2021 |
|---|---|---|
| **Appropriation/Budget Activity**<br>3600 / 5 | **R-1 Program Element (Number/Name)**<br>PE 1206442F / *Next Generation OPIR* | **Project (Number/Name)**<br>657120 / *Next-Gen OPIR Space, Block 0 GEO* |

**Product Development ($ in Millions)**

| Cost Category Item | Contract Method & Type | Performing Activity & Location | Prior Years | FY 2020 Cost | FY 2020 Award Date | FY 2021 Cost | FY 2021 Award Date | FY 2022 Base Cost | FY 2022 Base Award Date | FY 2022 OCO Cost | FY 2022 OCO Award Date | FY 2022 Total Cost | Cost To Complete | Total Cost | Target Value of Contract |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Next-Gen OPIR Space, Block 0 GEO | SS/CPIF | Lockheed Martin : Sunnyvale, CA | - | 974.849 | Oct 2019 | - | | - | | - | | - | - | - | - |
| Enterprise SE&I | C/CPAF | Engility Corp. : El Segundo, CA | - | 8.471 | Nov 2019 | - | | - | | - | | - | - | - | - |
| Technical Mission Analysis | RO | Aerospace Corp. : El Segundo, CA | - | 10.571 | Oct 2019 | - | | - | | - | | - | - | - | - |
| | | **Subtotal** | - | 993.891 | | - | | - | | - | | - | - | - | N/A |

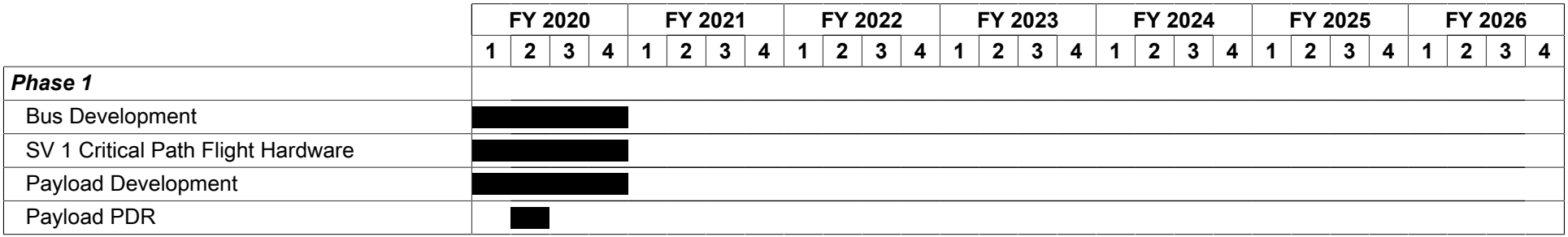
**Management Services ($ in Millions)**

| Cost Category Item | Contract Method & Type | Performing Activity & Location | Prior Years | FY 2020 Cost | FY 2020 Award Date | FY 2021 Cost | FY 2021 Award Date | FY 2022 Base Cost | FY 2022 Base Award Date | FY 2022 OCO Cost | FY 2022 OCO Award Date | FY 2022 Total Cost | Cost To Complete | Total Cost | Target Value of Contract |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FFRDC | RO | Aerospace Corp. : El Segundo, CA | - | 7.520 | Oct 2019 | - | | - | | - | | - | - | - | - |
| A&AS | Various | Various : Various | - | 7.663 | Feb 2020 | - | | - | | - | | - | - | - | - |
| Other Support | Various | Various : Various | - | 0.196 | Oct 2019 | - | | - | | - | | - | - | - | - |
| | | **Subtotal** | - | 15.379 | | - | | - | | - | | - | - | - | N/A |

| | Prior Years | FY 2020 | | FY 2021 | | FY 2022 Base | | FY 2022 OCO | | FY 2022 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Project Cost Totals** | - | 1,009.270 | | 0.000 | | - | | - | | - | - | - | N/A |

