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 7: *Operational Systems Development*	**R-1 Program Element (Number/Name)** PE 1203940SF / *Space Situation Awareness Operations*

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	-	102.019	264.966	120.160	0.000	120.160	108.071	80.586	82.652	84.799	Continuing	Continuing
673940: *Space Data Fusion*	-	58.027	73.665	81.964	0.000	81.964	69.276	41.888	43.075	44.440	Continuing	Continuing
673941: *Unified Data Library (UDL)*	-	40.848	187.370	35.075	0.000	35.075	35.573	35.410	36.170	36.885	Continuing	Continuing
67A018: *SF Weather Services Research*	-	3.144	3.931	3.121	0.000	3.121	3.222	3.288	3.407	3.474	0.000	23.587

A. Mission Description and Budget Item Justification

Space Domain Awareness (SDA) is one of five core competencies of the Space Force and is the effective identification, characterization, and understanding of any factor, passive or active, associated with the space domain that could affect space operations and thereby impact the security, safety, economy, or environment of our nation. As the foundation for space control, SDA encompasses surveillance of all space objects and activities; detailed surveillance of specific space assets; monitoring space environmental conditions; monitoring cooperative space assets; gathering indications and warning on adversary space operations; and conducting integrated command, control, communications, processing, analysis, dissemination, and archiving activities.

This program fields, upgrades, operationalizes, operates, and maintains Space Force sensors and information/data integration capabilities within the SDA network while companion program element 1206425SF, Space Situational Awareness Systems, develops new network sensors and associated information integration capabilities across the network. Activities funded in this program (1203940SF) focus on surveillance of objects in earth orbit and beyond to aid tasks including satellite tracking; space object identification; tracking and cataloging; satellite attack warning; notification of satellite flyovers to U.S. forces; space treaty monitoring; and technical intelligence gathering. As a whole, this program upgrades, modifies, modernizes, operationalizes, fields, operates, and maintains sensors and information integration capabilities for an integrated, end-to-end SDA architecture that provides critical national security space solutions on tactical operational timelines.

The Space Data Fusion (SDF) project (673940) develops and/or upgrades SDA data/data exploitation capabilities, to include Global Sensor Watch (GSW), TAPOUT, and pre-planned product improvement efforts to operational SDA capability. GSW, in partnership with Australia's Department of Defense, provides an integrated, end-to-end, SDA tip & cue capability that implements a resilient architecture providing overlapping, assured, and viable surveillance options for executing event response, SDA data processing at multiple classification levels, and automated, worldwide, cross-sensor tipping & cueing. TAPOUT is a tactical SDA system which consists of a Hardware Layer, a Data Layer, and an Application layer to enable predictive threat warning in support of 18 SDS DET 1 mission.

The SDF project (673940) is supported by, and supports, the Joint Task Force Space Defense (JTF-SD) Commercial Operations (JCO) cell. The JCO's mission is to provide persistent and rapid SDA coverage to maximize decision making space and reduce reaction time in support of Protect & Defend missions. SDF commercial data buys beyond protect and defend missions support existing capabilities through improvements to architecture and system efficiency, cybersecurity, migration to cloud computing, building on artificial intelligence and machine learning (AI/ML) initiatives, and expanding agile software development, delivery, and integration practices.

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 7: *Operational Systems Development*	**R-1 Program Element (Number/Name)** PE 1203940SF / *Space Situation Awareness Operations*

The Unified Data Library project (673941) supports integration, exploitation, and delivery of data sources for command and control and battle management of space forces. UDL will continue to develop the library by on-boarding new data sets, directly connecting to SDA sensors, expanding data services, federating between enterprise data lakes, expanding defensive cyber operations capabilities, adding non-metric data to the SDA marketplace, continuing to expand local area network capability to share Space Surveillance Network (SSN) data in a cyber-secure manner, purchase commercial data and services to support USSPACECOM operations, allow optimized data flow for use of existing SDA capability and provide access to new commercial SDA innovations that will enable the broader SDA mission.

The SF Weather Services Research project (67A018) funds the operational development necessary to acquire, sustain, and modernize Air Force Weather Service (AFWS) capabilities in support of the 2022 National Defense Strategy. AFWS provides timely, accurate, resilient, and relevant environmental information to enable global battlespace situational awareness for Air Force (AF), Army, Special Operations Forces (SOF), Space Force (USSF), combatant commands, the Intelligence Community (IC), and other government agencies. AFWS provides climate impacts and assessments, as well as space and terrestrial weather sensing, forecasting, and weather analytic capabilities, at home station and deployed, in order to deliver critical environmental intelligence in support of decision makers to gain the asymmetric advantage during the full spectrum of air and space combat operations.

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

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

B. Program Change Summary ($ in Millions)	FY 2023	FY 2024	FY 2025 Base	FY 2025 OCO	FY 2025 Total
Previous President's Budget	90.678	264.966	145.957	0.000	145.957
Current President's Budget	102.019	264.966	120.160	0.000	120.160
Total Adjustments	11.341	0.000	-25.797	0.000	-25.797
• 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	14.500	0.000			
• SBIR/STTR Transfer	-3.159	0.000			
• Other Adjustments	0.000	0.000	-25.797	0.000	-25.797

Change Summary Explanation

FY 2023: +14.500M Above Threshold Reprogramming for EDA and -3.159M for SBIR/STTR

FY 2025: -25.797 for higher U.S. Space Force priorities.

Exhibit R-2A, RDT&E Project Justification: PB 2025 Air Force											Date: March 2024	
Appropriation/Budget Activity 3620F / 7					R-1 Program Element (Number/Name) PE 1203940SF / *Space Situation Awarenes s Operations*				Project (Number/Name) 673940 / *Space Data Fusion*			
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**
673940: *Space Data Fusion*	-	58.027	73.665	81.964	0.000	81.964	69.276	41.888	43.075	44.440	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Space Data Fusion project (673940) develops and/or upgrades SDA data/data exploitation capabilities, to include Global Sensor Watch (GSW), TAPOUT, and provides pre-planned product improvement efforts to operational SDA capability.

GSW provides an integrated, end-to-end, SDA tip & cue capability that implements a resilient architecture providing overlapping, assured, and viable surveillance options for executing event response, SDA data processing at multiple classification levels, and automated, worldwide, cross-sensor tipping & cueing. Efforts directly enable support for Space Command & Control (C2) by developing & deploying advanced software algorithms to identify, acquire, characterize, and maintain custody of both space objects of interest and new foreign launches; developing & deploying advanced data analytics, machine learning, & artificial intelligence capabilities for rapid indication & warning; enhancing space environmental monitoring solutions; integrating and optimizing access to United States Government (USG), coalition, commercial, academic, intelligence community (IC) & Missile Defense Agency sensors to better support the broader space enterprise; supporting USSPACECOM operations and training exercises; leading trials, testing and training campaigns to test & optimize capabilities in support of the broader space kill chain; enhancing sensor performance to close the solar exclusion gap by leveraging modern technology and commercial & IC sensors for greater space domain coverage; and improving legacy communication paths through efforts such as upgrading legacy sensor communications and developing a redundant, terrestrial and space-based mesh communication network to enable a more complex space enterprise capability.

