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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 0102326F / <i>Region/Sector Operation Control Center Modernization Program</i>
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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	-	1.229	0.000	10.868	0.000	10.868	12.721	0.000	0.000	0.000	Continuing	Continuing
674592: <i>R/SAOC MODERNIZATION</i>	-	1.229	0.000	10.868	0.000	10.868	12.721	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

BATTLE CONTROL SYSTEM-FIXED (BCS-F) is a weapon system that comprises operational equipment in the fixed air defense sites, Region/Sector Air Operations Center (R/SAOC), also known as Region Air Operations Center-Air Defense Sector (RAOC-ADS). The BCS-F program supports a battle management command and control system with capability to integrate data from existing and future civil and military defense surveillance systems into a comprehensive recognized air picture. BCS-F systems serve as Air Force Homeland Defense battle management command and control hubs and integrators for data from radar sensors, data links and supporting communications architecture. BCS-F provides tactical communications and data link capabilities with other military and civil systems responsible for planning, directing, coordinating and controlling forces for air surveillance, air defense, and control of sovereign US air space. This integrated air picture enhances the capability to conduct peacetime air sovereignty operations and transition to active air defense operations in the event of aggression. The ACAT I BCS-F Increment 3 program declared full deployment in November 2012. BCS-F baseline also includes Remote Tactical Air Picture/Remote Work Station (RTAP/RWS). BCS-F is a bi-national program with Canada, ensuring air defense and surveillance capability across the CONUS, Canada, Alaska and Hawaii. NATIONAL CAPITAL REGION - INTEGRATED AIR DEFENSE SYSTEM (NCR-IADS) is a post-September 11, 2001 rapidly fielded capability that improves low altitude detection capability in order to prosecute airborne threats to the NCR. NCR-IADS provides ground-based air defense of the National Capital Region airspace, and provides an integrated air picture, ground air defense weapons, enhanced regional situational awareness and forensic data collection capabilities for the warfighter mission to protect the NCR.

BCS-F efforts will include systems engineering, development, prototyping, risk reduction, integration, and test & evaluation of the BCS modernization upgrades program for areas that will include but not be limited to: Mods supporting Battle Control Center (BCC) expansion (e.g., 3-D Coordinate System/Whole Earth); Ingestion/processing of advanced communications/sensors/data streams (such as ADS-B, Mode 5/S capability increase, and Live Virtual Construction (LVC) Distributed Mission Operations (DMO), Wide Area Surveillance (WAS) and Joint Land Attack Cruise Missile Defense Elevated Netted Sensor (JLENS)); System re-architecture/upgrade (such as cybersecurity upgrades, RTAP publish/subscribe architecture, system throughput/processing improvements (including 64-bit processing), and additional operator workstation capacity). Some aspects of the development are classified and will be provided on a need to know basis. Activities also include studies and analysis supporting current and future program planning and development.

NCR-IADS efforts may include system engineering, development, integration, and test & evaluation in support of the NCR-IADS sustainment transfer of the Enhanced Regional Situational Awareness (ERSA) system. Activities also include studies and analysis supporting future program planning and development.

This program is in Budget Activity 07, 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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B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	1.272	0.000	0.000	0.000	0.000
Current President's Budget	1.229	0.000	10.868	0.000	10.868
Total Adjustments	-0.043	0.000	10.868	0.000	10.868
• 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	-0.043	0.000			
• Other Adjustments	0.000	0.000	10.868	0.000	10.868

Change Summary Explanation

No FY 2016 RDT&E funding.
FY17 funds will support the incorporation of ADS-B into the BCS baseline.