**Remarks**

| Exhibit R-4, RDT&E Schedule Profile: PB 2022 Air Force | | Date: May 2021 |
|---|---|---|
| **Appropriation/Budget Activity**<br>3600 / 5 | **R-1 Program Element (Number/Name)**<br>PE 1206442F / *Next Generation OPIR* | **Project (Number/Name)**<br>657120 / *Next-Gen OPIR Space, Block 0 GEO* |



| Exhibit R-4A, RDT&E Schedule Details: PB 2022 Air Force | | Date: May 2021 |
|---|---|---|
| **Appropriation/Budget Activity**<br>3600 / 5 | **R-1 Program Element (Number/Name)**<br>PE 1206442F / *Next Generation OPIR* | **Project (Number/Name)**<br>657120 / *Next-Gen OPIR Space, Block 0 GEO* |

## Schedule Details

| | Start | | End | |
|---|---|---|---|---|
| **Events by Sub Project** | **Quarter** | **Year** | **Quarter** | **Year** |
| ***Phase 1*** | | | | |
| Bus Development | 1 | 2020 | 4 | 2020 |
| SV 1 Critical Path Flight Hardware | 1 | 2020 | 4 | 2020 |
| Payload Development | 1 | 2020 | 4 | 2020 |
| Payload PDR | 2 | 2020 | 2 | 2020 |

**Note**

Next-Gen OPIR Space, Block 0 GEO efforts continue past 2020.

| Exhibit R-2A, RDT&E Project Justification: PB 2022 Air Force | | | Date: May 2021 |
|---|---|---|---|
| Appropriation/Budget Activity<br>3600 / 5 | R-1 Program Element (Number/Name)<br>PE 1206442F / *Next Generation OPIR* | Project (Number/Name)<br>657121 / *Next-Gen OPIR Space, Block 0 Polar* | |

| COST ($ in Millions) | Prior Years | FY 2020 | FY 2021 | FY 2022 Base | FY 2022 OCO | FY 2022 Total | FY 2023 | FY 2024 | FY 2025 | FY 2026 | Cost To Complete | Total Cost |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 657121: *Next-Gen OPIR Space, Block 0 Polar* | - | 103.059 | 0.000 | 0.000 | 0.000 | 0.000 | - | - | - | - | - | - |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |

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

In FY 2021, PE 1206442F, Next Generation OPIR efforts were transferred to Appropriation 3620, Research, Development, Test & Evaluation, Space Force, PE 1206442SF, Next Generation OPIR from Appropriation 3600, Budget Activity 05 due to the creation of a new Appropriation for Space Force.

Next-Generation Overhead Persistent Infrared (OPIR) Space, Block 0 Polar (NGP) (Project 657121): The primary mission is to provide initial missile warning of a ballistic missile attack on the US, its deployed forces, and its allies. Next-Gen OPIR Space enhances detection and improves reporting of intercontinental ballistic missile launches, submarine launched ballistic missile launches, and tactical ballistic missile launches. Development consists of the Next-Gen OPIR Polar missile warning satellites with new payloads in a highly resilient bus, providing real-time persistent global infrared coverage to meet validated Joint Requirements Oversight Council (JROC) requirements on current and future space domain demands.

The Program Office is acquiring the NGP capability through three contract phases. Phase 0 awarded in June 2018, encompassed system requirements analysis and risk reduction efforts, which led to a March 2020 System Requirements Review (SRR). Phase 1 awarded May 2020, encompasses design and development, critical path flight hardware procurement, and risk reduction efforts leading to a System Critical Design Review (CDR) in FY 2025. Phase 2 will be awarded in FY 2025 for the manufacturing, assembly, integration and test, and early on orbit test, through operational acceptance of NGP satellites 1 and 2.