The mission of the current Joint Task Force Space Defense (JTF-SD) Commercial Operations (JCO) as of Aug 2022 is to provide persistent and rapid SDA coverage to maximize decision making space and reduce reaction time in support of Protect & Defend missions. The JCO augments JTF-SD tracking data, real-time visual magnitude, and real-time passive radio frequency (RF) using commercial capabilities. This funding will be used to support to a variety of other commercial mission sets beyond the protect and defend capabilities.

The Commercial Data Buys Beyond Protect and Defend Major Thrust Area will support existing capabilities through improvements to architecture and system efficiency, cybersecurity, migration to cloud computing, building on artificial intelligence and machine learning (AI/ML) initiatives, and expanding agile software development, delivery, and integration practices. As data ingress and egress grow, incorporate additional associated cloud-hosting, data service development, security, system administration, data on boarding, data as a service platform retention, processing, and normalization beyond protect and defend.

Provide support to JCO missions beyond the initial Protect & Defend capabilities. Review, adjudicate, and integrate initial capabilities with multiple commercial providers. These capabilities are planned to include: Geosynchronous Equatorial Orbit (GEO) spaceflight safety; Electromagnetic interference (EMI) detection and geolocation support for Positioning, Navigation and Timing (PNT); as well as space-based SDA augmentation from commercial providers. The expanding capabilities will build system resiliency and situational awareness. Activities may include, but are not limited to: studies, technical analysis, risk reduction experiments and prototyping,

integration and test of C2, resiliency measures and mission partner interfaces, and office support etc. Towards the close of FY 2024, the desired end state is the expectation of three new capabilities in deployment.

TAPOUT is a tactical SDA system which consists of a Hardware Layer, a Data Layer, and an Application layer. The planned Hardware Layer is the result of 2 years of prototyping, analysis, and collaboration with industry. Sixteen globally dispersed sites have been identified to field daytime/nighttime capable ground based sensors which will be remotely commanded and controlled through the Data and Application layers. The Data Layer consists of multi-source data feeds which are aggregated at a classified level where predictive threat warning occurs. The Application Layer consists of a series of Threat Warning and C2 applications at multiple classification levels which enable monitoring, and tactical command and control of the network.

This program may include necessary civilian pay expenses required to manage, execute, and deliver the 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.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2023	FY 2024	FY 2025
Title: Global Sensor Watch (GSW)	58.027	55.765	72.964
Description: GSW provides an integrated SDA architecture to deliver a resilient, high capacity, sensitive, timely, and comprehensive global ground and space-based network of sensors that cover the geocentric and cislunar orbital regimes. GSW is a resilient, automated cross-sensor tip and cue capability that provides overlapping, assured, and viable surveillance options for executing event response, and SDA data processing at multiple classification levels. In order to ensure the successful implementation of a resilient, overlapping, assured, and viable architecture, GSW includes the necessary sensor communication upgrades to ensure data transport/throughput, compatibility, and effects-based tactical tasking/response functionality. To do this, GSW enables highly available, non-stovepiped sensor planning, tasking, response, and data collection, as well as processed information/products/results to be stored, shared, and integrated for warfighting and analysis. GSW will continue coordination international work with Japanese Ministry of Defense (JMOD) on the development of classified C2 and SDA data sharing between a Japanese Space Operations Center (SpOC) and the U.S. Combined Space Operations Center (CSpOC). This will align Japanese sensors and United States Government (USG) and non-USG assets to provide critical national security space solutions on tactical operational timelines and continue to pursue security cooperations with other international partners such as Canada and the United Kingdom. ***FY 2024 Plans:*** Continue GSW sensor communication upgrades (SCU) for the remaining sites of existing systems, including radar sites at Eglin Air Force Base, Florida, Upgraded Early Warning Radars (UEWR), Millstone Radar Site Massachusetts, and Reagan Test Site (RTS) assets, to facilitate GSW tip and cue operations. Complete mesh network prototype demonstration for essential communications and resilient data transport capability. Continuation of RTS work on radome and sensor array development			

Exhibit R-2A, RDT&E Project Justification: PB 2025 Air Force		Date: March 2024
Appropriation/Budget Activity 3620F / 7	**R-1 Program Element (Number/Name)** PE 1203940SF / *Space Situation Awarenes s Operations*	**Project (Number/Name)** 673940 / *Space Data Fusion*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2023	FY 2024	FY 2025
on Ground Based Radar-Kwajalein work. Continuation of planning and upgrades to other SDA sensors, such as DARC Site 1, COBRA DANE, GEODSS, and Ascension Site C (depending on Ascension status). Integrate MDA to augment SSN connectivity. Continue GSW software development for incorporating non-traditional data sources and efforts to modernize legacy sensor message formats and protocols for greater accuracy. Continue integration of GSW tip and cue software at existing radar sites. Continue automation of manual SDA processes. Support USSPACECOM operations and test activities to vet new SDA capability deliveries and concepts of operations for optimizing legacy SDA sensors operations. Establish a SDA tip and cue sensor test asset. Complete Mission-driven Autonomous Collaborative Heterogeneous Intelligent Network Architecture (MACHINA) integration with the Air Force Research Lab (AFRL) Tako telescope network. Complete MACHINA integration with the secret-level Dynamic Optical Telescope System (DOTS) in Maui, and other sensors. Complete initial ops fielding for dynamic tasking input compatibility with mission partner Concept C mission system. Complete fielding of launch custody and high-rate-revisit capabilities at Millstone, Haystack Auxiliary Radar (X-band) (Haystack), and ARPA Long Range Tracking and Instrumentation Radar (VHF & UHF band) (ALTAIR) radars. Continue developing classified C2 and SDA sharing with the Japanese Space Operations Center (JSpOC) and expand Security Cooperation activities with other International mission partners, such as Canada and the United Kingdom. TAPOUT will complete 1) operations with existing sensors, 2) procurement and fielding of TAPOUT sensors, especially long lead items that require early purchase orders to meet the FOC timeline, 3) improvement of external network interfaces, 4) enhancement of existing TAPOUT Threat Warning capabilities and tactical messaging, and 5) provided training. Additionally, FY 2024 funding will allow the program to implement system resiliency and situational awareness necessary to operate in the contested space domain. Activities may include, but are not limited to: studies, technical analysis, risk reduction experiments and prototyping, integration and test of command and control (C2), resiliency measures and mission partner Interfaces via network and network modernization, space test/combat range events, and office support etc. ***FY 2025 Plans:*** Continue GSW sensor communication upgrades (SCU) and MDA integration for the remaining assets and capabilities, in support of the USSPACECOM funded Project Lighthouse (LH1 & LH2) including:			

