Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Air Force												Date: March 2023
Appropriation/Budget Activity 3620F: *Research, Development, Test & Evaluation, Space Force* / BA 5: *System Development & Demonstration (SDD)*					R-1 Program Element (Number/Name) PE 1206422SF / *Weather System Follow-on*							
COST ($ in Millions)	**Prior Years**	**FY 2022**	**FY 2023**	**FY 2024 Base**	**FY 2024 OCO**	**FY 2024 Total**	**FY 2025**	**FY 2026**	**FY 2027**	**FY 2028**	**Cost To Complete**	**Total Cost**
Total Program Element	-	1.368	48.720	79.727	0.000	79.727	50.884	37.748	33.553	27.902	0.000	279.902
65A038: *SSA Environmental Monitoring*	-	1.368	1.438	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.806
65A039: *WSF-M*	-	0.000	47.282	79.727	0.000	79.727	50.884	37.748	33.553	27.902	0.000	277.096

A. Mission Description and Budget Item Justification

In FY 2023, PE 1206422SF, Weather System Follow-On, Project 644289, Weather Satellite Follow-On, R-1 Line #8 efforts were transferred to PE 1206422SF, Weather System Follow-On, Project 65A039, Weather System Follow-on - Microwave (WSF-M), R-1 Line #20 reflecting the successful completion of Milestone B on 15 May 2020. Residual budget in FY 2024 - FY 2025 funds has transferred from BA 4 to BA 5 in this budget cycle.

Weather System Follow-on program 1206422SF consists of Space Situational Awareness Environmental Monitoring (SSAEM) Project 65A038 and WSF-M Project 65A039.

SSAEM Project 65A038 is a non-ACAT, Class D technology demonstration project to support the international Constellation Observing System for Meteorology, Ionosphere and Climate 2 (COSMIC-2) mission. The SSAEM program provides the acquisition, development and launch/on-orbit support of 18 space/terrestrial weather sensors to COSMIC-2 partnership in coordination with National Oceanic and Atmospheric Administration (NOAA) and Taiwan's National Space Organization (NSPO). COSMIC-2 launched six satellites in an equatorial, Low Earth Orbit (LEO) with 3 SSAEM sensors in each spacecraft in FY 2019. The sensor types are Tri-Global Navigation Satellite System (Tri-GNSS) Radio occultation System (TGRS), Ion Velocity Meter (IVM) and Radio Frequency Beacon (RFB). The SSAEM sensors will address three distinct Joint Requirement Oversight Committee (JROC)-approved Category A weather capability gaps, specifically Gap #4 (Ionospheric Density), Gap #7 (Equatorial Ionospheric Scintillation) and Gap #12 (Electric Field), to provide additional space meteorological data to improve forecast capabilities and improve warfighter navigation/communication capabilities.

The Weather Satellite Follow-on - Microwave (WSF-M) Project 65A039 includes funds for the WSF-M system, the Compact Ocean Wind Vector Radiometer (COWVR) technology demonstration, and the Energetic Charged Particle (ECP) sensor development.

Weather System Follow-on (WSF) is a Low-Earth Orbit (LEO) microwave imaging system developed and delivered by the United States Space Force's Space Systems Command (SSC). WSF is the next generation of space-based passive microwave sensing technology. It will provide U.S. and Allied warfighters with essential weather data, including the measurement of ocean surface wind speed and direction, ice thickness, snow depth, soil moisture, and local spacecraft energetic charged particle environment. The ocean surface wind speed measurement enables tropical cyclone intensity determination by the Joint Typhoon Warning Center. The data gathered by WSF will be provided to meteorologists in support of the generation of a wide variety of weather products necessary to conduct mission planning and operations globally.

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Air Force	Date: March 2023
Appropriation/Budget Activity 3620F: *Research, Development, Test & Evaluation, Space Force I* BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 1206422SF *I Weather System Follow-on*

WSF is an Acquisition Category IB program comprised of two Space Vehicles (SV) and their associated command, control, and data dissemination network. Global environmental monitoring data is gathered, stored, and down-linked through the Satellite Control Network (SCN) and disseminated to Air Force and Navy weather centers. Additionally, data is broadcast real time by the satellite for utilization by heritage Direct Readout Terminals that use the data for local weather forecasting.