| B. Accomplishments/Planned Programs ($ in Millions) | FY 2020 | FY 2021 | FY 2022 Base | FY 2022 OCO | FY 2022 Total |
|---|---|---|---|---|---|
| ***Title:*** Next-Gen OPIR Space, Block 0 Polar | 103.059 | 0.000 | 0.000 | 0.000 | 0.000 |
| ***Description:*** Development of the Next-Gen OPIR Polar missile warning satellites using a proven bus with modifications, auxiliary payloads for improved resiliency, and new hardened sensors. The Polar space segment will consist of two Next-Gen OPIR Polar satellites in a resilient architecture, providing real time persistent infrared coverage of the northern hemisphere. | | | | | |
| ***FY 2021 Plans:***<br>N/A | | | | | |
| ***FY 2022 Base Plans:***<br>N/A | | | | | |
| ***FY 2022 OCO Plans:*** | | | | | |

| Exhibit R-2A, RDT&E Project Justification: PB 2022 Air Force | | Date: May 2021 |
|---|---|---|
| **Appropriation/Budget Activity**<br>3600 / 5 | **R-1 Program Element (Number/Name)**<br>PE 1206442F / *Next Generation OPIR* | **Project (Number/Name)**<br>657121 / *Next-Gen OPIR Space, Block 0 Polar* |

| B. Accomplishments/Planned Programs ($ in Millions) | FY 2020 | FY 2021 | FY 2022 Base | FY 2022 OCO | FY 2022 Total |
|---|---|---|---|---|---|
| N/A<br>***FY 2021 to FY 2022 Increase/Decrease Statement:***<br>N/A | | | | | |
| **Accomplishments/Planned Programs Subtotals** | 103.059 | 0.000 | 0.000 | 0.000 | 0.000 |

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

N/A

**Remarks**

**D. Acquisition Strategy**

The Space Force intends to acquire Next-Gen systems in block developments to deliver the required constellation. The first block, Block 0, consists of three Next-Gen Geosynchronous Earth Orbit (GEO) and two Next-Gen Polar satellites. The Next-Gen OPIR Space program has been declared a Section 804 Rapid Prototype effort under the 2016 National Defense Authorization Act (NDAA). The first GEO satellite is required by FY 2025, and the first Polar satellite is required in FY 2027. The program office awarded two sole source contracts (one to a GEO prime and one to a Polar prime) under the authority of two Justification & Authorization documents. The Next-Gen Polar Phase 0 was awarded in FY 2018, consisting of requirements development and culminated in a March 2020 SRR. Phase 1 was awarded May 2020, encompassing requirements review, design, development, critical path flight hardware procurement, and risk reduction efforts leads to a System CDR in FY 2025 for Next-Gen Polar Satellite Vehicles (SV) 1 and 2. Phase 2 will be awarded in FY 2025, encompassing build, integration, test, launch, and transition to operations for Next-Gen Polar SVs 1 and 2. The Space Force plans to acquire subsequent blocks in a competitive environment. The Block 1 satellites will be based on the Missile Warning and Missile Defense OPIR Capability Development Document (CDD), validated by the Joint Requirements Oversight Council (JROC) in May 2019.

| Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Air Force | | Date: May 2021 |
|---|---|---|
| **Appropriation/Budget Activity**<br>3600 / 5 | **R-1 Program Element (Number/Name)**<br>PE 1206442F / *Next Generation OPIR* | **Project (Number/Name)**<br>657121 / *Next-Gen OPIR Space, Block 0 Polar* |

**Product Development ($ in Millions)**

| Cost Category Item | Contract Method & Type | Performing Activity & Location | Prior Years | FY 2020 Cost | FY 2020 Award Date | FY 2021 Cost | FY 2021 Award Date | FY 2022 Base Cost | FY 2022 Base Award Date | FY 2022 OCO Cost | FY 2022 OCO Award Date | FY 2022 Total Cost | Cost To Complete | Total Cost | Target Value of Contract |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Next-Gen OPIR Space, Block 0 Polar | SS/CPAF | Northrop Grumman : Redondo Beach, CA | - | 87.603 | Oct 2019 | - | | - | | - | | - | - | - | - |
| SE&I | C/CPAF | Engility Corp. : El Segundo, CA | - | 2.026 | Nov 2019 | - | | - | | - | | - | - | - | - |
| Technical Mission Analysis | RO | Aerospace Corp. : El Segundo, CA | - | 3.863 | Oct 2019 | - | | - | | - | | - | - | - | - |
| | | **Subtotal** | - | 93.492 | | - | | - | | - | | - | - | - | N/A |