Exhibit R-2A, RDT&E Project Justification: PB 2025 Air Force		Date: March 2024
Appropriation/Budget Activity 3620F / 7	**R-1 Program Element (Number/Name)** PE 1203940SF / *Space Situation Awarenes s Operations*	**Project (Number/Name)** 673940 / *Space Data Fusion*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2023	FY 2024	FY 2025
-Integrate radar sites at Eglin Air Force Base, Florida; Upgraded Early Warning Radars (UEWR), Millstone Radar Site Massachusetts, and Reagan Test Site assets (Space Fence, Millimeter Wave (MMW) Radar, ARPA Lincoln C-Band Observables Radar (ALCOR), Haystack Ultrawideband Satellite Imaging Radar (HUSIR), and The Haystack Auxiliary (HAX) Radar with other characterization and operational intelligence capabilities. -Continue Ground Based Radar-Kwajalein radome work and sensor array development. -Continue efforts towards DARC Site 1; COBRA DANE; GEODSS; Ascension Site C and REDLAN, as sites are available. -Award contract for Ascension SDA replacement radar (previously Ascension Site C) to fill USSPACECOM LEO detection and tracking capability gap in South Atlantic; continue site preparation and begin execution of hardware and software technical refresh and capability upgrades. -Vet new SDA capability deliveries and concepts of operations for optimizing legacy SDA sensor operations via other USSPACECOM operations and test activities. Continue GSW integration and fielding of: -Expand to additional SSN sites, mesh network for essential SCU communications and resilient data transport capability. -Upgrades to end-to-end SSN sensor communications at additional sites which facilitate tip and cue sensor operations. -Modernize legacy sensor message formats and protocols for greater accuracy via non-traditional data sources. -Continue Tip-and-cue software and launch custody and high-rate revisit capabilities at Millimeter Wave (MMW) Radar, ARPA Lincoln C-Band Observables Radar (ALCOR), Haystack Ultrawideband Satellite Imaging Radar (HUSIR), Haystack Auxiliary (HAX) and ALTAIR radars. -Automate SDA process such as MACHINA integration with the secret-level GEODSS system in Maui and other sensors. -Continue developing and integration of classified C2 and SDA sharing with the Japanese Space Operations Center (JSpOC) and expand Security Cooperation activities with other International mission partners, such as Canada and the United Kingdom. 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 increase due to addition of Project Lighthouse funding.			
Title: Commercial Data Buys Beyond Protect and Defend	0.000	17.900	9.000
Description: The mission of the current Joint Task Force Space Defense (JTF-SD) Commercial Operations (JCO) as of Aug 2022 is to provide persistent and rapid Space Domain Awareness (SDA) coverage to maximize decision making space and reduce reaction time in support of Protect & Defend missions. The JCO augments JTF-SD tracking data, real-time visual magnitude,			

Exhibit R-2A, RDT&E Project Justification: PB 2025 Air Force		Date: March 2024
Appropriation/Budget Activity 3620F / 7	**R-1 Program Element (Number/Name)** PE 1203940SF / *Space Situation Awarenes s Operations*	**Project (Number/Name)** 673940 / *Space Data Fusion*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2023	FY 2024	FY 2025
and real-time passive radio frequency (RF) using commercial capabilities. This funding will be used to support a variety of other commercial mission sets beyond the protect and defend capabilities. ***FY 2024 Plans:*** Provide support to JCO missions beyond the initial Protect & Defend capabilities. Review, adjudicate, and integrate initial capabilities with multiple commercial providers. These capabilities are planned to include: Geosynchronous Equatorial Orbit (GEO) spaceflight safety; Electromagnetic interference (EMI) detection and geolocation support for Positioning, Navigation and Timing (PNT); as well as space-based SDA augmentation from commercial providers. The expanding capabilities will build system resiliency and situational awareness. Support existing capabilities through improvements to architecture and system efficiency, cybersecurity, migration to cloud computing, building on artificial intelligence and machine learning (AI/ML) initiatives, and expanding agile software development, delivery, and integration practices. As data ingress and egress grow, incorporate additional associated cloud-hosting, data service development, security, system administration, data on boarding, data as a service platform retention, processing, and normalization beyond protect and defend, with the goal of deploying three new capabilities by the end of FY 2024. Activities may include, but are not limited to studies, technical analysis, risk reduction experiments and prototyping, integration and test of C2, resiliency measures and mission partner interfaces, and office support etc. ***FY 2025 Plans:*** Combine Joint Commercial Operations 24/7 GEO Protect and Defend mission (Which include multiple partner nations across three geographic sectors named Americas, Meridian, Pacific) with additional capabilities which achieved successful prototyping during FY24 events. The potential prototypes include LEO SDA support using both ground-centric and space-to-space collection; electromagnetic frequency SDA and interference detection and geolocation support across the spectrum (e.g., PNT); on-orbit GEO SDA augmentation from commercial providers; persistent revisit of the GEO belt for military space flight safety in coordination with the DOC; cyber SDA support; space-to-ground imagery collection in tactical support of unified combatant commands as directed by the recent Tac ISR/SRT initiative; and RF TT&C SDA monitoring and link support augmentation. ***FY 2024 to FY 2025 Increase/Decrease Statement:*** Funding decreased due to higher Space Force priorities.			
Title: Space Data Fusion/Unified Data Library (UDL)	0.000	0.000	0.000
Description: Space Data Fusion develops Unified Data Library (UDL) capabilities to support integration, exploitation, and delivery of data sources for command and control and battle management of space forces. UDL will continue to develop the library by onboarding new data sets, expand data services, expand defensive cyber operations capabilities, add non-metric data to the SDA			

Exhibit R-2A, RDT&E Project Justification: PB 2025 Air Force		Date: March 2024
Appropriation/Budget Activity 3620F / 7	**R-1 Program Element (Number/Name)** PE 1203940SF / *Space Situation Awarenes s Operations*	**Project (Number/Name)** 673940 / *Space Data Fusion*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2023	FY 2024	FY 2025
marketplace, continue to expand local area network capability to share Space Surveillance Network (SSN) data in a cyber-secure manner, and purchase commercial data and services to support USSPACECOM operations, allow optimized data flow for use of existing SDA capability, and provide access to new commercial SDA innovations that will enable the broader SDA mission. ***FY 2024 Plans:*** N/A ***FY 2025 Plans:*** N/A ***FY 2024 to FY 2025 Increase/Decrease Statement:*** N/A			
Accomplishments/Planned Programs Subtotals	58.027	73.665	81.964

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 SPCMOD: *Space Mods*	8.331	2.079	-	-	-	-	-	-	-	0.000	10.410

Remarks

D. Acquisition Strategy

The acquisition strategies for GSW include a mix of modifications to existing Air Force or Space Force contracts and directing funds to other Air Force, Space Force, or DoD organizations for contract support.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2025 Air Force			Date: March 2024
Appropriation/Budget Activity 3620F / 7	**R-1 Program Element (Number/Name)** PE 1203940SF / *Space Situation Awarenes s Operations*	**Project (Number/Name)** 673940 / *Space Data Fusion*	