WSF is a Major Defense Acquisition Program (MDAP) with the Space Force as the lead component. Founded on the Space-Based Environmental Monitoring (SBEM) Analysis of Alternatives (AoA) results, the WSF will be to enable:

1) Timely weather collection over broad oceans in support of maneuvering forces;
2) Space weather capabilities to characterize operational orbits, space situational awareness, and the ionosphere.

Secondary investments may be supported to address weather gaps identified in the SBEM AoA and validated by the JROC.

COWVR is an on-orbit demonstration project of the new COWVR technology to deliver Weather Gap #3, Ocean Surface Vector Winds (OSVW) and Gap #8, Tropical Cyclone Intensity (TCI).

ECP supports the SBEM Weather Gap #11, Low Earth Orbit Energetic Charged Particle Characterization. To support this requirement, the ECP sensor will be integrated on the WSF-M satellites.

Space acquisition must respond with speed and agility to emerging adversary threats. SSC 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, SSC 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 WSF for 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.

This program is in Budget Activity 5, System Development and Demonstration (SDD) because it has passed Milestone B approval and is conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full rate production.

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Air Force					Date: March 2023
Appropriation/Budget Activity 3620F: *Research, Development, Test & Evaluation, Space Force* / BA 5: *System Development & Demonstration (SDD)*			R-1 Program Element (Number/Name) PE 1206422SF / *Weather System Follow-on*		
B. Program Change Summary ($ in Millions)	**FY 2022**	**FY 2023**	**FY 2024 Base**	**FY 2024 OCO**	**FY 2024 Total**
Previous President's Budget	1.438	48.870	69.333	0.000	69.333
Current President's Budget	1.368	48.720	79.727	0.000	79.727
Total Adjustments	-0.070	-0.150	10.394	0.000	10.394
• Congressional General Reductions	-0.049	-0.150			
• 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	-0.021	0.000	10.394	0.000	10.394

Change Summary Explanation

FY 2022: -$0.0212M realign funding to APPN3620, PE 99999S, for cancelled year bill.

FY 2022: -$0.049M for Congressional General Reduction

FY 2023: -$0.150M for Congressional General Reduction

FY 2024: +$10.562M; transferred from PE 1206422SF, Weather System Follow-On, Project 644289, Weather Satellite Follow-On, Budget Activity, BA 4, to PE 1206442SF, Weather System Follow-On, Project 65A039, WSF-M, BA 5 to capture residual budget.

FY 2024: -$0.5M; to realign funding to APPN 3410, PE 1207804SF (SAG 13C), for fiscal policy compliance as Space Systems Command (SSC) establishes Headquarters functions and a Chief Information Office (CIO) for integrated cybersecurity.

FY 2024: +$0.4M; inflation rates for Non-Pay and Non-Fuel purchases.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Air Force			Date: March 2023
Appropriation/Budget Activity 3620F / 5	R-1 Program Element (Number/Name) PE 1206422SF / *Weather System Follow-on*	Project (Number/Name) 65A038 / *SSA Environmental Monitoring*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
65A038: *SSA Environmental Monitoring*	-	1.368	1.438	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.806
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Space Situational Awareness Environmental Monitoring (SSAEM) program is a non-ACAT, Class D technology demonstration project to support the international Constellation Observing System for Meteorology, Ionosphere and Climate 2 (COSMIC-2) mission. The SSAEM program provides the acquisition, development and launch/on-orbit support of 18 space/terrestrial weather sensors to COSMIC-2 partnership in coordination with National Oceanic and Atmospheric Administration (NOAA) and Taiwan's National Space Organization (NSPO). COSMIC-2 launched six satellites in an equatorial, Low Earth Orbit (LEO) with 3 SSAEM sensors in each spacecraft in FY 2019. The sensor types are Tri-Global Navigation Satellite System (Tri-GNSS) Radio occultation System (TGRS), Ion Velocity Meter (IVM) and Radio Frequency Beacon (RFB). The SSAEM sensors will address three distinct Joint Requirement Oversight Committee (JROC)-approved Category A weather gaps, specifically Gap #4 (Ionospheric Density), Gap #7 (Equatorial Ionospheric Scintillation) and Gap #12 (Electric Field), to provide additional space meteorological data to improve forecast capabilities and improve warfighter navigation/communication capabilities.

