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 4: *Advanced Component Development & Prototypes (ACD&P)*					R-1 Program Element (Number/Name) PE 1203710SF *I EO/IR Weather Systems*							
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	-	156.631	86.519	95.615	0.000	95.615	78.458	80.184	81.822	84.780	0.000	664.009
643730: *EO/IR Weather System Dev*	-	156.631	86.519	95.615	0.000	95.615	78.458	80.184	81.822	84.780	0.000	664.009
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

In compliance with the 2015, 2016, 2017, and 2020 National Defense Authorization Act (NDAA) and Joint Requirements Oversight Council (JROC) Memo's 092-14, 062-17, and 031-22, EWS will provide global Low-Earth Orbit (LEO) coverage to meet Space-Based Environmental Monitoring (SBEM) Electro-Optical/Infrared (EO/IR) Gaps 1) Cloud Characterization (CC) and 2) Theatre Weather Imagery (TWI). This capability will operationally replace the obsolete and aging Defense Meteorological Satellite Program (DMSP) projected end-of-life June 2026, and the EWS-Geostationary (EWS-G) projected end-of-life Sept 2030. Without the CC and TWI data, production of global predictive weather data will be severely impacted, affecting daily air operations and intelligence gathering for strategic mission planning. Moreover, INDOPACOM, CENTCOM, and AFRICOM will be unable to forecast and monitor adverse weather conditions over eastern Africa and the Indian Ocean. Lastly, the US will not meet the DoD responsibility of maintaining the SBEM civil/international partnership for the Family of Systems architecture.

Based on SBEM Capability Assessment and Strategy Review (CASR) in April 2019, the current EWS acquisition strategy focuses on a distributed LEO architecture, for scalability and increased operational resilience. The Space Force will pursue prototyping of latest industry capabilities for simplified sensor designs, while meeting CC and TWI requirements and data latencies in a distributed architecture.

Space acquisition must respond with speed and agility to emerging adversary threats. Space Systems Command (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 existing capabilities.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver EWS 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 effort is in Budget Activity 4, Advanced Component Development and Prototypes (ACD&P), because efforts are necessary to evaluate integrated technologies, representative modes or prototype systems in a high fidelity and realistic operating environment.

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Appropriation/Budget Activity 3620F: *Research, Development, Test & Evaluation, Space Force I* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 Program Element (Number/Name)** PE 1203710SF *I EO/IR Weather Systems*

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	162.274	96.519	95.817	0.000	95.817
Current President's Budget	156.631	86.519	95.615	0.000	95.615
Total Adjustments	-5.643	-10.000	-0.202	0.000	-0.202
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	-10.000			
• 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	-5.643	0.000			
• Other Adjustments	0.000	0.000	-0.202	0.000	-0.202

Change Summary Explanation

FY 2022: -5.643M for SBIR reduction

FY 2023: -10.000M for Congressional Directed Reductions

FY 2024: -0.630M 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.

C. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Title: Electro-Optical/Infrared Weather System (EWS)	156.631	86.519	95.615	0.000	95.615
Description: EWS will focus on an overlapping three-phased approach intended to mature multi-spectral imaging capabilities to collect and disseminate terrestrial atmospheric phenomena to support Department of Defense (DoD) operations. Primary effort will focus on competitive prototyping of the latest industry sensor and bus designs, development, integration, test, launch and successful on-orbit demonstrations. This effort will also assess current industrial capability to deliver CC and TWI data in a viable commercial service business, hosted on a proliferated LEO mesh network. Program will minimize technology maturity risks by evaluating multiple, competitive EO/IR sensors, satellite vehicle prototypes and commercial services in order to inform a decision on a cost-effective system or service to replace the DMSP constellation in a timely manner. Per the approved EWS Acquisition Strategy, the Program Office will continue to competitively prototype sensor and bus designs for a proliferated-LEO architecture while leveraging the existing SBEM Family of Systems (Phase II), and on-ramp to an operational system (Phase III) based on the success of Phase II in time to operationally replace DMSP					