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
Title: Battle Control System - Fixed Increment 3	1.229	0.000	10.868
Description: -The development, systems engineering, test and evaluation of the BCS modernization upgrades program to include Release 3.2.3 efforts and beyond.			
FY 2015 Accomplishments: -Work continues on efforts that include Radiant Mercury (RM) Redundancy, Automatic Dependent Surveillance – Broadcast (ADS-B) analysis, requirements development, and risk reduction. ADS-B work will resume in FY17.			
FY 2016 Plans: N/A			
FY 2017 Plans: -Efforts will include: Systems engineering, development, risk reduction, integration, and test & evaluation of the BCS system for: Mods supporting Battle Control Center (BCC) expansion ; ingestion/processing of advanced communications/sensors/data streams ; system re- architecture/upgrade.			
Accomplishments/Planned Programs Subtotals	1.229	0.000	10.868

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D. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• OPAF: BA07: Line Item # 833030: <i>Battle Control System - Fixed</i>	2.704	1.682	5.677	0.000	5.677	7.380	4.047	4.118	4.192	Continuing	Continuing

Remarks

E. Acquisition Strategy

- The BCS modernization upgrades uses sole source contracting strategy for the on-going Radiant Mercury (RM) redundancy effort.
- Acquisition Strategy for Ingestion/processing of advanced communications/sensors/data streams as well as system re-architecture/upgrades will be evolutionary utilizing competition.
- Management strategy for Mods supporting BCC Expansion and Automatic Dependent Surveillance Broadcast (ADS-B), as well as Ingestion/processing of advanced communications/sensors/data streams, and System re-architecture/upgrades is under the purview of the Air Force Program Executive Officer for Battle Management (AFPEO BM); and Air Force Life Cycle Management Center (AFLCMC) as the Contracting Authority. The Mods Supporting BCC expansion and ADS-B integration, test and evaluation, and fielding programs will be managed under the umbrella Battle Control Systems (BCS) Program Management Office (PMO).
- Contracting strategy for Mods supporting BCC Expansion and ADS-B as well as ingestion/processing of advanced communications/sensors/data streams, and system re-architecture/upgrades will utilize full and open competition procedures with small business set-aside if possible. Cost Plus contracts with some Fixed Price CLINs will be utilized where possible and appropriate.

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 2017 Air Force												Date: February 2016				
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)								
3600 / 7				PE 0102326F / Region/Sector Operation Control Center Modernization Program				674592 / R/SAOC MODERNIZATION								
Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 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	
BCS Modernization Upgrade (ADS-B)	Various	Various : Various	-	0.000		0.000		8.773	Apr 2017	0.000		8.773	Continuing	Continuing	0.000	
ADS-B Risk Reduction	Various	Various : Various	-	0.918	Mar 2016	0.000		0.000		0.000		0.000	0.000	0.918	-	
RM Redundancy	SS/CPFF	Thales Raytheon Systems : Fullerton, CA	-	0.140	Mar 2016	0.000		0.000		0.000		0.000	0.000	0.140	0.000	
Subtotal			-	1.058		0.000		8.773		0.000		8.773	-	-	-	
Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 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	
Subtotal			-	-		-		-		-		-	-	-	-	
Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 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	
46th Test Wing/Other Test Act	Various	Various : Various	-	0.000		0.000		0.232	Apr 2017	0.000		0.232	Continuing	Continuing	0.000	
Subtotal			-	0.000		0.000		0.232		0.000		0.232	-	-	0.000	
Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 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	
Program Management and Administration	Various	Various : Various	-	0.171	Oct 2014	0.000		1.863	Oct 2016	0.000		1.863	Continuing	Continuing	0.000	
Subtotal			-	0.171		0.000		1.863		0.000		1.863	-	-	0.000	

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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 0102326F / <i>Region/Sector Operation Control Center Modernization Program</i>	Project (Number/Name) 674592 / <i>R/SAOC MODERNIZATION</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
BCS-F RM Redundancy	1	2015	2	2017
BCS-F Ingestion/processing of adv. comms/sensors/data streams	1	2015	1	2019
BCS-F ADS-B Risk Reduction	2	2016	2	2017
BCS Modernization Upgrades (Mods Supporting BCC Expansion)	2	2017	1	2019
BCS Modernization Upgrades (System re-architecture/upgrade)	2	2017	2	2019
BCS Modernization Upgrades (ADS-B)	2	2017	1	2019

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