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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force	Date: February 2018
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>					R-1 Program Element (Number/Name) PE 1203699F / <i>Shared Early Warning (SEW)</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	-	6.154	1.373	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	7.527
674838: <i>Shared Early Warning System</i>	-	6.154	1.373	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	7.527
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

In FY 2019, PE 1203699F, Shared Early Warning, Project 674838, Shared Early Warning System (SEWS) will be complete.

A. Mission Description and Budget Item Justification

The Shared Early Warning System (SEWS) is the result of Presidential foreign policy initiatives which began in 1996. The SEWS continues to provide Theater Combatant Commanders and foreign nation customers direct operational benefit by improving the architectural design and equipment thereby providing enhanced mission capabilities (i.e., expanded coverage, emerging capability integration, etc.). Foreign customer arrangements are negotiated with individual countries on a bilateral basis to provide selected region-specific missile warning information. SEWS Integration and Test facility is kept current by enhancing systems to improve analysis of real world events. To enhance mission capability the SEWS program tests message format updates, cross domain solution updates, mandatory crypto upgrades, SEWS integration with other warning systems, and the transition to "coalition-based" warning.

Activities also include studies and analysis to support both current program planning and execution and future program planning.

The North Warning System (NWS) is composed of 1970s era radar systems. The existing radar technology is quickly approaching obsolescence with regards to future threats.

In FY 2018, PE 0308699F, Shared Early Warning (SEW) efforts were transferred to PE 1203699F, Shared Early Warning (SEW) due to the creation of a new Major Force Program for Space. FY 2017 funding is now documented in the exhibits for PE 1203699F.

In FY 2019, no funding is requested and no funding is required as all SEWS development will be complete.

BA7 - This program is in Budget Activity 7, Operational System Development because this budget activity includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate production funding in the current or subsequent fiscal year.

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Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development		R-1 Program Element (Number/Name) PE 1203699F I Shared Early Warning (SEW)			
B. Program Change Summary (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	6.366	1.373	1.251	0.000	1.251
Current President's Budget	6.154	1.373	0.000	0.000	0.000
Total Adjustments	-0.212	0.000	-1.251	0.000	-1.251
• 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	-0.212	0.000			
• Other Adjustments	0.000	0.000	-1.251	0.000	-1.251
Change Summary Explanation FY 2019 funding decreased \$1.251 because Project Shared Early Warning System (SEWS) was completed.					
C. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: Shared Early Warning System (SEWS)	1.203	1.373	0.000	0.000	0.000
Description: Development of SEWS common architecture and SEWS initiatives as identified by theater commanders.					
FY 2018 Plans: - Investigate and evaluate new Combatant Command (CCMD) Joint Staff validated SEW requirements and integrate derived requirements into plans for SEW system component enhancements like Radiant Mercury (RM) 6.0 Common Message Format (CMF) rule development, Global Command and Control System - Joint (GCCS-J) 6.0 with a CMF input capability and transition of operational sites to SEW data in a CMF format - Continue to evaluate solutions, enhancements, and approaches for an improved infrared/radar integrated missile picture based on SEW GCCS-J correlation of SEW-Space (SEW-S) and SEW-Radar (SEW-R) data to include association of multiple tracked objects to a single event and display of the weapon track resulting is a correct missile count and improved impact prediction - Develop and test Phase 3 Force Protection Tiered Notification System (FPTNS) to provide automatic data transfer from GCCS-J to FPTNS to eliminate operator entry errors and to significantly improve the delivery time of secondary missile warning to SEW partner command centers and lower tier sites					

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C. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
<p>- Implement SEW CMF rule sets for RM 6.0, conduct tests and verify proper operation, timely processing and output of SEW partner data to multiple sites, develop enhancements to provide new releasable CMF fields to partners; identify software/hardware problems and develop fixes and enhancements to support fielding of the new RM 6.0 architecture</p> <p>- Develop and test end-to-end SEW architecture with CMF input data from the receivers to ensure proper operation/compatibility of implemented RM 6.0 and GCCS-J 6.0 on partner and CCMD Single-Award (SA) SEW servers</p> <p>- Test GCCS-J 3D Agile Client for use as the SEW partner display and verify all required capabilities are functioning properly including configuring communications channels, SEW data record and playback, display of infrared/radar single integrated missile picture, Theater Event System (TES) site status window and capability to manage track database</p> <p>- Develop improved and enhanced mobile SEWS capability for use with partner deployable active missile defense systems</p> <p>- Conduct research and support tests with United States Strategic Command (USSTRATCOM) and TES Program Offices to develop enhancements to improve TES/SEW performance for short and dim missile events; efforts will include the exploitation of new sensor data and the development of new processing algorithms</p> <p>FY 2019 Base Plans: N/A</p> <p>FY 2019 OCO Plans: N/A</p> <p>FY 2018 to FY 2019 Increase/Decrease Statement: Funding decreased due to program no longer requiring RDT&E funds starting in FY 2019.</p>						
<p>Title: North Warning System (NWS)</p> <p>Description: Conduct an analysis of alternatives for potential replacement of the NWS.</p> <p>FY 2018 Plans: N/A</p> <p>FY 2019 Base Plans: N/A</p> <p>FY 2019 OCO Plans:</p>		4.951	0.000	0.000	0.000	0.000