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C. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
and EWS-G at their end of life. Leveraging the success of these efforts, the Program Office intends to field an affordable and highly capable operational replacement system in Phase III. ***FY 2023 Plans:*** For Phase II Modernized Pathfinder efforts: For Orion Space Solutions Technology Demonstration, complete associated space vehicle and launch vehicle integration. Conduct root-cause analysis for orbital insertion issue with initial demonstration launch. Re-plan, contract, build, integrate, and test additional technology demonstration. For Increment 0 Operational Demonstrations, continue General Atomics Operational Demonstration #1 build, Integration & Test (I&T) activities. Develop and coordinate mission unique requirements with SSC launch enterprise to maintain planned launch schedule by end of FY 2025. These efforts will inform a second operational demonstration #2 starting in 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 2024 Base Plans:*** For Phase II Modernized Pathfinder efforts: For the additional Orion Space Solutions Technology Demonstration, complete associated space vehicle and launch vehicle integration, on-orbit calibration and check-out, and technology demonstration. Assess prototype microbolometer performances in Early Morning Orbit and feed results to Phase III operational system acquisition strategy. For Increment 0 Operational Demonstrations: continue Operational Demonstration #1 build, Integration & Test (I&T) activities in preparation for an FY 2025 launch. Begin pre-acquisition activities and execute contract award of Operational Demonstration #2. Prepare for Acquisition Strategy decision in FY 2025 to support Phase III Operational Replacement definition. 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 OCO Plans:***					

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C. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
N/A ***FY 2023 to FY 2024 Increase/Decrease Statement:*** FY 2024 decreased slightly due to ramping down of Phase II on-orbit technology demonstration of Orion Space Solution Technology Demonstration while ramping up to build, integrate and prepare Phase II Operational Demonstration #1 initial operational demonstration for launch.					
Accomplishments/Planned Programs Subtotals	156.631	86.519	95.615	0.000	95.615

D. Other Program Funding Summary ($ in Millions)

N/A

Remarks

E. Acquisition Strategy

In accordance with the approved SBEM Acquisition Strategy (Sep 2020), the Space Force will continue to address Joint SBEM gaps with a combination of DoD materiel and non-materiel solutions, partnerships, and commercial, civil, and allied data. EWS will continue to use Section 815, Other Transaction Authority (OTA), to competitively pursue a scalable, proliferated-LEO architecture based on technological advancements in smaller sensor design and leveraging commercial-based capabilities. The Phase II modernized pathfinder efforts will include OTA contracts for technology risk reduction and operational demonstration efforts. The purpose of Phase II is to explore various technology projects and partnerships to determine the most technically acceptable, resilient, and affordable option to support Phase III. Informed by Phase II, the Phase III operational system replacement acquisition strategy will be decided in early FY 2025 and will consider modern architectures such as proliferated-LEO, hosted-payload, or other commercial capabilities.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force			Date: March 2023
Appropriation/Budget Activity 3620F / 4	R-1 Program Element (Number/Name) PE 1203710SF / *EO/IR Weather Systems*	Project (Number/Name) 643730 / *EO/IR Weather System Dev*	

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
Phase II Demo 1	C/Various	Various : Various	-	144.957	Dec 2021	71.409	Dec 2022	50.891	Dec 2023	-		50.891	Continuing	Continuing	-
Phase II Demo 2	C/Various	TBD : TBD	-	0.171	Dec 2022	-		29.106	Jul 2024	-		29.106	Continuing	Continuing	-
Technical Mission Analysis	RO	Aerospace Corp : El Segundo, CA	-	1.347	Nov 2022	2.326	Jan 2023	2.178	Jan 2024	-		2.178	Continuing	Continuing	-
Enterprise Systems Engineering & Integration	C/CPIF	Engility Corp : Andover, WA	-	2.145	Nov 2022	2.527	Jan 2023	2.625	Jan 2024	-		2.625	Continuing	Continuing	-
SBIR/STTR	C/Various	TBD : TBD	-	-		2.924	Mar 2024	3.347	Mar 2024	-		3.347	Continuing	Continuing	-
		Subtotal	-	148.620		79.186		88.147		-		88.147	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	-	2.020	Jan 2022	3.489	Jan 2023	3.267	Jan 2024	-		3.267	Continuing	Continuing	-
A&AS	Various	Various : Various	-	5.911	Jan 2022	3.757	Jan 2023	4.111	Jan 2024	-		4.111	Continuing	Continuing	-
Other Support	Various	Various : Various	-	0.080	Oct 2021	0.087	Oct 2022	0.090	Oct 2023	-		0.090	Continuing	Continuing	-
		Subtotal	-	8.011		7.333		7.468		-		7.468	Continuing	Continuing	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	-	156.631		86.519		95.615		-		95.615	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Air Force		Date: March 2023
Appropriation/Budget Activity 3620F / 4	**R-1 Program Element (Number/Name)** PE 1203710SF / *EO/IR Weather Systems*	**Project (Number/Name)** 643730 / *EO/IR Weather System Dev*