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

The RFB ground station equipment will be transferred to AFRL to continue development and potential fielding options for future ops capability. Operational fixes for TGRS begin 1QFY23 and IVM validation finalizes later in FY 2023. Design life has extended through FY 2028 due to system performance exceeding expectations.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Space Situational Awareness Environment Monitoring (SSAEM)	1.368	1.438	0.000
Description: The SSAEM program provides the acquisition, development and launch/on-orbit support of 18 space/terrestrial weather sensors to COSMIC-2 partnership in coordination with National Oceanic and Atmospheric Administration (NOAA) and Taiwan's National Space Organization (NSPO). ***FY 2023 Plans:*** Continue development and improvement of operationalized products for USSF/Navy models. Adapt existing data readings based on emerging user needs. Improve terrestrial and space weather data capture in terms of quality and latency in cooperation with National Oceanic and Atmospheric Administration (NOAA) and Taiwan's National Space Organization (NSPO) Taiwan. Complete fielding and transition of RFB to AFRL. Evaluate and adapt to emerging solar maximum environment to ensure constellation health and longevity as the program is transitioned to sustainment after FY 2024. Rapidly respond to implement system resiliency and			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Air Force		Date: March 2023
Appropriation/Budget Activity 3620F / 5	**R-1 Program Element (Number/Name)** PE 1206422SF / *Weather System Follow-on*	**Project (Number/Name)** 65A038 / *SSA Environmental Monitoring*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
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. ***FY 2024 Plans:*** N/A. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** N/A.			
Accomplishments/Planned Programs Subtotals	1.368	1.438	0.000

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

SSAEM post-launch and cal/val support contract is the sole-source contract to University Corporation Atmospheric Research due to their expertise in radio occultation and space weather monitoring for SSAEM sensors. The Justification & Approval (J&A) was approved in June 2018 and the Request for Proposal was released on August 1st, 2018. The contract was awarded in July 2019 for 5-years of post-launch cal/val and on-orbit support.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force			Date: March 2023
Appropriation/Budget Activity 3620F / 5	R-1 Program Element (Number/Name) PE 1206422SF / *Weather System Follow-on*	Project (Number/Name) 65A038 / *SSA Environmental Monitoring*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
UCAR Sensor R&D	SS/CPFF	UCAR : TBD	-	0.550	Nov 2021	0.625	Nov 2022	-		-		-	Continuing	Continuing	-
On-Orbit Support (UCAR/ JPL)	MIPR	UCAR/JPL : Boulder, CO	-	0.178	Nov 2021	0.395	Nov 2022	-		-		-	Continuing	Continuing	-
Ground Support	Various	Various : TBD	-	0.278	Nov 2021	0.072	Nov 2022	-		-		-	Continuing	Continuing	-
Technical Mission Analysis	RO	Aerospace Corp : El Segundo, CA	-	0.150	Nov 2021	0.104	Nov 2022	-		-		-	Continuing	Continuing	-
SBIR/STTR	Various	TBD : TBD	-	-		-		-		-		-	Continuing	Continuing	-
		Subtotal	-	1.156		1.196		-		-		-	Continuing	Continuing	N/A

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
FFRDC	RO	Aerospace Corp : El Segundo, CA	-	0.212	Nov 2021	0.242	Nov 2022	-		-		-	Continuing	Continuing	-
A&AS	Various	Various : Various	-	-		0.000	May 2023	-		-		-	Continuing	Continuing	-
Other Support	Various	Various : Various	-	-		0.000	Nov 2022	-		-		-	Continuing	Continuing	-
		Subtotal	-	0.212		0.242		-		-		-	Continuing	Continuing	N/A

	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	1.368		1.438		-		-		-	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Air Force		Date: March 2023
Appropriation/Budget Activity 3620F / 5	**R-1 Program Element (Number/Name)** PE 1206422SF / *Weather System Follow-on*	**Project (Number/Name)** 65A038 / *SSA Environmental Monitoring*