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
GSW Integration (Dev, Sensor, C2)	Various	MIT/LL : Lexington, MA	-	-		18.678	Nov 2023	16.416	Nov 2024	-		16.416	Continuing	Continuing	-
GSW Sensor Comm Upgrades	Various	Various : Various	-	22.865	Mar 2023	26.453	Nov 2023	47.376	Nov 2024	-		47.376	Continuing	Continuing	-
GSW Exploitation	Various	MIT/LL : Lexington, MA	-	16.150	Mar 2023	-		-		-		-	0.000	16.150	-
GSW Dynamic Tasking	Various	Various : Various	-	9.850	Dec 2022	-		-		-		-	0.000	9.850	-
GSW SW Development 3	Various	Sandia National Labs : Albuquerque, NM	-	1.337	Nov 2022	-		-		-		-	0.000	1.337	-
GSW Commercial Data Buys Beyond Protect and Defend	Various	Various : Colorado Springs, CO	-	-		15.740	Oct 2023	8.091	Oct 2024	-		8.091	Continuing	Continuing	-
TAPOUT	MIPR	AFRL : Various	-	2.425	Oct 2022	2.436	Nov 2023	-		-		-	0.000	4.861	-
SBIR/STTR	Allot	Not specified. : TBD	-	-		2.578	Oct 2023	2.951	Oct 2024	-		2.951	Continuing	Continuing	-
		Subtotal	-	52.627		65.885		74.834		-		74.834	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 : Colorado Springs, CO	-	2.650	Dec 2022	4.700	Nov 2023	4.600	Nov 2024	-		4.600	Continuing	Continuing	-
FFRDC	RO	Various : Colorado Springs, CO	-	2.000	Nov 2022	2.700	Nov 2023	2.300	Nov 2024	-		2.300	Continuing	Continuing	-
Other Support	Various	Various : Colorado Springs, CO	-	0.750	Dec 2022	0.380	Nov 2023	0.230	Nov 2024	-		0.230	Continuing	Continuing	-
		Subtotal	-	5.400		7.780		7.130		-		7.130	Continuing	Continuing	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2025 Air Force			Date: March 2024
Appropriation/Budget Activity 3620F / 7	R-1 Program Element (Number/Name) PE 1203940SF / *Space Situation Awarenes s Operations*	Project (Number/Name) 673940 / *Space Data Fusion*	

	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	-	58.027		73.665		81.964		-		81.964	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2025 Air Force		Date: March 2024
Appropriation/Budget Activity 3620F / 7	**R-1 Program Element (Number/Name)** PE 1203940SF / *Space Situation Awarenes s Operations*	**Project (Number/Name)** 673940 / *Space Data Fusion*

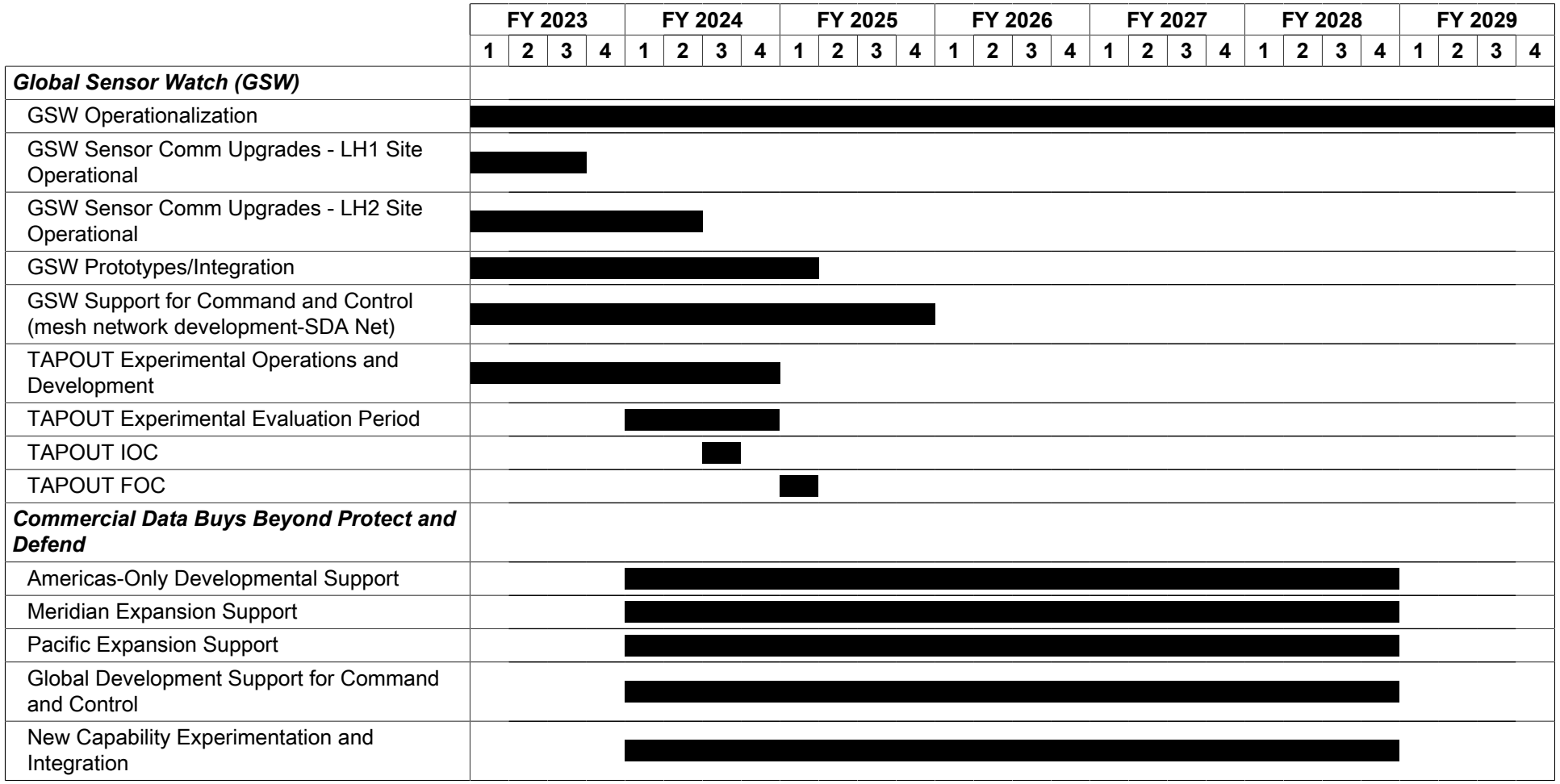

Exhibit R-4A, RDT&E Schedule Details: PB 2025 Air Force		Date: March 2024
Appropriation/Budget Activity 3620F / 7	**R-1 Program Element (Number/Name)** PE 1203940SF / *Space Situation Awarenes s Operations*	**Project (Number/Name)** 673940 / *Space Data Fusion*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Global Sensor Watch (GSW)				
GSW Operationalization	1	2023	4	2029
GSW Sensor Comm Upgrades - LH1 Site Operational	1	2023	3	2023
GSW Sensor Comm Upgrades - LH2 Site Operational	1	2023	2	2024
GSW Prototypes/Integration	1	2023	1	2025
GSW Support for Command and Control (mesh network development-SDA Net)	1	2023	4	2025
TAPOUT Experimental Operations and Development	1	2023	4	2024
TAPOUT Experimental Evaluation Period	1	2024	4	2024
TAPOUT IOC	3	2024	3	2024
TAPOUT FOC	1	2025	1	2025
Commercial Data Buys Beyond Protect and Defend				
Americas-Only Developmental Support	1	2024	4	2028
Meridian Expansion Support	1	2024	4	2028
Pacific Expansion Support	1	2024	4	2028
Global Development Support for Command and Control	1	2024	4	2028
New Capability Experimentation and Integration	1	2024	4	2028

Exhibit R-2A, RDT&E Project Justification: PB 2025 Air Force			Date: March 2024
Appropriation/Budget Activity 3620F / 7	R-1 Program Element (Number/Name) PE 1203940SF / *Space Situation Awarenes s Operations*	Project (Number/Name) 673941 / *Unified Data Library (UDL)*	

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
673941: *Unified Data Library (UDL)*	-	40.848	187.370	35.075	0.000	35.075	35.573	35.410	36.170	36.885	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Unified Data Library project (673941) supports integration, exploitation, and delivery of Space Domain Awareness (SDA) data sources for Command and Control (C2) and battle management of space forces. It focuses on enabling data sharing, establishing the data architecture required to aggregate multi-sensor data for broader use at different classification levels, transforming any-source data into normalized, usable information via data exploitation tools, followed by data hand off to Battle Management Command and Control mission systems to support actual space operations. UDL efforts include purchasing commercial SDA data and services in support of US Space Command (USSPACECOM) operations. The UDL will directly connect to dedicated USSF collateral, contributing and non-traditional sensors and systems with modernized interfaces and transport options to broadly expose data. The UDL will be the single source for accessing and managing all data in support of the USSF, providing a central location to find and access data, enabling superior analytics.