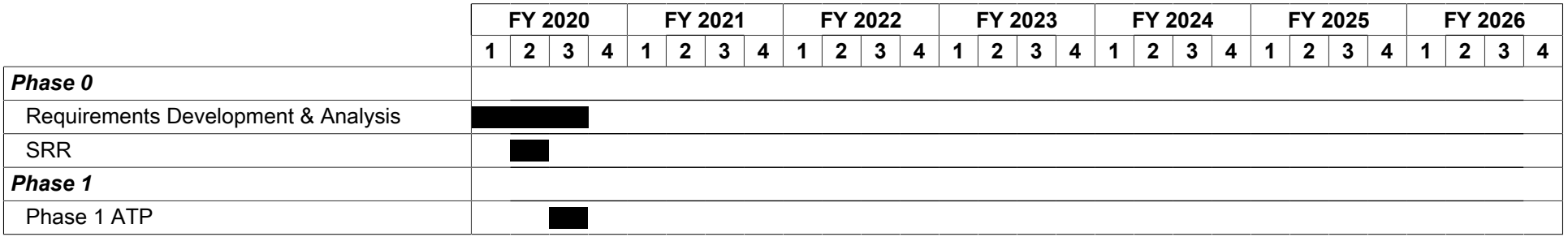
**Management Services ($ in Millions)**

| Cost Category Item | Contract Method & Type | Performing Activity & Location | Prior Years | FY 2020 Cost | FY 2020 Award Date | FY 2021 Cost | FY 2021 Award Date | FY 2022 Base Cost | FY 2022 Base Award Date | FY 2022 OCO Cost | FY 2022 OCO Award Date | FY 2022 Total Cost | Cost To Complete | Total Cost | Target Value of Contract |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FFRDC | RO | Aerospace Corp. : El Segundo, CA | - | 7.645 | Oct 2019 | - | | - | | - | | - | - | - | - |
| A&AS | Various | Various : Various | - | 1.539 | Feb 2020 | - | | - | | - | | - | - | - | - |
| Other Support | Various | Various : Various | - | 0.383 | Oct 2019 | - | | - | | - | | - | - | - | - |
| | | **Subtotal** | - | 9.567 | | - | | - | | - | | - | - | - | N/A |

| | Prior Years | FY 2020 | | FY 2021 | | FY 2022 Base | | FY 2022 OCO | | FY 2022 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Project Cost Totals** | - | 103.059 | | 0.000 | | - | | - | | - | - | - | N/A |

**Remarks**

| Exhibit R-4, RDT&E Schedule Profile: PB 2022 Air Force | | Date: May 2021 |
|---|---|---|
| **Appropriation/Budget Activity**<br>3600 / 5 | **R-1 Program Element (Number/Name)**<br>PE 1206442F / *Next Generation OPIR* | **Project (Number/Name)**<br>657121 / *Next-Gen OPIR Space, Block 0 Polar* |



| Exhibit R-4A, RDT&E Schedule Details: PB 2022 Air Force | | Date: May 2021 |
|---|---|---|
| **Appropriation/Budget Activity**<br>3600 / 5 | **R-1 Program Element (Number/Name)**<br>PE 1206442F / *Next Generation OPIR* | **Project (Number/Name)**<br>657121 / *Next-Gen OPIR Space, Block 0 Polar* |

## Schedule Details

| | Start | | End | |
|---|---|---|---|---|
| **Events by Sub Project** | **Quarter** | **Year** | **Quarter** | **Year** |
| ***Phase 0*** | | | | |
| Requirements Development & Analysis | 1 | 2020 | 3 | 2020 |
| SRR | 2 | 2020 | 2 | 2020 |
| ***Phase 1*** | | | | |
| Phase 1 ATP | 3 | 2020 | 3 | 2020 |

**Note**

Next-Gen OPIR Polar efforts continue past 2020