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C. Accomplishments/Planned Programs (\$ in Millions)			FY 2017	FY 2018	FY 2019 Base
N/A					
FY 2018 to FY 2019 Increase/Decrease Statement: N/A					
Accomplishments/Planned Programs Subtotals			6.154	1.373	0.000
D. Other Program Funding Summary (\$ in Millions)					
Line Item	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
• OPAF 03 Line Item	0.403	0.392	0.000	-	0.000
838010: <i>Comm Elect Mods</i>					0.000
					0.795
Remarks					
E. Acquisition Strategy					
The acquisition strategy is to build on existing capabilities using evolutionary acquisition to modernize and sustain SEWS. The program office serves as the SEW system integrator, relying on a Prime Contractor for Logistics, Operations, and Sustainment support. This contract was re-competed through full and open competition in 2017 and was awarded to a small business. The current contract has a Period of Performance (PoP) through 30 Sep 2018. Additionally, some SEWS requirements are satisfied through Military Interdepartmental Purchase Requests to external programs of record.					
The analysis of alternatives for potential replacement of the NWS will be accomplished using a to be determined mix of organic, federally funded research and development center, and advisory and assistance support contractor efforts.					
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 / 7						R-1 Program Element (Number/Name) PE 1203699F / Shared Early Warning (SEW)				Project (Number/Name) 674838 / Shared Early Warning System					
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
System Development	C/CPIF	Lockheed Martin : Colorado Springs, CO	-	0.895	Oct 2016	0.923	Oct 2017	-		-		-	Continuing	Continuing	-
Integration and Modernization	MIPR	US Navy : San Diego, CA	-	0.195	Mar 2017	0.195	Mar 2018	-		-		-	Continuing	Continuing	-
Additional Product Development	MIPR	Various : Colorado Springs, CO	-	0.082	Sep 2017	0.090	Sep 2018	-		-		-	Continuing	Continuing	-
Subtotal			-	1.172		1.208		-		-		-	Continuing	Continuing	N/A
Support (\$ 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
Analysis of Alternatives for potential replacement for NWS	Various	Various : Colorado Springs, CO	-	4.822	Mar 2017	-		-		-		-	Continuing	Continuing	-
Subtotal			-	4.822		-		-		-		-	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
Systems Engineering	SS/CPFF	MITRE : Colorado Springs, CO	-	0.160	Nov 2016	0.165	Nov 2017	-		-		-	Continuing	Continuing	-
Subtotal			-	0.160		0.165		-		-		-	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			-	6.154		1.373		-		-		-	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 / 7		R-1 Program Element (Number/Name) PE 1203699F / <i>Shared Early Warning (SEW)</i>			Project (Number/Name) 674838 / <i>Shared Early Warning System</i>

	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
Shared Early Warning System (SEWS)																												
Investigation of solutions for emerging Combatant Command (CCMD) and Joint Staff validated requirements and needed Shared Early Warning (SEW) system enhancements																												
Cross Domain Solution (CDS) Common Message Format (CMF) Data Sharing Improvements																												
SEW-Radar (SEW-R) Data Correlation Solutions Development/Integration/Test																												
Accuracy Improvements Development/Test																												
Prototype Network Investigation																												
Shared Early Warning System (SEWS) Mobile System Development/Integration/Test																												
FPTNS Phase 3 Design/Development/Integration/Test																												
Agile Client Testing																												
Analysis of Alternatives for potential replacement of North Warning System (NWS)																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force			Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1203699F / <i>Shared Early Warning (SEW)</i>	Project (Number/Name) 674838 / <i>Shared Early Warning System</i>	

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>Shared Early Warning System (SEWS)</i>				
Investigation of solutions for emerging Combatant Command (CCMD) and Joint Staff validated requirements and needed Shared Early Warning (SEW) system enhancements	1	2017	4	2018
Cross Domain Solution (CDS) Common Message Format (CMF) Data Sharing Improvements	1	2017	4	2018
SEW-Radar (SEW-R) Data Correlation Solutions Development/Integration/Test	1	2017	4	2017
Accuracy Improvements Development/Test	1	2017	2	2019
Prototype Network Investigation	1	2017	3	2017
Shared Early Warning System (SEWS) Mobile System Development/Integration/Test	1	2017	1	2019
FPTNS Phase 3 Design/Development/Integration/Test	3	2017	1	2018
Agile Client Testing	3	2017	2	2018
Analysis of Alternatives for potential replacement of North Warning System (NWS)	2	2017	1	2018