Enterprise Data Architecture (EDA) is an emergent Unified Data Library (UDL) requirement prototype pursuing an authority to operate on both unclassified and classified domains. EDA will strategically execute experimentation, prototyping, and risk reduction to build an enterprise data architecture providing relevant data and a repository architecture to be managed and federated at the enterprise level with an agile data strategy. Architecture will incorporate DAF CDAO enterprise services to ensure a common infrastructure will enable integration between Space Domain Awareness and other mission area artificial intelligence decision-support tools synthesizing field data to assess and report near real-time force readiness status.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2023	FY 2024	FY 2025
Title: Unified Data Library (UDL)	26.348	55.970	35.075
Description: UDL capabilities support integration, exploitation, and delivery of data sources for command and control and battle management of space forces. UDL will continue to develop the library by on-boarding new data sets, directly connecting to SDA sensors, expanding data services, federating between enterprise data lakes, expanding defensive cyber operations capabilities, adding non-metric data to the SDA marketplace, continuing to expand local area network capability to share Space Surveillance Network (SSN) data in a cyber-secure manner, purchasing commercial data and services to support USSPACECOM operations, allowing optimized data flow for use of existing SDA capability, and providing access to new commercial SDA innovations that will enable the broader SDA mission. The UDL enables analysis across the global space enterprise, as well as for Space Force related exercise support, cross-domain solution services and integration of the legacy communications architecture with the UDL.			
FY 2024 Plans:			

Exhibit R-2A, RDT&E Project Justification: PB 2025 Air Force		Date: March 2024
Appropriation/Budget Activity 3620F / 7	**R-1 Program Element (Number/Name)** PE 1203940SF / *Space Situation Awarenes s Operations*	**Project (Number/Name)** 673941 / *Unified Data Library (UDL)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2023	FY 2024	FY 2025
Continue to expand UDL infrastructure to maintain digital superiority, support an increased number of customers and operations across multiple security environments. Expand the enterprise support structure to allow the UDL to be "franchised" and proliferated at different classification levels, yet supported by a common source of system administration for all UDL instances located at any classification level through Special Access Programs (SAP). Implement federation with five other existing Department of the Air Force (DAF) enterprise data lakes to expose data for the purposes of advanced data analytics. Incorporate commercial SDA related data and information to increase data samples and improve overall SDA picture for government customers. Expand cybersecurity efforts to include persistent red team analysis of broader UDL architecture and ensure zero trust. Directly connect the UDL to 20+ additional Space Surveillance Network (SSN) and non-traditional SDA sensors with modernized interfaces and transport options. Streamline SDA related data flows as transport options are implemented to meet SDA objectives. Expand bi-directional data sharing capabilities between C2 Centers and SDA systems, implement bi-directional data sharing with coalition and allied partners, and implement edge computing platform strategies to enhance the situational awareness necessary to operate in a congested space domain. As data ingress and egress grow, a portion of the funds will cover associated cloud-hosting costs, data service development, security, system administration, data on boarding, data as a service platform retention, processing, and normalization. Analyze space warfighting data across the global space enterprise, as well as for Space Force related exercise support, cross-domain solution services and integration of the legacy communications architecture with the UDL. Additionally, FY 2024 funding will enable the program to implement system redundancy and resiliency to meet availability objectives in support of analysis and planning requirements. Activities may include, but are not limited to studies, technical analysis, risk reduction experiments, prototyping, integration and test of C2, evaluation of resiliency measures and mission partner interfaces, space test/combat range events, and expanded program support. ***FY 2025 Plans:*** Continue to expand UDL infrastructure to maintain digital superiority, support an increased number of providers and consumers and operations across multiple security environments. Expand the enterprise support structure to allow the UDL to be "franchised" and proliferated at different classification levels yet be supported by a common source of system administration for all UDL instances located at any security level, up to and included Special Access Programs (SAP). Continue to incorporate commercial SDA related data and information to increase data samples and improve the overall SDA "picture" for government customers. Continue to expand cybersecurity efforts to include persistent red team analysis of broader UDL architecture and ensure zero trust. Renew UDL's Authority to Operate (ATO). Continue the direct connect to additional SSN and non-traditional SDA sensors with modernized interfaces and transport options replacing connections to legacy processing systems and networks to improve latency. Continue to streamline SDA related data flows as transport options are implemented to meet SDA objectives. Continue to expand bi- directional data sharing capabilities between C2 Centers and SDA systems, implement bi-directional data sharing with coalition and allied partners, and implement edge computing platform strategies to enhance the situational awareness necessary to operate in a congested space domain. As			

Exhibit R-2A, RDT&E Project Justification: PB 2025 Air Force		Date: March 2024
Appropriation/Budget Activity 3620F / 7	**R-1 Program Element (Number/Name)** PE 1203940SF / *Space Situation Awarenes s Operations*	**Project (Number/Name)** 673941 / *Unified Data Library (UDL)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2023	FY 2024	FY 2025
data ingress and egress grows, a portion of the funds will cover cloud-hosting costs, data service development, security, system administration, data on boarding, data as a service platform retention, processing, and normalization, cross domain solutions and integration of the legacy communications architecture with the UDL through translation services. Support the analysis of space warfighting data across the global space enterprise to include Space Force related exercises. 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 fewer planned new data connections and reduced cloud hosting costs.			
Title: Expansion of sensor communications upgrades and data integration ***Description:*** Expand planned sensor communications upgrades and the integration of non-traditional and commercial data. Deliver data on tactically relevant timelines from sensor to UDL and C2. ***FY 2024 Plans:*** Due to the classified nature of this project, specific details are available at a higher classification level. ***FY 2025 Plans:*** N/A ***FY 2024 to FY 2025 Increase/Decrease Statement:*** FY 2025 decreased due to FY 2025 funding being correctly moved to the Space Data Fusion project (673940). An error in the FY 2024 budget document incorrectly placed the FY 2024 funding into the UDL project instead of the Space Data Fusion project. Once FY 2024 funds are appropriated, the USSF will move to and execute these funds in the Space Data Fusion project.	0.000	131.400	0.000
Title: Enterprise Data Architecture ***Description:*** Funds are required to support an emergent requirement for Unified Data Library to finalize an Enterprise Data Architecture (EDA) prototype with authority to operate on both unclassified and classified domains. The EDA will enable integration between Space Domain Awareness and other mission area artificial intelligence decision-support tools synthetizing field data to assess and report near real-time force readiness status. ***FY 2024 Plans:*** N/A ***FY 2025 Plans:***	14.500	0.000	0.000

Exhibit R-2A, RDT&E Project Justification: PB 2025 Air Force		Date: March 2024
Appropriation/Budget Activity 3620F / 7	**R-1 Program Element (Number/Name)** PE 1203940SF / *Space Situation Awarenes s Operations*	**Project (Number/Name)** 673941 / *Unified Data Library (UDL)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2023	FY 2024	FY 2025
N/A			
Accomplishments/Planned Programs Subtotals	40.848	187.370	35.075

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

In FY23 EDA received $14.5M in Above Threshold Reprogramming (ATR) funding in October of 2023 in support of SDA which will normalize, standardize and condition data to implement attribute-based access control (ABAC) to enable enterprise data federation and AI/ML. It will implement an automated CAP/SAP data management platform providing a foundational zero trust architecture deployable to on-demand or disconnected off-premise, on-premise and edge computing environments; consistently apply these capabilities and governance to all classifications and inform higher-level data enterprise.

