Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Air Force											Date: April 2022	
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 2021**	**FY 2022**	**FY 2023 Base**	**FY 2023 OCO**	**FY 2023 Total**	**FY 2024**	**FY 2025**	**FY 2026**	**FY 2027**	**Cost To Complete**	**Total Cost**
Total Program Element	-	2.440	1.438	48.870	0.000	48.870	69.333	23.362	23.881	24.346	Continuing	Continuing
65A038: *SSA Environmental Monitoring*	-	2.440	1.438	1.438	0.000	1.438	0.000	0.000	0.000	0.000	Continuing	Continuing
65A039: *WSF-M*	-	0.000	0.000	47.432	0.000	47.432	69.333	23.362	23.881	24.346	0.000	188.354

A. Mission Description and Budget Item Justification

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 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.

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 FY24-25 funds will be transferred from BA04 to BA05 in future budget cycle.

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

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 2023 Air Force	Date: April 2022
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. In FY 2021 $0.00 was expended for civilian pay expenses in this program element, and in FY 2022 $0.00 is forecasted for civilian pay expenses in this program element.

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 2023 Air Force					Date: April 2022
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 2021**	**FY 2022**	**FY 2023 Base**	**FY 2023 OCO**	**FY 2023 Total**
Previous President's Budget	2.526	1.438	0.000	0.000	0.000
Current President's Budget	2.440	1.438	48.870	0.000	48.870
Total Adjustments	-0.086	0.000	48.870	0.000	48.870
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	-0.086	0.000			
• Other Adjustments	0.000	0.000	48.870	0.000	48.870

Change Summary Explanation

FY 2023: The FY 2022 President's Budget submittal did not reflect FY 2023 through FY 2026 funding. Therefore, an explanation of the change between the two budget positions for FY 2023 cannot be made in a relevant manner.

Exhibit R-2A, RDT&E Project Justification: PB 2023 Air Force			Date: April 2022
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 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
65A038: *SSA Environmental Monitoring*	-	2.440	1.438	1.438	0.000	1.438	0.000	0.000	0.000	0.000	Continuing	Continuing
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. In FY 2021 $0.00 was expended for civilian pay expenses in this program element, and in FY 2022 $0.00 is forecasted for civilian pay expenses in this program element.

The RFB ground stations will be transferred to AFRL after Calibration and Validation is complete in 2nd Quarter FY 2022. Design life has extended through FY28 due to system performance exceeding expectations.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2021	FY 2022	FY 2023
Title: Space Situational Awareness Environment Monitoring (SSAEM)	2.440	1.438	1.438
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 2022 Plans:*** Continue Radio Frequency Beacon receivers (RFBr) fielding activities at operational Ionospheric Scintillation and Total Electron Content Observer (ISTO) sites. Continue on-orbit support of SSAEM sensors onboard COSMIC-2 as well as provide remote sensing of space weather coverage until the satellites reach their design mission End of Life. Continue program office and other related support activities that may include,			

Exhibit R-2A, RDT&E Project Justification: PB 2023 Air Force		Date: April 2022
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 2021	FY 2022	FY 2023
but are not limited to studies, technical analysis, prototyping, etc. ***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 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 2022 to FY 2023 Increase/Decrease Statement:*** N/A			
Accomplishments/Planned Programs Subtotals	2.440	1.438	1.438

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 2023 Air Force			Date: April 2022
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 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
UCAR Sensor R&D	SS/CPFF	UCAR : TBD	-	0.893	Nov 2020	0.759	Nov 2021	0.589	Nov 2022	-		0.589	Continuing	Continuing	-
On-Orbit Support (UCAR/ JPL)	MIPR	UCAR/JPL : Boulder, CO	-	0.845	Nov 2020	0.440	Nov 2021	0.395	Nov 2022	-		0.395	Continuing	Continuing	-
Ground Support	Various	Various : TBD	-	0.698	Nov 2020	-		0.153	Nov 2022	-		0.153	Continuing	Continuing	-
Technical Mission Analysis	RO	Aerospace Corp : El Segundo, CA	-	-		0.115	Nov 2021	0.144	Nov 2022	-		0.144	Continuing	Continuing	-
		Subtotal	-	2.436		1.314		1.281		-		1.281	Continuing	Continuing	N/A

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
FFRDC	RO	Aerospace Corp : El Segundo, CA	-	0.000	Nov 2020	0.115	Nov 2021	0.096	Nov 2022	-		0.096	Continuing	Continuing	-
A&AS	Various	Various : Various	-	-		-		0.056	May 2023	-		0.056	Continuing	Continuing	-
Other Support	Various	Various : Various	-	0.004	Aug 2021	0.009		0.005	Nov 2022	-		0.005	Continuing	Continuing	-
		Subtotal	-	0.004		0.124		0.157		-		0.157	Continuing	Continuing	N/A

	Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	2.440		1.438		1.438		-		1.438	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2023 Air Force		Date: April 2022
Appropriation/Budget Activity 3620F / 5	**R-1 Program Element (Number/Name)** PE 1206422SF / *Weather System Follow-on*	**Project (Number/Name)** 65A038 / *SSA Environmental Monitoring*

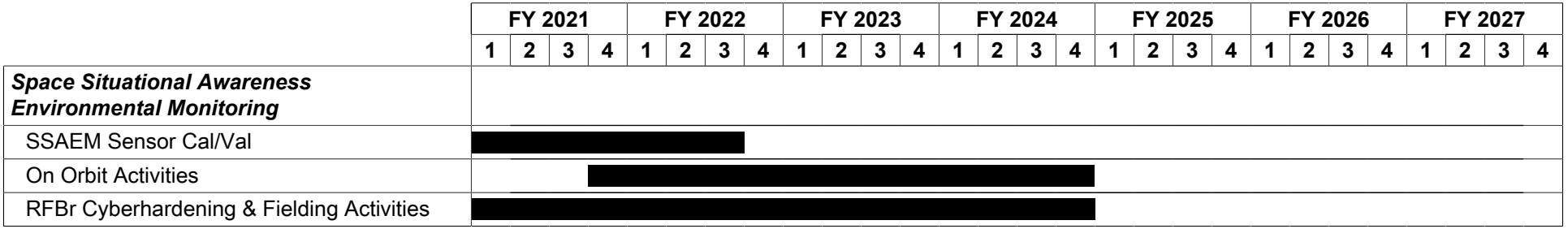

Exhibit R-4A, RDT&E Schedule Details: PB 2023 Air Force		Date: April 2022
Appropriation/Budget Activity 3620F / 5	**R-1 Program Element (Number/Name)** PE 1206422SF / *Weather System Follow-on*	**Project (Number/Name)** 65A038 / *SSA Environmental Monitoring*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Space Situational Awareness Environmental Monitoring				
SSAEM Sensor Cal/Val	1	2021	3	2022
On Orbit Activities	4	2021	4	2024
RFBr Cyberhardening & Fielding Activities	1	2021	4	2024

Exhibit R-2A, RDT&E Project Justification: PB 2023 Air Force			Date: April 2022
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 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
65A039: *WSF-M*	-	0.000	0.000	47.432	0.000	47.432	69.333	23.362	23.881	24.346	0.000	188.354
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This is not a new start. 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 FY24-25 funds will be transferred from BA04 to BA05 in future budget cycle.

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

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).

Exhibit R-2A, RDT&E Project Justification: PB 2023 Air Force		Date: April 2022
Appropriation/Budget Activity 3620F / 5	**R-1 Program Element (Number/Name)** PE 1206422SF / *Weather System Follow-on*	**Project (Number/Name)** 65A039 / *WSF-M*

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.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2021	FY 2022	FY 2023
Title: WSF Microwave Satellite (SV1-2)	0.000	0.000	47.097
Description: This is not a new start. 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 2022 Plans:*** N/A ***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 2022 to FY 2023 Increase/Decrease Statement:*** The FY 2023 funding increased due to the transfer of funding from PE 1206422SF BA04, Weather System Follow-On, Project 644289 to PE 1206442SF BA05, Weather System Follow-On, Project 65A039. The transfer of funding recognizes the $8.1M in FY22 funds under the former BA04 removed through congressional mark for product development excess to need.			
Title: COWVR Tech Demo	0.000	0.000	0.030
Description: This is not a new start. 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 will be a cooperative mission with NASA for integrating the sensor onto the International Space Station (ISS) as a weather technology demonstration project. The new mission designation for the COWVR launch will be 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 will fly on the ISS and the residual operational capability is not guaranteed as a result. ***FY 2022 Plans:***			

Exhibit R-2A, RDT&E Project Justification: PB 2023 Air Force		Date: April 2022
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 2021	FY 2022	FY 2023
N/A ***FY 2023 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 2022 to FY 2023 Increase/Decrease Statement:*** FY 2023 funding increased due to the transfer of funding from PE 1206422SF BA04, Weather System Follow-On, Project 644289 to PE 1206442SF, BA05, Weather System Follow-On, Project 65A039			
Title: ECP ***Description:*** This is not a new start. 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 2022 Plans:*** N/A ***FY 2023 Plans:*** Continue support for system integration activities. Complete WSF-M ECP sensor data processing software and pre-launch efforts. ***FY 2022 to FY 2023 Increase/Decrease Statement:*** FY 2023 funding increased due to the transfer of funding from PE 1206422SF BA04, Weather System Follow-On, Project 644289 to PE 1206442SF, BA05, Weather System Follow-On, Project 65A039	0.000	0.000	0.305
Accomplishments/Planned Programs Subtotals	0.000	0.000	47.432