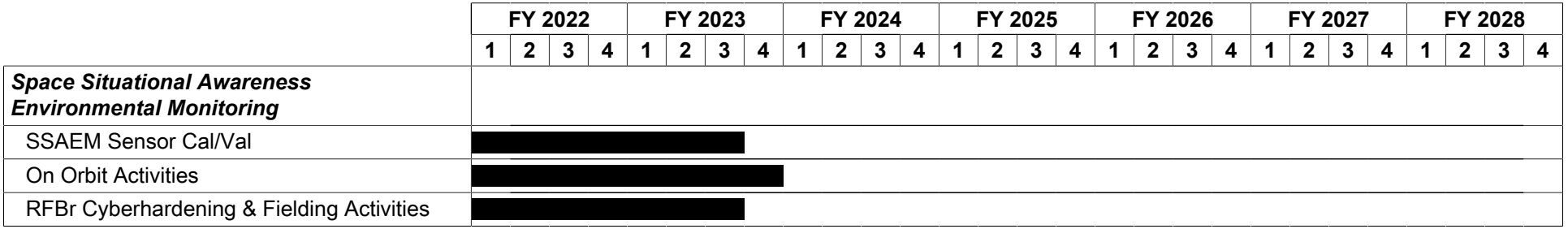

Exhibit R-4A, RDT&E Schedule Details: PB 2024 Air Force		Date: March 2023
Appropriation/Budget Activity 3620F / 5	**R-1 Program Element (Number/Name)** PE 1206422SF / *Weather System Follow-on*	**Project (Number/Name)** 65A038 / *SSA Environmental Monitoring*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Space Situational Awareness Environmental Monitoring				
SSAEM Sensor Cal/Val	1	2022	3	2023
On Orbit Activities	1	2022	4	2023
RFBr Cyberhardening & Fielding Activities	1	2022	3	2023

Exhibit R-2A, RDT&E Project Justification: PB 2024 Air Force			Date: March 2023
Appropriation/Budget Activity 3620F / 5	R-1 Program Element (Number/Name) PE 1206422SF / *Weather System Follow-on*	Project (Number/Name) 65A039 / *WSF-M*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
65A039: *WSF-M*	-	0.000	47.282	79.727	0.000	79.727	50.884	37.748	33.553	27.902	0.000	277.096
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

In FY 2023, PE 1206422SF, Weather System Follow-On, Project 644289, Weather Satellite Follow-On, R-1 Line #8 efforts were transferred to PE 1206422SF, Weather System Follow-On, Project 65A039, Weather System Follow-on - Microwave (WSF-M), R-1 Line #20 reflecting the successful completion of Milestone B on 15 May 2020. Residual budget in FY 2024 - FY 2025 has transferred from BA 4 to BA 5 in this budget cycle.

The Weather Satellite Follow-on - Microwave (WSF-M) Project 65A039 includes funds for the WSF-M system, the Compact Ocean Wind Vector Radiometer (COWVR) technology demonstration, and the Energetic Charged Particle (ECP) sensor development.

Weather System Follow-on (WSF) is a Low-Earth Orbit (LEO) microwave imaging system developed and delivered by the United States Space Force's Space Systems Command (SSC). WSF is the next generation of space-based passive microwave sensing technology. It will provide U.S. and Allied warfighters with essential weather data, including the measurement of ocean surface wind speed and direction, ice thickness, snow depth, soil moisture, and local spacecraft energetic charged particle environment. The ocean surface wind speed measurement enables tropical cyclone intensity determination by the Joint Typhoon Warning Center. The data gathered by WSF will be provided to meteorologists in support of the generation of a wide variety of weather products necessary to conduct mission planning and operations globally.

WSF is an Acquisition Category IB program comprised of two Space Vehicles (SV) and their associated command, control, and data dissemination network. Global environmental monitoring data is gathered, stored, and down-linked through the Satellite Control Network (SCN) and disseminated to Air Force and Navy weather centers. Additionally, data is broadcast real time by the satellite for utilization by heritage Direct Readout Terminals that use the data for local weather forecasting.

WSF is a Major Defense Acquisition Program (MDAP) with the Space Force as the lead component. Founded on the Space-Based Environmental Monitoring (SBEM) Analysis of Alternatives (AoA) results, the WSF will be to enable:

1) Timely weather collection over broad oceans in support of maneuvering forces;
2) Space weather capabilities to characterize operational orbits, space situational awareness, and the ionosphere.

Secondary investments may be supported to address weather gaps identified in the SBEM AoA and validated by the JROC.

COWVR is an on-orbit demonstration project of the new COWVR technology to deliver Weather Gap #3, Ocean Surface Vector Winds (OSVW) and Gap #8, Tropical Cyclone Intensity (TCI).

ECP supports the SBEM Weather Gap #11, Low Earth Orbit Energetic Charged Particle Characterization. To support this requirement, the ECP sensor will be integrated on the WSF-M satellites.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Air Force		Date: March 2023
Appropriation/Budget Activity 3620F / 5	**R-1 Program Element (Number/Name)** PE 1206422SF / *Weather System Follow-on*	**Project (Number/Name)** 65A039 / *WSF-M*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: WSF Microwave Satellite (SV1-2) ***Description:*** Develop, build, integrate, and test the WSF Microwave (WSF-M) satellites, including bus, payloads, and ground upgrades to satisfy JROC-directed SBEM Capability gaps. ***FY 2023 Plans:*** Complete WSF-M Ground Segment Integration & Test. Complete SV-1 I&T, to include, but not limited to Day-In-The-Life testing. Conduct SV-1 pre-ship review ahead of shipment of SV-1 to payload processing facility for launch processing. Execute pre-priced contract to manufacture and build of SV-2 to include payload and spacecraft unit and subsystems production, integration and test. 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. ***FY 2024 Plans:*** Launch, early orbit, checkout, calibration and validation and Initial Operational Capability of WSF-M SV-1. Continue manufacturing and build of SV-2 to include payload and spacecraft unit and subsystems production. Begin SV-2 spacecraft and payload I&T. 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. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** FY 2024 funding increased due to parallel SV-1 early orbit and operational testing in addition to continuation of SV-2 production and subsystem I&T.	0.000	45.377	76.981
Title: COWVR Tech Demo ***Description:*** The Compact Ocean Wind Vector Radiometer (COWVR) launch objective supports Category A Weather Requirements, as codified in JROC Memo 092-014, providing on-orbit technology demonstration of the new COWVR technology to deliver Weather Gap #3, Ocean Surface Vector Winds (OSVW) and Gap #8, Tropical Cyclone Intensity (TCI). This is a cooperative mission with NASA for integrating the sensor onto the International Space Station (ISS) as a weather technology demonstration project. The mission designation for the COWVR is Space Test Program Houston Mission #8 (STP-H8). Demonstrating COWVR technology in the space environment remains an important milestone for the microwave data weather mission in lieu of the ORS-6 cancellation. Unlike ORS-6, COVWR flying on the ISS and the residual operational capability is guaranteed by NASA through December 2024. ***FY 2023 Plans:***	0.000	1.600	1.640

Exhibit R-2A, RDT&E Project Justification: PB 2024 Air Force		Date: March 2023
Appropriation/Budget Activity 3620F / 5	**R-1 Program Element (Number/Name)** PE 1206422SF / *Weather System Follow-on*	**Project (Number/Name)** 65A039 / *WSF-M*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Complete the COWVR sensor calibration and validation onboard the ISS. Continue operating the sensor and gathering data for potential inclusion into current weather models. This funding includes but is not limited to payload commanding, data interpretation and dissemination, and other ground operational support. ***FY 2024 Plans:*** Continue operating the sensor and gathering data for potential inclusion into current weather models. This funding includes but is not limited to payload commanding, data interpretation and dissemination, and other ground operational support. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** FY 2024 increase due to operational life has been extended through FY based on ISS availability.			
Title: ECP ***Description:*** Energetic Charged Particles (ECP) will support the SBEM Weather Gap 11 and address the Secretary of the Air Force (SECAF) policy which directed each Space Force Satellite Office to plan for ECP sensors on all pre-Milestone B satellite acquisitions. To support this requirement, the ECP sensor will be integrated on the WSF-M satellites. ***FY 2023 Plans:*** Continue support for system integration activities. Complete WSF-M ECP sensor data processing software and pre-launch efforts. ***FY 2024 Plans:*** Begin integration and test of ECP payload for SV-2. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** FY 2024 funding decreased due to completion of ECP integration and test with WSF-M SV-1 in FY23.	0.000	0.305	1.106
Accomplishments/Planned Programs Subtotals	0.000	47.282	79.727