In FY 2025 the UDL program plans to execute a follow-on contract for the next generation of the UDL platform in support of emerging mission requirements. The USSF expects to be executing this strategy within the Software Acquisition Pathway. The program also plans to continue leveraging the Space Enterprise Consortium (SpEC) Other Transaction Authority (OTA) and other contract vehicles to continue strengthening the USSF data and digital infrastructure.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2025 Air Force			Date: March 2024
Appropriation/Budget Activity 3620F / 7	**R-1 Program Element (Number/Name)** PE 1203940SF / *Space Situation Awarenes s Operations*	**Project (Number/Name)** 673941 / *Unified Data Library (UDL)*	

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
UDL Data Science Working Group	C/CPFF	L3Harris : Colorado Springs, CO	-	-		0.600	Jan 2024	-		-		-	0.000	0.600	-
UDL Commercial Data	Various	Various : Various	-	3.000	Jan 2023	3.000	Jan 2024	-		-		-	0.000	6.000	-
UDL Development/Data Onboarding	Various	Various : Various	-	8.048	Dec 2022	27.027	Dec 2023	17.188	Dec 2024	-		17.188	Continuing	Continuing	-
UDL Cloud Hosting	Various	Various : Various	-	6.048	Mar 2023	15.690	Mar 2024	5.872	Mar 2025	-		5.872	Continuing	Continuing	-
EDA Cloud Hosting	Various	Various : Various	-	1.430	Jan 2024	-		-		-		-	0.000	1.430	-
EDA Infrastructure	Various	Various : Various	-	12.515	Jan 2024	-		-		-		-	0.000	12.515	-
UDL Technical Mission Analysis	RO	Aerospace : El Segundo, CA	-	2.643	Nov 2022	1.122	Nov 2023	1.852	Nov 2024	-		1.852	Continuing	Continuing	-
Expansion of sensor comm upgrades and data integration	TBD	TBD : TBD	-	-		131.400	Mar 2024	-		-		-	0.000	131.400	-
SBIR/STTR	Allot	TBD : TBD	-	-		1.950	Oct 2023	1.228	Oct 2024	-		1.228	Continuing	Continuing	-
		Subtotal	-	33.684		180.789		26.140		-		26.140	Continuing	Continuing	N/A

Test and Evaluation ($ 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
Test & Evaluation	Various	Various : Colorado Springs, CO	-	-		-		1.097	Nov 2024	-		1.097	Continuing	Continuing	-
		Subtotal	-	-		-		1.097		-		1.097	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 : Colorado Springs, CO	-	3.961	Dec 2022	3.931	Dec 2023	5.059	Apr 2025	-		5.059	Continuing	Continuing	-

Exhibit R-3, RDT&E Project Cost Analysis: PB 2025 Air Force		Date: March 2024
Appropriation/Budget Activity 3620F / 7	**R-1 Program Element (Number/Name)** PE 1203940SF / *Space Situation Awarenes s Operations*	**Project (Number/Name)** 673941 / *Unified Data Library (UDL)*

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	RO	Various : Colorado Springs, CO	-	2.528	Nov 2022	2.550	Nov 2023	2.379	Nov 2024	-		2.379	Continuing	Continuing	-
EDA A&AS	Various	Various : Los Angeles, CA	-	0.505	Jan 2024	-		-		-		-	0.000	0.505	-
Other Support	C/Various	Various : Colorado Springs, CO	-	0.120	Dec 2022	0.100	Dec 2023	0.400	Dec 2024	-		0.400	Continuing	Continuing	-
EDA Other Support	Various	Various : Los Angeles, CA	-	0.050	Jan 2024	-		-		-		-	0.000	0.050	-
		Subtotal	-	7.164		6.581		7.838		-		7.838	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	-	40.848		187.370		35.075		-		35.075	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2025 Air Force		Date: March 2024
Appropriation/Budget Activity 3620F / 7	**R-1 Program Element (Number/Name)** PE 1203940SF / *Space Situation Awarenes s Operations*	**Project (Number/Name)** 673941 / *Unified Data Library (UDL)*