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 2023 Air Force		Date: April 2022
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 Development Corps 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 must be exercised by Nov 2022 or be subject to renegotiation. WSF-M SV-2 ILC is 4th 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 2023 Air Force			Date: April 2022
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 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
WSF COWVR Technology Demonstration	Various	Various : TBD	-	-		-		0.030	Apr 2023	-		0.030	0.000	0.030	-
WSF Microwave System (SV1-2)	C/CPFF	Ball Aerospace, : Boulder, CO	-	-		-		25.638	Nov 2022	-		25.638	0.000	25.638	499.147
WSF ECP	C/Various	Various : Various	-	-		-		0.305	Jan 2023	-		0.305	0.000	0.305	-
WSF Enterprise Systems Engineering & Integration	C/CPAF	Engility Corp : Andover, MA	-	-		-		3.267	Nov 2022	-		3.267	0.000	3.267	-
WSF Technical Mission Analysis	RO	Aerospace Corp. : El Segundo, CA	-	-		-		6.414	Nov 2022	-		6.414	0.000	6.414	-
WSF Blossom Point Naval Research Laboratory	MIPR	NRL : Welcome, MD	-	-		-		4.174	Dec 2022	-		4.174	0.000	4.174	-
		Subtotal	-	-		-		39.828		-		39.828	0.000	39.828	N/A

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
WSF FFRDC	RO	Aerospace Corp : El Segundo, CA	-	-		-		3.019	Nov 2022	-		3.019	0.000	3.019	-
WSF A&AS	Various	Various : El Segundo, CA	-	-		-		4.377	Feb 2023	-		4.377	0.000	4.377	-
WSF Other Support	Various	Various : El Sefunto, CA	-	-		-		0.208	Nov 2022	-		0.208	0.000	0.208	-
		Subtotal	-	-		-		7.604		-		7.604	0.000	7.604	N/A

	Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	-		-		47.432		-		47.432	0.000	47.432	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2023 Air Force		Date: April 2022
Appropriation/Budget Activity 3620F / 5	**R-1 Program Element (Number/Name)** PE 1206422SF / *Weather System Follow-on*	**Project (Number/Name)** 65A039 / *WSF-M*

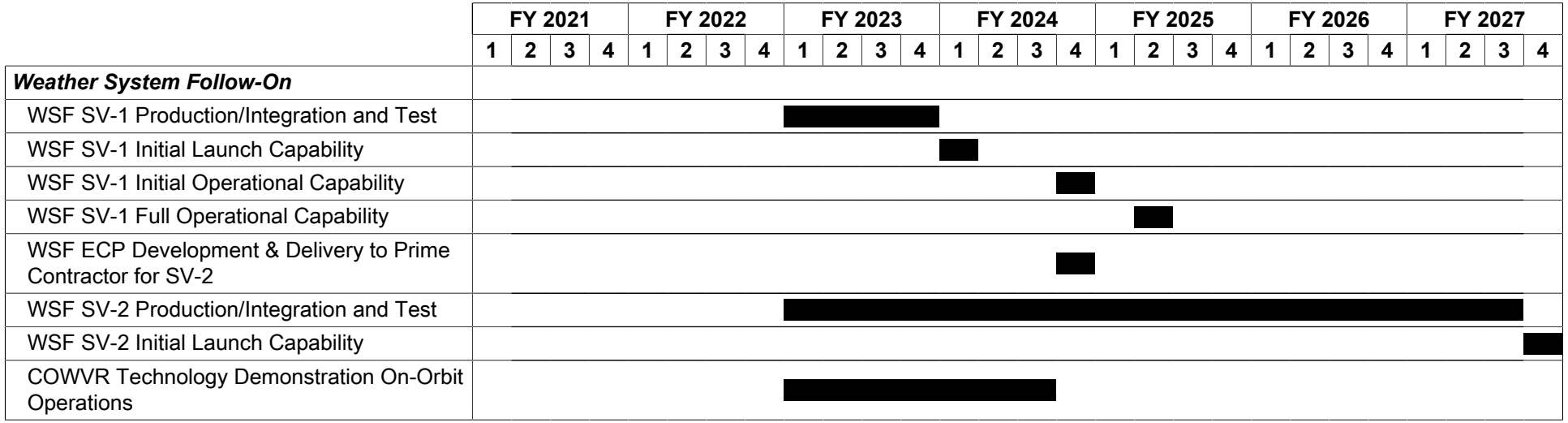

Exhibit R-4A, RDT&E Schedule Details: PB 2023 Air Force		Date: April 2022
Appropriation/Budget Activity 3620F / 5	**R-1 Program Element (Number/Name)** PE 1206422SF / *Weather System Follow-on*	**Project (Number/Name)** 65A039 / *WSF-M*

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	1	2023	3	2027
WSF SV-2 Initial Launch Capability	4	2027	4	2027
COWVR Technology Demonstration On-Orbit Operations	1	2023	3	2024

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.