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Exhibit R-2, RDT&E Budget Item Justification: PB 2020 Air Force										Date: February 2019		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)					R-1 Program Element (Number/Name) PE 1203710F I EO/IR Weather Systems							
COST (\$ in Millions)	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
Total Program Element	-	8.000	7.940	101.222	0.000	101.222	156.819	106.231	42.700	29.669	Continuing	Continuing
643730: EO/IR Weather System Dev	-	8.000	7.940	101.222	0.000	101.222	156.819	106.231	42.700	29.669	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 (EWS) initial thrusts will enable:

- 1) DoD use of data collected by civil, international and other DoD space systems;
- 2) Timely weather collection of EWS Program of Record;
- 3) 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.

EWS will consist of a Low Earth Orbiting (LEO) Freeflyer space vehicle in a sun-synchronous, early morning orbit and a ground architecture (LEO Ground) for mission data retrieval/processing and telemetry, tracking, and control. EWS will provide environmental monitoring in the Electro-Optical/Infrared (EO/IR) Family of Systems providing coverage to meet Space Based Environmental Monitoring (SBEM) Gaps 1 and 2, Cloud Characterization (CC) and Theater Weather Imagery (TWI).

Space acquisition must respond with speed and agility to emerging adversary threats. Space & Missile Systems Center (SMC) is transforming 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, SMC 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 EWS 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.

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As directed in the FY 2018 NDAA, Sec 825, amendment to PL 114-92 FY 2016 NDAA, Sec 828 Penalty for Cost Overruns, the FY 2018 Air Force penalty total is \$14.373M. The calculated percentage reduction to each research, development, test and evaluation and procurement account will be allocated proportionally from all programs, projects, or activities under such account.						
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.						
B. Program Change Summary (\$ in Millions)		FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Previous President's Budget		10.000	7.940	101.222	0.000	101.222
Current President's Budget		8.000	7.940	101.222	0.000	101.222
Total Adjustments		-2.000	0.000	0.000	0.000	0.000
• 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		-2.000	0.000			
• SBIR/STTR Transfer		0.000	0.000			
• Other Adjustments		0.000	0.000	0.000	0.000	0.000
Change Summary Explanation						
FY 2018: -\$2.000M Reprogramming for higher Air Force Space priority						
C. Accomplishments/Planned Programs (\$ in Millions)				FY 2018	FY 2019	FY 2020
Title: Electro-Optical/Infrared Weather System (EWS)				8.000	7.940	101.222
Description: EWS will consist of a Low Earth Orbiting (LEO) Freeflyer space vehicle in a sun-synchronous, early morning orbit and a ground architecture (LEO Ground) for mission data retrieval/processing and telemetry, tracking, and control. EWS will provide environmental monitoring in the Electro-Optical/Infrared (EO/IR) Family of Systems providing coverage to meet Space Based Environmental Monitoring (SBEM) Gaps 1 and 2, Cloud Characterization (CC) and Theater Weather Imagery (TWI).						
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 EWS. Continue						

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C. Accomplishments/Planned Programs (\$ in Millions)		FY 2018	FY 2019	FY 2020							
program office support and other related support activities that may include, but are not limited to studies, technical analysis, prototyping, etc. FY 2020 Plans: Award contract and begin design of EWS to include ground development activities. Conduct subsystem Preliminary Design Reviews (PDRs) for the payload, spacecraft and ground components and prepare for system level PDR in first quarter of FY 2021. Will continue Enterprise Systems Engineering & Integration and Management Services. 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 2019 to FY 2020 Increase/Decrease Statement: FY 2020 increased compared to FY 2019 by \$93.282M. Justification for this increase is described in plans above.											
Accomplishments/Planned Programs Subtotals		8.000	7.940	101.222							
D. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
• SPAF 01 SPCMOD: <i>Space Mods</i>	18.620	63.737	-	-	-	-	-	-	-	0.000	82.357
• RDTE 04 1206857F: <i>Space Rapid Capabilities Office</i>	57.200	69.000	24.742	-	24.742	9.044	0.000	0.000	0.000	0.000	159.986
Remarks											
E. Acquisition Strategy The acquisition strategy for EWS is based on validated SBEM AoA and JROC Memo 033-16 and subsequent acquisition strategy development activities that were conducted in FY 2018. The acquisition strategy for EWS will be finalized in the first quarter of FY 2019 to support an anticipated development RFP release in the second quarter of FY 2019. The program office successfully completed a Materiel Development Decision with the Air Force Program Executive Officer of Space (AFPEO/SP) on 3 May 17, Milestone A and the Acquisition Decision Memorandum on 19 May 17.											
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 2020 Air Force												Date: February 2019			
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 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 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	-	6.588	Jul 2018	0.933	Jun 2019	-		-		-	0.000	7.521	-
LEO Free Flyer	TBD	TBD : TBD	-	-		-		86.608	Jan 2020	-		86.608	Continuing	Continuing	-
LEO Ground (EGS)	TBD	TBD : TBD	-	-		-		0.100	Dec 2019	-		0.100	Continuing	Continuing	-
Technical Mission Analysis	RO	Aerospace Corp : El Segundo, CA	-	-		2.596	Nov 2018	3.826	Nov 2019	-		3.826	Continuing	Continuing	-
Enterprise Systems Engineering & Integration	C/CPIF	Engility Corp : Andover, MA	-	-		0.643	Nov 2018	2.491	Nov 2019	-		2.491	Continuing	Continuing	-
Subtotal			-	6.588		4.172		93.025		-		93.025	Continuing	Continuing	N/A
Management Services (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 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
FFRDC	RO	Aerospace Corp : El Segundo, CA	-	1.412	Jul 2018	1.925	Nov 2018	2.837	Nov 2019	-		2.837	Continuing	Continuing	-
A&AS	Various	Various : Various	-	-		1.684	Feb 2019	3.336	Feb 2020	-		3.336	Continuing	Continuing	-
Other Support	Various	Various : Various	-	-		0.159	Jun 2019	2.024	Jun 2020	-		2.024	Continuing	Continuing	-
Subtotal			-	1.412		3.768		8.197		-		8.197	Continuing	Continuing	N/A
			Prior Years	FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			-	8.000		7.940		101.222		-		101.222	Continuing	Continuing	N/A
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: PB 2020 Air Force																Date: February 2019			
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			

	FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023				FY 2024			
	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 (EWS)																												
EWS Pre-Acquisition Activities																												
EWS ATP																												
EWS Preliminary Design Review																												
EWS IPR																												
EWS Critical Design Review																												
EWS Development																												
EWS Integration and Testing																												
EWS Initial Launch Capability																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2020 Air Force			Date: February 2019
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 (EWS)</i>				
EWS Pre-Acquisition Activities	2	2018	2	2020
EWS ATP	2	2020	2	2020
EWS Preliminary Design Review	1	2021	1	2021
EWS IPR	2	2021	2	2021
EWS Critical Design Review	2	2022	2	2022
EWS Development	2	2022	1	2024
EWS Integration and Testing	1	2024	3	2024
EWS Initial Launch Capability	4	2024	4	2024