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Exhibit R-2, RDT&E Budget Item Justification: PB 2025 Air Force **Date:** March 2024

Appropriation/Budget Activity 3620F: <i>Research, Development, Test & Evaluation, Space Force I BA 8: Software and Digital Technology Pilot Programs</i>	R-1 Program Element (Number/Name) PE 1208248SF / <i>Space Domain Awareness/Planning/Tasking SW</i>
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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	-	191.980	122.326	157.265	0.000	157.265	138.192	131.958	136.715	139.410	Continuing	Continuing
68A035: <i>SSA/BMC2</i>	-	191.980	122.326	157.265	0.000	157.265	138.192	131.958	136.715	139.410	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The FY 2018 National Defense Authorization Act (Sections 873/874) directed the Office of the Secretary of Defense (OSD) to streamline software development. The Space Domain Awareness (SDA)/ Planning/ Tasking software program is an OSD pilot initiative in which all lifecycle funding is tracked under Budget Activity 8 (BA 8), Software and Digital Technology Pilot Programs, beginning in FY 2021. Pilot programs enable the execution of modern software development practices encompassing development, procurement, modification and maintenance activities within a single RDT&E appropriation in this PE.

In FY 2023, PE 1203614SF, JSpOC Mission System, Project 68A035 SSA/BMC2 efforts were transferred to PE 1208248SF, Enterprise Space BMC2, Project 68A035 SSA/BMC2 for SDA planning and tasking software program transparency.

The Space Force is developing a SDA planning and tasking capability for the Combined Force Space Component Command (CFSCC) and the Joint Task Force - Space Defense (JTF-SD). The SDA Planning and Tasking software program provides a collaborative environment that will enhance and modernize SDA and Battle Management Command and Control (BMC2) capabilities; create decision-relevant views of the space and multi-domain environment; rapidly detect, track and characterize objects of interest; identify / exploit traditional and non-traditional sources; perform space threat analysis; and enable efficient distribution of data across the Space Surveillance Network (SSN). The program maintains enterprise infrastructure, platform and data services, and develops mission applications to enable responsive, resilient operational-level SDA Planning and Tasking capabilities for the National Space Defense Center (NSDC), Combined Space Operations Center (CSpOC), 18th Space Defense Squadron (SDS) and other Command and Control (C2) centers. Employing an agile-based Rapid Delivery Framework with a 90-day Program Increment (PI) construct fosters a collaborative and integrated environment for the community to effectively plan and deliver C2 capabilities. The enterprise-wide system provides a common government infrastructure and processes to allow C2 capabilities at USSF operational Deltas to rapidly address the evolving and dynamic threat. The program also identifies shared/common platform, infrastructure, and data layer solutions to support open frameworks and architectures across the enterprise ground portfolio. Funding includes technical studies, development, experimentation, integration and related support costs.

In FY 2023 this Program Element also includes effort for the Cyber Halo Innovation Research Program (CHIRP) based on a Congressional add. CHIRP will continue collaboration between Space Systems Command (SSC), universities/colleges, and industry with a mission to drive innovation and to create a pipeline of talent in cyber security with the specialized expertise to protect mission-critical, space-borne assets from cyber threats by adversaries.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program elements 1206392SF and 1206398SF.

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This program is in Budget Activity 8, Software and Digital Technology Pilot Program because this budget activity includes funding provided for expenses necessary for agile development, test and evaluation, procurement, production and modification, and the operation and maintenance of these programs.

B. Program Change Summary (\$ in Millions)	FY 2023	FY 2024	FY 2025 Base	FY 2025 OCO	FY 2025 Total
Previous President's Budget	155.553	122.326	123.422	0.000	123.422
Current President's Budget	191.980	122.326	157.265	0.000	157.265
Total Adjustments	36.427	0.000	33.843	0.000	33.843
• 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	41.999	0.000			
• SBIR/STTR Transfer	-5.572	0.000			
• Other Adjustments	0.000	0.000	33.843	0.000	33.843

Congressional Add Details (\$ in Millions, and Includes General Reductions)

Project: 68A035: *SSA/BMC2*

Congressional Add: *Cyber Halo Innovation Research Program (CHIRP) Development*

Congressional Add Subtotals for Project: 68A035

Congressional Add Totals for all Projects

	FY 2023	FY 2024
Congressional Add: <i>Cyber Halo Innovation Research Program (CHIRP) Development</i>	4.820	0.000
Congressional Add Subtotals for Project: 68A035	4.820	0.000
Congressional Add Totals for all Projects	4.820	0.000

Change Summary Explanation

FY 2023: +32.000M Above Threshold Reprogramming (ATR) and 9.999M Below Threshold Reprogramming (BTR) to fund the development and associated 24/7 support of the Advanced Tracking and Launch Analysis System (ATLAS) and the Iris bi-directional messaging interface system.

