

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

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 0308699F / <i>Shared Early Warning (SEW)</i>
--	---

COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	1.119	0.849	6.366	0.000	6.366	1.369	1.250	1.273	1.296	Continuing	Continuing
674838: <i>Shared Early Warning System</i>	-	1.119	0.849	6.366	0.000	6.366	1.369	1.250	1.273	1.296	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note
 This program, BA 07 PE 0308699F, project 674838, North Warning System (NWS), is a new start.

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.

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.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force	Date: February 2016
--	----------------------------

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 0308699F / <i>Shared Early Warning (SEW)</i>
--	---

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	1.157	0.853	1.429	0.000	1.429
Current President's Budget	1.119	0.849	6.366	0.000	6.366
Total Adjustments	-0.038	-0.004	4.937	0.000	4.937
• Congressional General Reductions	0.000	-0.004			
• 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	-0.038	0.000			
• Other Adjustments	0.000	0.000	4.937	0.000	4.937

Change Summary Explanation

FY17: Funding increased to conduct an analysis of alternatives for potential replacement of the North Warning System (NWS).

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
Title: Shared Early Warning System (SEWS)	1.119	0.849	1.415
Description: Development of SEWS common architecture and SEWS initiatives as identified by theater commanders.			
FY 2015 Accomplishments:			
- Investigated solutions for emerging Combatant Command (CCMD) and Joint Staff validated requirements and needed Shared Early Warning (SEW) system enhancements.			
-- Focused on Radiant Mercury (RM) Common Message Format (CMF) rule development, new CMF data parsing capabilities, and transition of receiver and data recording equipment to CMF formats.			
- Developed Cross Domain Solution (CDS) CMF data sharing improvements.			
-- Tested RM 5.1 performance with CMF data received from the new Common Interactive Broadcast (CIB).			
-- Developed RM ruleset and tested a SEW Joint Range Extension Application Protocol B (JREAP-B) data interface to eliminate legacy formats.			
- Completed the Force Protection Tiered Notification System (FPTNS) Phase 2, One-to-Many rule set development, accreditation and testing for United States Central Command (USCENTCOM).			
-- CDS was fielded, accredited, tested and implemented with one of the USCENTCOM partners.			
- Tested Tactical Receive Suite (TRS) Radios improvements.			
-- Conducted testing of TRS Suite 4.0 CMF data filtering capability and provided developer with software problem reports.			
Conducted testing of TRS Dashboard 5.0 beta software implementing a new CMF data record and playback capability.			

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force	Date: February 2016
--	----------------------------

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 0308699F / <i>Shared Early Warning (SEW)</i>
--	---

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
<ul style="list-style-type: none"> - Developed SEW-Radar (SEW-R) data correlation solutions. -- Developed enhanced SEW architecture to facilitate the combination and correlation of infrared and radar missile track for a single integrated missile picture. -- Integrated United States European Command (USEUCOM) partner SEW-R data into the Centralized Distribution Facility (CDF) and developed recording and playback capability to test and evaluate performance of GCCS-J Kinematic Correlation capability with real Link-16 radar tracks. - Planned Accuracy Improvements research, development, integration and testing. -- Coordinated efforts with United States Strategic Command (USSTRATCOM) and Theater Event System (TES) program office to plan development of enhancements to improve TES/SEW performance for short and dim missile events. <p>FY 2016 Plans:</p> <ul style="list-style-type: none"> - Investigating solutions for emerging CCMD and Joint Staff validated requirements and needed SEW system enhancements. - Developing CDS CMF data sharing improvements. -- Focusing efforts on CMF translation, CMF implementation, JREAP-B interface standards, Real Time Rule-Set Modification, and Message De-duplication. - Developing and integrating SEW-R data correlation solutions. -- Enhancing SEW architecture to facilitate the combination and correlation of infrared and radar missile track data for a single integrated missile picture. -- Planning testing that will demonstrate increased performance. - Developing Accuracy Improvements. -- Analyzing alternative solutions to exploit new sensor data and new processing algorithms. - Beginning Prototype Network Investigation. -- Planning and beginning development of end-to-end SEW architecture with CMF input data from the receivers to ensure proper operation/compatibility of improved rulesets, applications, and interoperability. - Beginning SEWS Mobile System Development/Integration/Test. -- Planning and beginning development of improved and enhanced mobile SEWS capability for use with partner deployable active missile defense systems. <p>FY 2017 Plans:</p> <ul style="list-style-type: none"> - Will investigate solutions for emerging CCMD and Joint Staff validated requirements and needed SEW system enhancements. - Will implement CDS CMF data sharing improvements. -- Implement SEW CMF RM 6.0 rulesets, conduct tests and verify proper operation. -- Develop enhancements to provide new releasable CMF fields to partners. - Will test and evaluate SEW-R data correlation solutions. 			