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

E. Acquisition Strategy

The acquisition strategy for WSF is based on validated SBEM AoA results from FY 2014 and subsequent acquisition strategy development activities that were conducted in FY 2015. The WSF acquisition strategy focuses on streamlined acquisition processes for providing materiel solutions to OSVW, TCI & LEO ECP, as validated by the JROC; deliver microwave sensing solution to address DoD needs for OSVW and TCI capabilities and deliver space environment sensing solution to address LEO ECP capabilities for on-orbit attributions and support of anomaly resolutions.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Air Force		Date: March 2023
Appropriation/Budget Activity 3620F / 5	**R-1 Program Element (Number/Name)** PE 1206422SF / *Weather System Follow-on*	**Project (Number/Name)** 65A039 / *WSF-M*

The Space Force is conducting a technology demonstration of the Compact Ocean Wind Vector Radiometer (COWVR) sensor on the International Space Station (ISS), utilizing its unique technology demonstration capabilities for on-orbit demonstration of COWVR technology. The Space Systems Command (SSC) Space Test Program Office is the lead Space Force organization spearheading the NASA partnership, with the SSC Space Sensing (SN) Directorate responsible for the COWVR sensor and providing programmatic support to enable COWVR sensor to ISS integration/technology demonstration.

The program awarded a contract for WSF-M with up to two satellites through a full and open competition. The WSF-M first satellite (SV-1) Initial Launch Capability is 1st quarter FY 2024. The pre-priced WSF-M SV-2 option was exercised in Nov 2022. WSF-M SV-2 ILC is 3rd quarter FY 2027. The WSF SV-2 will be functionally equivalent to SV-1. The Naval Research Lab Blossom Point Tracking Facility (BPTF) will be the Satellite Operations Center (SOC) for WSF-M.

The WSF ECP sensor is developed by AFRL and will be integrated onto the WSF-M satellites.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force			Date: March 2023
Appropriation/Budget Activity 3620F / 5	**R-1 Program Element (Number/Name)** PE 1206422SF / *Weather System Follow-on*	**Project (Number/Name)** 65A039 / *WSF-M*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
WSF COWVR Technology Demonstration	Various	Various : TBD	-	-		2.384	Apr 2023	1.640	Apr 2024	-		1.640	0.000	4.024	-
WSF Microwave System (SV1-2)	C/CPFF	Ball Aerospace, : Boulder, CO	-	-		26.629	Nov 2022	53.625	Nov 2023	-		53.625	0.000	80.254	505.466
WSF ECP	C/Various	Various : Various	-	-		0.305	Jan 2023	1.106	Jan 2024	-		1.106	0.000	1.411	-
WSF Enterprise Systems Engineering & Integration	C/CPAF	Engility Corp : Andover, MA	-	-		2.106	Nov 2022	2.325	Nov 2023	-		2.325	0.000	4.431	-
WSF Technical Mission Analysis	RO	Aerospace Corp. : El Segundo, CA	-	-		5.645	Nov 2022	7.102	Nov 2023	-		7.102	0.000	12.747	-
WSF Blossom Point Naval Research Laboratory	MIPR	NRL : Welcome, MD	-	-		3.246	Dec 2022	4.017	Dec 2023	-		4.017	0.000	7.263	-
SBIR/STTR	Various	Not specified. : TBD	-	-		1.563		2.790		-		2.790	0.000	4.353	-
		Subtotal	-	-		41.878		72.605		-		72.605	0.000	114.483	N/A