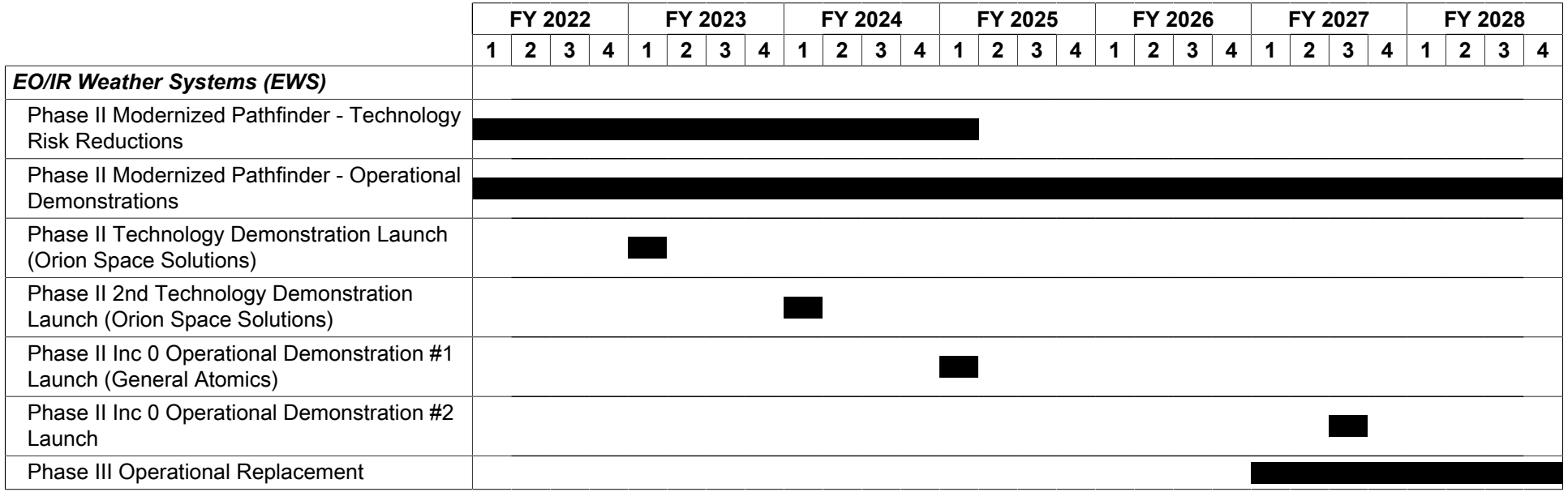

Exhibit R-4A, RDT&E Schedule Details: PB 2024 Air Force		Date: March 2023
Appropriation/Budget Activity 3620F / 4	**R-1 Program Element (Number/Name)** PE 1203710SF / *EO/IR Weather Systems*	**Project (Number/Name)** 643730 / *EO/IR Weather System Dev*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
EO/IR Weather Systems (EWS)				
Phase II Modernized Pathfinder - Technology Risk Reductions	1	2022	1	2025
Phase II Modernized Pathfinder - Operational Demonstrations	1	2022	4	2028
Phase II Technology Demonstration Launch (Orion Space Solutions)	1	2023	1	2023
Phase II 2nd Technology Demonstration Launch (Orion Space Solutions)	1	2024	1	2024
Phase II Inc 0 Operational Demonstration #1 Launch (General Atomics)	1	2025	1	2025
Phase II Inc 0 Operational Demonstration #2 Launch	3	2027	3	2027
Phase III Operational Replacement	1	2027	4	2028