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

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 0308699F / <i>Shared Early Warning (SEW)</i>
--	---

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
-- Demonstrate an improved infrared/radar integrated missile picture based on SEW GCCS-J correlation of SEW-Space and SEW-R data, featuring association of multiple tracked objects to a single event and display of the weapon track with a correct missile count and improved impact prediction. - Will continue development and plan integration of Accuracy Improvements. -- Implement most promising alternative solutions to exploit new sensor data and new processing algorithms. - Will integrate and test Prototype Network Investigation enhancements. -- Test and evaluate end-to-end SEW architecture with CMF input data from the receivers to ensure proper operation/compatibility of improved rulesets, applications, and interoperability. - Will continue development of SEWS Mobile System. -- Continue development of improved and enhanced mobile SEWS capability for use with partner deployable active missile defense systems. - Will begin FPTNS Phase 3 Design/Development and plan testing. -- Develop and plan to test FPTNS Phase 3 to provide automatic data transfer 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. - Will conduct Agile Client Testing. -- Evaluate GCCS-J 3D Agile Client for use as the SEW partner display and verify all required capabilities are functioning properly.			
Title: North Warning System (NWS) Description: Conduct an analysis of alternatives for potential replacement of the NWS. FY 2017 Plans: - Conduct analysis of alternatives.	-	-	4.951
Accomplishments/Planned Programs Subtotals	1.119	0.849	6.366

D. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
• OPAF: BA07: Line Item # 838010: <i>Comm Elect Mods</i>	0.329	0.220	0.407	0.000	0.407	0.388	0.348	0.354	0.360	Continuing	Continuing

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. The projects described will be accomplished on the existing SEWS

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

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 0308699F / <i>Shared Early Warning (SEW)</i>
--	---

Single-Award Indefinite Delivery Indefinite Quantity (SA IDIQ) contract. This contract was re-competed through full and open competition in 2012. The current contract has a PoP through 30 Sep 2017. 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.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0308699F / Shared Early Warning (SEW)	Project (Number/Name) 674838 / Shared Early Warning System
--	--	--

Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
System Development	C/CPIF	Lockheed Martin : Colorado Springs, CO	-	0.596	Oct 2014	0.532	Oct 2015	0.895	Oct 2016	0.000		0.895	Continuing	Continuing	-
Integration and Modernization	MIPR	US Navy : San Diego, CA	-	0.254	Mar 2015	0.155	Mar 2016	0.195	Mar 2017	0.000		0.195	Continuing	Continuing	-
Additional Product Development	MIPR	Various : Colorado Springs, CO	-	0.072	Sep 2015	0.081	Sep 2016	0.082	Sep 2017	0.000		0.082	Continuing	Continuing	-
Subtotal			-	0.922		0.768		1.172		0.000		1.172	-	-	-

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Analysis of Alternatives for potential replacement of NWS	TBD	Various : Colorado Springs, CO	-	0.000		0.000		4.951	Mar 2017	0.000		4.951	0.000	4.951	4.951
Subtotal			-	0.000		0.000		4.951		0.000		4.951	0.000	4.951	4.951

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-		-		-		-		-	-	-	-

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Systems Engineering	SS/CPFF	MITRE : Colorado Springs, CO	-	0.160	Nov 2014	0.000		0.160	Nov 2016	0.000		0.160	Continuing	Continuing	-

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0308699F / Shared Early Warning (SEW)	Project (Number/Name) 674838 / Shared Early Warning System

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Investigation of solutions for emerging Combatant Command (CCMD) and Joint Staff validated requirements and needed Shared Early Warning (SEW) system enhancements	1	2015	4	2018
Cross Domain Solution (CDS) Common Message Format (CMF) Data Sharing Improvements	1	2015	4	2018
Force Protection Tiered Notification System (FPTNS) Phase 2 Integration/Testing	1	2015	4	2015
Tactical Receive Suite (TRS) Radios Improvements Testing	1	2015	4	2015
SEW-Radar (SEW-R) Data Correlation Solutions Development/Integration/Test	3	2015	4	2017
Accuracy Improvements Development/Test	4	2015	2	2019
Prototype Network Investigation	2	2016	3	2017
Shared Early Warning System (SEWS) Mobile System Development/Integration/Test	3	2016	1	2019
FPTNS Phase 3 Design/Development/Integration/Testing	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

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED