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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>					R-1 Program Element (Number/Name) PE 1203710F / <i>EO/IR Weather Systems</i>							
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	0.000	10.000	7.940	0.000	7.940	101.222	156.819	106.231	42.700	Continuing	Continuing
643730: <i>EO/IR Weather System Dev</i>	-	0.000	10.000	7.940	0.000	7.940	101.222	156.819	106.231	42.700	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Based on completion of the Space-Based Environmental Monitoring (SBEM) Joint Requirements Oversight Council (JROC) Memo 092-14, capabilities will be developed to satisfy weather Gap 1 (Cloud Characterization) and Gap 2 (Theater Weather Imagery). Electro-Optical/Infrared (EO/IR) Weather Systems is a component of SBEM efforts to develop capabilities to satisfy weather Gap 1 (Cloud Characterization) and Gap 2 (Theater Weather Imagery). The earliest possible launch options are being integrated in the design for critical gaps.

Based on the SBEM Analysis of Alternatives (AoA) results, the EO/IR Weather Systems initial thrusts will enable:

- 1) DoD use of data collected by civil, international and other DoD space systems;
- 2) Weather System Follow-on Geostationary (WSF-G) efforts to include residual Geostationary Operational Environmental Satellite (GOES) relocation planning and engineering assessment;
- 3) Timely weather collection of WSF EO/IR (WSF-E) Program of Record;
- 4) Explore and/or utilize the use of commercially available data.

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

The current and future space domain demands that space systems be responsive to new and changing threats, and can rapidly integrate new capabilities to make our warfighting force more resilient in a contested battlespace. This agility, survivability, and rapid reconstitution must extend through the entire space warfighting enterprise, to include how we learn about the threat; develop solutions; acquire, test, deploy, train, operate and integrate new systems into the greater system of systems; and ensure our space mission force is ready to defeat a thinking adversary in a complex, multi-domain battlespace. The enterprise will use all of its elements to accelerate decision-making, prototype potential solutions, rapidly integrate decision-making tools and sustain a war-winning capability by delivering multi-domain effects in, from, and through space and cyberspace enabling battle management and resilience options to "fight through."

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

This program 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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B. Program Change Summary (\$ in Millions)		FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget		0.000	10.000	0.000	0.000	0.000
Current President's Budget		0.000	10.000	7.940	0.000	7.940
Total Adjustments		0.000	0.000	7.940	0.000	7.940
• 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		0.000	0.000			
• Other Adjustments		0.000	0.000	7.940	0.000	7.940
Change Summary Explanation						
FY2019: +\$8.000M WSF-E; -\$0.060M Inflation.						
C. Accomplishments/Planned Programs (\$ in Millions)				FY 2017	FY 2018	FY 2019
Title: Weather System Follow-On Electro-Optical/Infrared (WSF-E)				0.000	9.500	7.940
Description: WSF-E acquisition will follow standard SMC satellite acquisition processes. The Air Force intends to pursue a full and open competition with industry aimed at procuring the most affordable and capable WSF-E system to meet both capability gaps 1 (cloud characterization) & 2 (theater weather imagery). Includes program office and other related support activities that may include, but are not limited to studies, technical analysis, and risk reduction activities etc.						
FY 2018 Plans:						
Risk reduction, pre-acquisition activities and Request for Proposal (RFP) for WSF-E. Continue to address secondary weather gaps identified in the Meteorological and Oceanographic (METOC) Initial Capabilities Document (ICD).						
FY 2019 Plans:						
Receive proposals and conduct source selection. Continue to address secondary weather gaps identified in the Meteorological and Oceanographic (METOC) Initial Capabilities Document (ICD). Continue Enterprise Systems Engineering & Integration and Management Services. Risk reduction and pre-acquisition activities leading up to contract award in FY 2020 for WSF-E. Rapidly respond to implement system resiliency and situational awareness necessary to operate in the contested space domain. These activities may include, but are not limited to program office support, studies, technical analysis, prototyping, etc.						
FY 2018 to FY 2019 Increase/Decrease Statement:						

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C. Accomplishments/Planned Programs (\$ in Millions)										FY 2017	FY 2018	FY 2019
FY 2019 decreased compared to FY 2018 by \$1.560M. Justification for this decrease is described in plans above.												
Title: Weather System Follow-On Geostationary (WSF-G)										0.000	0.500	-
Description: Residual Geostationary Operational Environmental Satellite (GOES) Relocation is a Department of Defense (DoD) weather mitigation plan to address Space-based Environmental Monitoring (SBEM) Weather Gaps 1 (Cloud Characterization) and Gap 2 (Theater Weather Imagery) requirements over the Indian Ocean region. The requirements have been validated by the JROC Memo 033-16. The program will leverage a spare National Oceanic and Atmospheric Agency (NOAA) on-orbit geostationary asset for the DoD use, in order to provide timely and reliable high-quality electro-optical/infrared (EO/IR) remote sensing capability that will address the critical weather data needs over the Central Command (CENTCOM) Area of Responsibility (AoR). Includes program office and other related support activities that may include, but are not limited to studies, technical analysis, and risk reduction activities etc. Continue to address secondary weather gaps identified in the Meteorological and Oceanographic (METOC) Initial Capabilities Document (ICD).												
FY 2018 Plans: Risk reduction, pre-acquisition activities and Request for Proposal (RFP) release for WSF-G.												
FY 2018 to FY 2019 Increase/Decrease Statement: FY 2019 decrease compared to FY 2018 by \$0.500M. Justification for this decreased is described in plans above.												
Accomplishments/Planned Programs Subtotals										0.000	10.000	7.940
D. Other Program Funding Summary (\$ in Millions)												
Line Item	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost	
• SPAF 01 SPCMOD: Space Mods	-	18.620	63.737	-	63.737	-	-	-	-	0.000	82.357	
Remarks Reflects PE 1203710F EO/IR Weather Systems portion of shared P-1 line SPCMOD.												
E. Acquisition Strategy The acquisition strategy for WSF-E and WSF-G is based on validated SBEM AoA and JROC Memo 033-16 and subsequent acquisition strategy development activities that will be conducted in FY 2018. The program office successfully completed a Materiel Development Decision with the Air Force Program Executive Officer of Space (AFPEO/SP), 3 May 17; and WSF-E Milestone A event with the Milestone Decision Authority (AFPEO/SP) and signed Acquisition Decision Memorandum, 19 May 17.												

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F. Performance Metrics Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.		

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force												Date: February 2018			
Appropriation/Budget Activity 3600 / 4						R-1 Program Element (Number/Name) PE 1203710F / EO/IR Weather Systems				Project (Number/Name) 643730 / EO/IR Weather System Dev					
Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Pre-Acquisition Activities	Various	Various : Various	-	0.000		9.000	Feb 2018	7.940	Feb 2019	-		7.940	Continuing	Continuing	-
Subtotal			-	0.000		9.000		7.940		-		7.940	Continuing	Continuing	N/A
Management Services (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Other Support	Various	Various : Various	-	0.000		1.000	Oct 2017	-		-		-	Continuing	Continuing	-
Subtotal			-	0.000		1.000		-		-		-	Continuing	Continuing	N/A
			Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			-	0.000		10.000		7.940		-		7.940	Continuing	Continuing	N/A
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force Date: February 2018

Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 1203710F / EO/IR Weather Systems	Project (Number/Name) 643730 / EO/IR Weather System Dev
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	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
EO/IR Weather Systems																												
WSF EO/IR System Pre-Acquisition Activities																												
WSF EO/IR System Development RFP Release																												
WSF EO/IR System Source Selection																												
WSF EO/IR System Contract Award																												
WSF EO/IR System Preliminary Design Review																												
WSF EO/IR System Milestone B																												
WSF EO/IR System Critical Design Review																												
WSF EO/IR System Production and Fielding																												
WSF EO/IR System Integration and Testing																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force			Date: February 2018
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 1203710F / <i>EO/IR Weather Systems</i>	Project (Number/Name) 643730 / <i>EO/IR Weather System Dev</i>	

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>EO/IR Weather Systems</i>				
WSF EO/IR System Pre-Acquisition Activities	1	2018	4	2018
WSF EO/IR System Development RFP Release	1	2019	1	2019
WSF EO/IR System Source Selection	1	2019	1	2020
WSF EO/IR System Contract Award	1	2020	1	2020
WSF EO/IR System Preliminary Design Review	1	2020	1	2021
WSF EO/IR System Milestone B	1	2021	1	2022
WSF EO/IR System Critical Design Review	1	2022	2	2022
WSF EO/IR System Production and Fielding	2	2022	1	2023
WSF EO/IR System Integration and Testing	2	2023	4	2023