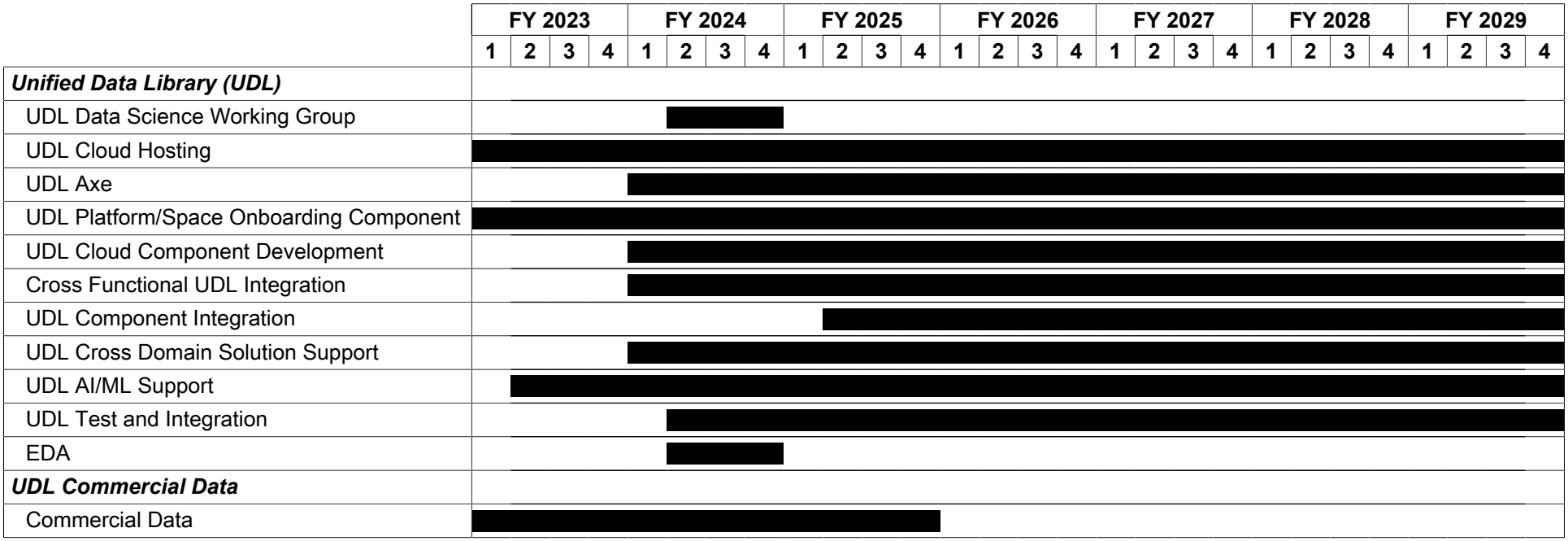

Exhibit R-4A, RDT&E Schedule Details: PB 2025 Air Force		Date: March 2024
Appropriation/Budget Activity 3620F / 7	**R-1 Program Element (Number/Name)** PE 1203940SF / *Space Situation Awarenes s Operations*	**Project (Number/Name)** 673941 / *Unified Data Library (UDL)*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Unified Data Library (UDL)				
UDL Data Science Working Group	2	2024	4	2024
UDL Cloud Hosting	1	2023	4	2029
UDL Axe	1	2024	4	2029
UDL Platform/Space Onboarding Component	1	2023	4	2029
UDL Cloud Component Development	1	2024	4	2029
Cross Functional UDL Integration	1	2024	4	2029
UDL Component Integration	2	2025	4	2029
UDL Cross Domain Solution Support	1	2024	4	2029
UDL AI/ML Support	2	2023	4	2029
UDL Test and Integration	2	2024	4	2029
EDA	2	2024	4	2024
UDL Commercial Data				
Commercial Data	1	2023	4	2025

Exhibit R-2A, RDT&E Project Justification: PB 2025 Air Force			Date: March 2024
Appropriation/Budget Activity 3620F / 7	R-1 Program Element (Number/Name) PE 1203940SF / *Space Situation Awarenes s Operations*	Project (Number/Name) 67A018 / *SF Weather Services Research*	

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
67A018: *SF Weather Services Research*	-	3.144	3.931	3.121	0.000	3.121	3.222	3.288	3.407	3.474	0.000	23.587
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This budget activity funds the operational development necessary to acquire, sustain, and modernize SF Weather Services Research capabilities in support of the 2022 National Defense Strategy's (NDS) three lines of effort: build a more lethal force, strengthen alliances and attract new partners, and change the way we do business.

To improve readiness for a more lethal force, SF Weather Services Research provides timely, accurate, resilient, and relevant environmental information to enable global battlespace situational awareness for Air Force (AF), Army, Special Operations Forces (SOF), Space Force (USSF), combatant commands, the Intelligence Community (IC), and other government agencies. SF Weather Services Research provides climate impacts and assessments, as well as space and terrestrial weather sensing, forecasting, and weather analytic capabilities, at home station and deployed, in order to deliver critical environmental intelligence in support of warfighters to gain the asymmetric advantage during the full spectrum of air and space combat operations. SF Weather Services Research decreases the risk to mission and risk to force by increasing the lethality, effectiveness, and survivability of Department of Defense (DoD) weapon systems.

To strengthen alliances and partnerships, SF Weather Services Research development efforts integrate DoD, government agency, commercial, and international partner environmental data with AFWS information system equipment for processing, storing, exploiting, and disseminating multi-domain weather information for analysis, forecasting, mission integration, and greater interoperability.

To ensure greater performance and affordability for the Department of the AF, SF Weather Services Research sensors and information systems are being modernized through improvements to architecture and system efficiency, cybersecurity, joint all-domain command and control (JADC2) and sensing grid integration, migration to cloud computing, artificial intelligence and machine learning (AI/ML) initiatives, and expanding agile software development, delivery, and integration practices. The AF Weather Enterprise digital transformation and cloud migration effort modernizes key capabilities providing the military advantage to accurately predict environmental impacts optimizing mission planning, targeting, weaponeering, mission execution, battle damage assessment, and space systems operations.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2023	FY 2024	FY 2025
Title: Space Weather Analysis and Forecast System (SWAFS)	3.144	3.931	3.121
Description: The SWAFS legacy baseline is currently being redesigned and upgraded under the Space Domain Awareness Environmental Toolkit for Defense (SET4D) effort to satisfy Space Domain Awareness goals for a modern cloud hosted infrastructure that is cyber resilient and integrated with the Unified Data Library. The Energetic Charged Particle Hazard Assessment System (ECP HAS) is one of several models and applications within the SET4D environment designed to			

Exhibit R-2A, RDT&E Project Justification: PB 2025 Air Force		Date: March 2024
Appropriation/Budget Activity 3620F / 7	**R-1 Program Element (Number/Name)** PE 1203940SF / *Space Situation Awarenes s Operations*	**Project (Number/Name)** 67A018 / *SF Weather Services Research*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2023	FY 2024	FY 2025
inform satellite operators of hazards and the impacts of those hazards to their spacecraft that will provide warfighters with the environmental awareness to safely sustain their respective orbits and missions. ***FY 2024 Plans:*** Development activities include integration of software into the Space Environment Toolkit for Defense (SET4D) baseline that includes decomposing, developing, testing, and validating software applications that support the prediction/forecasting processors for global geomagnetic, auroral and solar activities that impact satellite, communication, radar, high flyer, and intelligence operations. The contractor will perform integration and cloud migration efforts of prototype tools of a Technology Readiness level (TRL) 6 or higher from the Air Force Research Lab (AFRL), Atmospheric Environmental Research Corporation (AER), Boston College (BC), and John Hopkins University/Applied Physics Lab (JHU/APL) for integration into the SET4D baseline that give DOD customer's customized tools for performing space environment characterization for the different layers of the atmosphere. AFRL's Radio Frequency Ionospheric Scintillation Analysis tool (RISA v1 and v2) requires integration into the SET4D baseline and will produce a Global four-dimensional Specification Product, a communications link Outage Map Product, and a ground-to-sky outage SkyMap Product. Boston College developed Constellation Observing System for Meteorology, Ionosphere and Climate 2 (COSMIC2). Additional AFRL tools such as Solar Indices Forecasting Tool (SIFT), Air Force Data Assimilative Photospheric Flux Transport (ADAPT), Solar Radio Burst (SRB) forecast, Radiation Exposure (RADEX), and the International Reference Ionosphere (IRI) 2016 model that provides an empirical electron density specification or forecast (by forecasting drivers) will require integration into SET4D baseline. JHU/APL software modernization of the OVATION-Prime (aurora radar model) and the global Ionospheric assimilation model (IDA4D) that replaces the Global Assimilation of Ionospheric Measurements (GAIM) will require integration into the SET4D baseline. The contractor will develop SET4D metrics that track performance of all the SET4D applications and perform raw data qualitative analysis to ensure the applications can discern good data from bad data in the final products. The contractor will perform integration of the Wideband Model (WBMOD) software in support of scintillation climatology characterization for Electromagnetic Induction (EMI) attribution of the DOD's ground and space assets for improved space situational awareness. Lastly, the contractor will address any carry- over of Continuous Improvement/Continuous Development (CI/CD) activities for space environment characterization algorithm improvements. ***FY 2025 Plans:*** Continue software upgrades into the Space Weather Analysis and Forecast System (SWAFS) version 2.x baseline that supports the deployment of the Satellite Anomaly Assess tool, which includes Solar Indices Forecasting Tool (SIFT) and ECP-HAS forecast model integration analysis tool. As well as the Environmental Effects to DoD communications tool, Ionospheric Data Assimilation - four dimensional (IDA-4D) model. This work includes decomposing, developing, testing, and validating software applications for prediction/forecasting processors for global environmental effects to DoD satellites and communications spectrum. Model environmental effects to DoD satellites and develop an operator user tool and on-board additional data sets required to effectively execute the user application. Develop and deploy updates to the operator user tool and environmental models that support DoD			