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
WSF FFRDC	RO	Aerospace Corp : El Segundo, CA	-	-		2.419	Nov 2022	3.342	Nov 2023	-		3.342	0.000	5.761	-
WSF A&AS	Various	Various : El Segundo, CA	-	-		2.777	Feb 2023	3.572	Feb 2024	-		3.572	0.000	6.349	-
WSF Other Support	Various	Various : El Segundo, CA	-	-		0.208	Nov 2022	0.208	Nov 2023	-		0.208	0.000	0.416	-
		Subtotal	-	-		5.404		7.122		-		7.122	0.000	12.526	N/A

	Prior Years	FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	-		47.282		79.727		-		79.727	0.000	127.009	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Air Force		Date: March 2023
Appropriation/Budget Activity 3620F / 5	**R-1 Program Element (Number/Name)** PE 1206422SF / *Weather System Follow-on*	**Project (Number/Name)** 65A039 / *WSF-M*

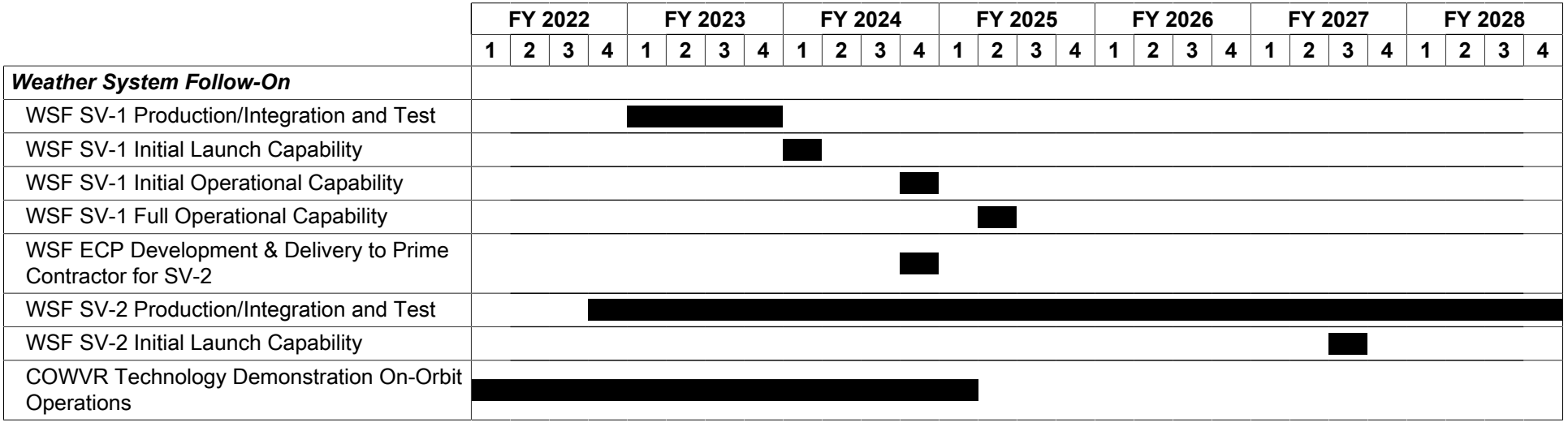

Exhibit R-4A, RDT&E Schedule Details: PB 2024 Air Force		Date: March 2023
Appropriation/Budget Activity 3620F / 5	**R-1 Program Element (Number/Name)** PE 1206422SF / *Weather System Follow-on*	**Project (Number/Name)** 65A039 / *WSF-M*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Weather System Follow-On				
WSF SV-1 Production/Integration and Test	1	2023	4	2023
WSF SV-1 Initial Launch Capability	1	2024	1	2024
WSF SV-1 Initial Operational Capability	4	2024	4	2024
WSF SV-1 Full Operational Capability	2	2025	2	2025
WSF ECP Development & Delivery to Prime Contractor for SV-2	4	2024	4	2024
WSF SV-2 Production/Integration and Test	4	2022	4	2028
WSF SV-2 Initial Launch Capability	3	2027	3	2027
COWVR Technology Demonstration On-Orbit Operations	1	2022	1	2025

Note

FY 2021 and FY 2022 scheduled activities are captured within the budget justification exhibit for program 1206422SF, Weather System Follow-On, Project 644289, Weather Satellite Follow-On, R-1 Line #6.