FY 2025: +30.728M for SDA Planning and Tasking to continue development and fielding of enterprise SDA C2 capability in support of Space Operations Command (SpOC). +3.115M for additional SDA C2 application development and inflation.

C. Accomplishments/Planned Programs (\$ in Millions)

	FY 2023	FY 2024	FY 2025
Title: SDA Planning and Tasking Development	150.528	85.738	111.977
Description: This program delivers a robust and responsive SDA and BMC2 capability to meet emerging threats. The program will deliver capability for decision makers trying to prevent a conflict from extending to space, or winning it if it does. Capabilities and associated infrastructure include, but are not limited to, the following: SDA, Indications & Warning (I&W), Planning & Tasking,			

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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2023	FY 2024	FY 2025
<p>Theater & Coalition Support, Transmit/Receive, Space Control, Tactical Operations and Common Data Management Layer, Platforms and Infrastructure; and Cyber and Threat Warning. The program maintains foundational DevSecOps enablers such as, but not limited to, Data as a Service, Zero Trust Architecture, Platform Support, Continuous Improvement/Continuous Deployment (CI/CD) toolchain, and infrastructure and inherent sustainment efforts that are an integral part of the agile software development process. Other activities include dedicated Systems Engineering & Integration (SE&I), Test & Evaluation (T&E), Model Based Systems Engineering (MBSE) and prototype Validation & Verification to support these efforts.</p> <p>FY 2024 Plans: Continue to plan and develop a message standard compliant open architecture to support both the SDA and BMC2 missions to meet dynamic emerging threats. The enterprise architecture and platform/infrastructure will modernize and deliver new capabilities in the NSDC, CSpOC, and other operations centers supporting SDA, BMC2, Theater Support, Battle Space Awareness, and Planning & Tasking & Electronic Warfare tools. Enhance the scalability, performance, and reliability of the platform. These requirements will include design, enablement services, security, services necessary for authority to operate (ATO), engineering, network and platform architecture, reliability testing, prototyping efforts to increase platform, communications, and network capabilities, data science, data engineering, reinforcement learning, machine learning, artificial intelligence, product management services. Continue development, system engineering and contracting efforts to integrate best in breed commercial, contractor, and government applications through the release of multiple incremental software capability in program increments 20-23 drops throughout FY 2024. FY 2024 funding will allow the program to implement system resiliency, cybersecurity, and situational awareness necessary to operate in the contested space domain, conduct studies to identify shared platform, infrastructure, and data layer solutions that will inform future concepts and activities in support of enterprise open frameworks and architectures, as well as risk reduction activities, technical analysis for common platform, infrastructure and data layers for ground and communication systems to build upon. 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, etc.</p> <p>FY 2025 Plans: Continue to plan and develop a message standard compliant open architecture to support both the SDA and BMC2 missions to meet dynamic emerging threats. Continue product support and enhancements for operationally accepted applications, workflows, and capabilities. The enterprise architecture and platform/infrastructure will modernize and deliver new capabilities in the NSDC, CSpOC, and other operations centers supporting SDA, BMC2, Theater Support, Battle Space Awareness, and Planning & Tasking & Electronic Warfare tools. Enhance the scalability, performance, and reliability of the platform. These requirements will include design, enablement services, security, services necessary for ATO, engineering, network and platform architecture, reliability testing, prototyping efforts to increase platform, communications, network capabilities, data science, data engineering, reinforcement learning, machine learning, artificial intelligence and product management services. Expand SDA software</p>			