Exhibit R-2A, RDT&E Project Justification: PB 2025 Air Force		Date: March 2024
Appropriation/Budget Activity 3620F / 7	**R-1 Program Element (Number/Name)** PE 1203940SF / *Space Situation Awarenes s Operations*	**Project (Number/Name)** 67A018 / *SF Weather Services Research*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2023	FY 2024	FY 2025
Long-Haul communications systems and environmental impacts to radar operations specifically supported by IDA-4D. Incorporate prototyping efforts provided from the Space Force Weather Services Research. RDT&E, BA 04, PE 0604002S, Project 645353 for transition into the SWAFS future code baseline utilizing the Continuous Improvement/Continuous Development (CI/CD) process to rapidly integrate environmental impact codes. Additional AFRL tools such as Solar Indices Forecasting Tool (SIFT), Air Force Data Assimilative Photospheric Flux Transport (ADAPT), Solar Radio Burst (SRB) forecast, and Radiation Exposure (RADEX), will require integration into SET4D baseline. Lastly beginning efforts to apply operational metrics to environmental assessment tools to provide a near real time assessment that will be incorporated into the CI/CD 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, and activities that may leverage commercial and international opportunities. ***FY 2024 to FY 2025 Increase/Decrease Statement:*** FY 2025 decreased due to progress incorporating space weather model updates.			
Accomplishments/Planned Programs Subtotals	3.144	3.931	3.121

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 SPCMOD: *Space Mods*	5.155	3.221	3.088	-	3.088	3.182	3.267	3.336	3.403	0.000	24.652
• 0604002SF: *Space Force Weather Services Research*	0.816	0.849	0.867	-	0.867	0.888	0.906	0.938	0.957	0.000	6.221

Remarks

D. Acquisition Strategy

SF Weather Services Research uses CI/CD approach to rapidly deliver capabilities using multiple contracts to support a family of systems through development, fielding and sustainment.

Cost Plus contracts are utilized for software development and sustainment and Fixed Firm Price contracts for Commercial-off-the-shelf (COTS) systems and Contract Logistics Support (CLS) efforts that were pre-competed via General Services Administration (GSA).

Exhibit R-3, RDT&E Project Cost Analysis: PB 2025 Air Force			Date: March 2024
Appropriation/Budget Activity 3620F / 7	R-1 Program Element (Number/Name) PE 1203940SF / *Space Situation Awarenes s Operations*	Project (Number/Name) 67A018 / *SF Weather Services Research*	

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
SWAFS Scintillation	C/CPFF	Peraton : Herndon, VA	-	3.144	Feb 2023	3.931	Feb 2024	3.009	Feb 2025	-		3.009	Continuing	Continuing	-
SBIR/STTR	Allot	Not specified. : TBD	-	-		-		0.112	Oct 2024	-		0.112	Continuing	Continuing	-
		Subtotal	-	3.144		3.931		3.121		-		3.121	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	-	3.144		3.931		3.121		-		3.121	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2025 Air Force		Date: March 2024
Appropriation/Budget Activity 3620F / 7	**R-1 Program Element (Number/Name)** PE 1203940SF / *Space Situation Awarenes s Operations*	**Project (Number/Name)** 67A018 / *SF Weather Services Research*

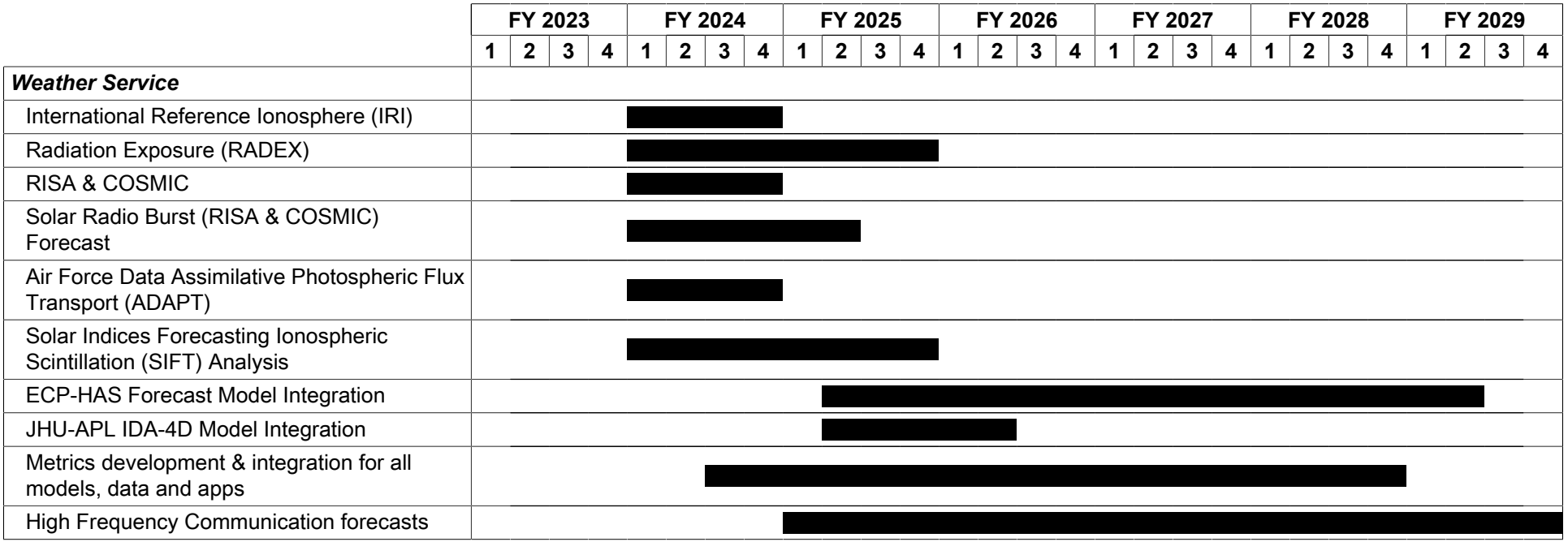

Exhibit R-4A, RDT&E Schedule Details: PB 2025 Air Force		Date: March 2024
Appropriation/Budget Activity 3620F / 7	**R-1 Program Element (Number/Name)** PE 1203940SF / *Space Situation Awarenes s Operations*	**Project (Number/Name)** 67A018 / *SF Weather Services Research*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Weather Service				
International Reference Ionosphere (IRI)	1	2024	4	2024
Radiation Exposure (RADEX)	1	2024	4	2025
RISA & COSMIC	1	2024	4	2024
Solar Radio Burst (RISA & COSMIC) Forecast	1	2024	2	2025
Air Force Data Assimilative Photospheric Flux Transport (ADAPT)	1	2024	4	2024
Solar Indices Forecasting Ionospheric Scintillation (SIFT) Analysis	1	2024	4	2025
ECP-HAS Forecast Model Integration	2	2025	2	2029
JHU-APL IDA-4D Model Integration	2	2025	2	2026
Metrics development & integration for all models, data and apps	3	2024	4	2028
High Frequency Communication forecasts	1	2025	4	2029