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C. Accomplishments/Planned Programs (\$ in Millions)		FY 2023	FY 2024	FY 2025
<p>development, integration, deployment, and testing for replacement of joint legacy software systems and establish machine-to-machine interfaces for SDA event processing. Ramp up SDA C2 related activity to develop and deploy enterprise capabilities previously deferred by SSC, SpOC, and US Space Command agreement as the program prioritized efforts related to Space Defense Operations Center (SPADOC) decommissioning. Continue development, system engineering and contracting efforts to integrate best in breed commercial, contractor, and government applications through the release of multiple incremental software capability in program increments 24-27 drops throughout FY 2025.</p> <p>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.</p> <p>FY 2024 to FY 2025 Increase/Decrease Statement: FY 2025 increase due to expanded effort to replace joint legacy software systems and establish machine-to-machine interfaces for SDA event processing.</p>				
<p>Title: SDA Planning and Tasking Procurement</p> <p>Description: Provides hardware, software, technical documents, integration, testing and associated support to modernize and enhance SDA, Planning, and Tasking infrastructure for operations centers.</p> <p>FY 2024 Plans: SSC will procure Commercial and Government Off The Shelf (COTS/GOTS) hardware and software necessary to host and field critical applications as well as refresh existing hardware in use at Space Force locations. Activities may include but are not limited to sustainment-related program office support, studies, technical analysis, etc.</p> <p>FY 2025 Plans: SSC will procure COTS/GOTS hardware and software necessary to host and field critical applications as well as refresh existing hardware in use at Space Force locations. Implement equipment and licenses to improve system resiliency, cybersecurity, and situational awareness necessary to operate in the contested space domain, conduct studies to identify shared platform, infrastructure, and data layer solutions that will inform future concepts and activities in support of enterprise open frameworks and architectures, as well as risk reduction activities, technical analysis for common platform, infrastructure, and data layers for ground and communication systems to build upon.</p> <p>FY 2024 to FY 2025 Increase/Decrease Statement: FY 2025 increase due to purchase of required hardware, software, and licenses for SDA C2.</p>		0.000	2.436	3.146
<p>Title: SDA Planning and Tasking Sustainment</p>		36.632	34.152	42.142

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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2023	FY 2024	FY 2025
<p>Description: The program maintains existing capability for the CSpOC, NSDC and other C2 centers. These tasks include maintaining the COTS software database, removing and canceling decommissioned systems and unused tools, adding new tools required for ongoing support of the system, maintaining data support systems, and maintaining day to day software operations which continuously ensures and optimizes reliability, security, resiliency, availability, flexibility and scalability of the warfighter tools.</p> <p>FY 2024 Plans: SSC will continue to fund government software centers, laboratories, and contractors for supporting the update, maintenance and modification, integration, configuration management and cybersecurity requirements of infrastructure and legacy software associated hardware. The program maintains foundational DevSecOps enablers such as, but not limited to, Data as a Service, Platform Support, Continuous Improvement/Continuous Deployment (CI/CD) toolchain, and infrastructure and inherent sustainment efforts that are an integral part of the agile software development process. 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, etc.</p> <p>FY 2025 Plans: Continue to fund government software centers, laboratories, contractors for supporting the update, maintenance and modification, integration, configuration management and cybersecurity requirements of infrastructure, legacy software, associated hardware, operationally accepted software applications, capabilities, and workflows associated with SDA Planning and Tasking program. Expand fielding of Platform, Infrastructure, and Data as a Service to operations sites. This includes associated connectivity, enhancements, on-site manpower, and training required to enable simultaneous operations across all nodes. The program maintains foundational DevSecOps enablers such as, but not limited to, Data as a Service, Platform Support, continuous Improvement/Continuous Deployment (CI/CD) toolchain, and infrastructure and inherent sustainment efforts that are an integral part of the agile software development process.</p> <p>FY 2024 to FY 2025 Increase/Decrease Statement: FY 2025 increase due to additional sustainment requirements for DevSecOps infrastructure, tools and product support of developed, delivered and operational capabilities.</p>			
Accomplishments/Planned Programs Subtotals	187.160	122.326	157.265

	FY 2023	FY 2024
Congressional Add: Cyber Halo Innovation Research Program (CHIRP) Development	4.820	0.000

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	FY 2023	FY 2024
FY 2023 Accomplishments: Funds will be used for continued collaboration between SSC, universities/colleges, and industry with a mission to drive innovation and to create a pipeline of talent in cyber security to fill positions at SSC that includes but is not limited to: network security, cyber analysis, incident response, cyber policy, data architecture, continuity of operations, data analytics, machine learning, artificial intelligence, and secure software.		
FY 2024 Plans: N/A		
Congressional Adds Subtotals	4.820	0.000

D. Other Program Funding Summary (\$ in Millions)

N/A

Remarks

E. Acquisition Strategy

The Space Force is employing agile software development practices such as flexible requirements, frequent user interaction, and rapid delivery and deficiency retirement. The program acquires tools and capabilities through an agile-based Rapid Delivery Framework that delivers and sustains new features and capabilities through a CI/CD pipeline with 90-day Program Increments. This strategy focuses on rapidly delivering capability to warfighters and leveraging commercial, industry and government partners. Currently there are multiple contractors performing on competitively-awarded and sole-source contracts with no single prime contractor responsible for the entire ecosystem.

SDA Planning and Tasking program entered the planning phase of the Software Acquisition Pathway in May 2021 in accordance with DoD Instruction 5000.87 and is continuing to execute as an OSD DEVSECOPS pathfinder program.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2025 Air Force **Date:** March 2024

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Product Development (\$ in Millions)				FY 2023		FY 2024		FY 2025 Base		FY 2025 OCO		FY 2025 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
SDA Planning and Tasking Applications Development	Various	Various : Various	-	107.919	Nov 2022	64.405	Nov 2023	61.065	Nov 2024	-		61.065	Continuing	Continuing	-
SDA Planning and Tasking Platform Development	Various	Various : Various	-	25.655	Nov 2022	-		26.609	Nov 2024	-		26.609	Continuing	Continuing	-
SDA Planning and Tasking Platform Sustainment	Various	Various : Various	-	15.723	Dec 2022	10.502	Dec 2023	18.342	Dec 2024	-		18.342	Continuing	Continuing	-
SDA Planning and Tasking Infrastructure Sustainment	Various	Various : Various	-	1.328	Nov 2022	3.600	Nov 2023	3.600	Nov 2024	-		3.600	Continuing	Continuing	-
SDA Planning and Tasking Enterprise Systems Engineering & Integration	Various	Various : Various	-	1.315	Nov 2022	3.595	Nov 2023	3.000	Nov 2024	-		3.000	Continuing	Continuing	-
SDA Planning and Tasking Data as a Service Sustainment	Various	Various : Various	-	19.581	Nov 2022	20.050	Nov 2023	20.200	Nov 2024	-		20.200	Continuing	Continuing	-
SDA Planning and Tasking Procurement	TBD	TBD : TBD	-	0.000	Mar 2023	2.436	Mar 2024	3.146	Mar 2025	-		3.146	Continuing	Continuing	-
SDA Planning and Tasking Technical Mission Analysis	RO	Aerospace : El Segundo, CA	-	1.892	Jan 2023	2.000	Jan 2024	1.000	Jan 2025	-		1.000	Continuing	Continuing	-
CHIRP	RO	PNNL : Richland, WA	-	4.820	Apr 2023	-		-		-		-	0.000	4.820	5.000
SBIR/STTR	Allot	TBD : TBD	-	0.000	Oct 2022	4.263	Oct 2023	5.662	Oct 2024	-		5.662	Continuing	Continuing	-
Subtotal			-	178.233		110.851		142.624		-		142.624	Continuing	Continuing	N/A

Test and Evaluation (\$ in Millions)				FY 2023		FY 2024		FY 2025 Base		FY 2025 OCO		FY 2025 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
SDA Planning and Tasking Test	Various	Various : Various	-	1.000	Dec 2022	1.600	Dec 2023	2.506	Dec 2024	-		2.506	Continuing	Continuing	-
Subtotal			-	1.000		1.600		2.506		-		2.506	Continuing	Continuing	N/A

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Exhibit R-4, RDT&E Schedule Profile: PB 2025 Air Force		Date: March 2024
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FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028				FY 2029			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

SDA Planning and Tasking	
Platform/Infrastructure Sustainment	
Platform Development	
Program Increment 16-19	
Program Increment 20-23	
Program Increment 24-27	
Program Increment 28-31	
Program Increment 32-35	
Program Increment 36-39	
Program Increment 40-43	
SDA Planning and Tasking Sustainment (maintain existing capability)	
SDA Planning and Tasking Data as a Service (DaaS)	
CHIRP	
Collaboration with PNNL	

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Exhibit R-4A, RDT&E Schedule Details: PB 2025 Air Force		Date: March 2024
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
SDA Planning and Tasking				
Platform/Infrastructure Sustainment	1	2023	4	2029
Platform Development	1	2025	4	2029
Program Increment 16-19	1	2023	4	2023
Program Increment 20-23	1	2024	4	2024
Program Increment 24-27	1	2025	4	2025
Program Increment 28-31	1	2026	4	2026
Program Increment 32-35	1	2027	4	2027
Program Increment 36-39	1	2028	4	2028
Program Increment 40-43	1	2029	4	2029
SDA Planning and Tasking Sustainment (maintain existing capability)	1	2023	4	2029
SDA Planning and Tasking Data as a Service (DaaS)	1	2023	4	2029
CHIRP				
Collaboration with PNNL	3	2023	4	2023