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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force										Date: February 2018		
Appropriation/Budget Activity					R-1 Program Element (Number/Name)							
3600: Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development					PE 0102326F I Region/Sector Operation Control Center Modernization Program							
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	-	10.868	3.347	9.252	0.000	9.252	0.000	6.427	0.783	0.797	Continuing	Continuing
674592: R/SAOC MODERNIZATION	-	10.868	3.347	9.252	0.000	9.252	0.000	6.427	0.783	0.797	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Regional/Sector Operation Center Modernization program supports the NORAD/NORTHCOM homeland defense and air sovereignty mission for fixed Air Defense Sectors.

BATTLE CONTROL SYSTEM-FIXED (BCS-F): BCS-F is the effort to implement the bi-national program with Canada. The BCS-F Program is an AF Homeland Defense battle management command and control system with the capability to integrate data from existing and future civil and military defense surveillance systems into a comprehensive air picture. 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.

BATTLE CONTROL SYSTEM-FIXED MODIFICATION ONE (BCS-F Modification 1). BCS-F Modification 1 effort will implement Automatic Dependent Surveillance-Broadcast (ADS-B) and Earth Center Earth Fixed (ECEF) into the BCS-F system. ADS-B provides the BCS-F system the capability to ingest Global Position System (GPS) based location data, from ADS-B equipped aircraft, at the Air Defense Sectors. Implementation of ADS-B on aircraft flying in US airspace is mandated by the Federal Aviation Administration (FAA) by 2020. ECEF is a three-dimensional earth model that eliminates artificial boundaries in the two-dimensional BCS-F stereographic plane. ECEF also allows the ingestion and processing of sensor, target, track, and graphical data without compromising data accuracy due to translation errors. The BCS-F Modification 1 effort will be executed as a Cooperative Program between the US and Canada.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver BCS-F Modification 1 weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program elements 0605826F, 0605827F, 0605828F, 0605829F, 0605830F, 0605831F, 0605832F, and 0605898F.

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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B. Program Change Summary (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	
Previous President's Budget	10.868	3.347	9.322	0.000	9.322	
Current President's Budget	10.868	3.347	9.252	0.000	9.252	
Total Adjustments	0.000	0.000	-0.070	0.000	-0.070	
• 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	-0.070	0.000	-0.070	
C. Accomplishments/Planned Programs (\$ in Millions)				FY 2017	FY 2018	FY 2019
Title: BATTLE CONTROL SYSTEMS MODERNIZATION 1				10.868	3.347	9.252
Description: Begin systems engineering, development, risk reduction, integration, test & evaluation and fielding of the BCS-F Modification 1 effort. The BCS-F Modification 1 effort will be executed as a Cooperative Program between the US and Canada.						
FY 2018 Plans: Activities include, but are not limited to: - Continue developing test strategy and systems engineering related documentation - Begin the ADS-B and ECEF systems engineering development, integration, test and evaluation, risk reduction - Execute source selection activities and award a competitively selected contract - Continue to document changes to the program that could affect the system baseline - Continue test and cyber-security planning - Continue to identify, monitor and mitigate technical risks - Conduct the Post Award Conference, Program Management Reviews, Technical Interchange Meetings, Systems Readiness Review and Integrated Baseline Review						
FY 2019 Plans: Activities include, but are not limited to: - Will continue developing test strategy and systems engineering related documentation - Will continue the ADS-B and ECEF systems engineering development, integration, test and evaluation, risk reduction - Will continue to document changes to the program that could affect the system baseline - Will continue test and cyber-security planning						

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C. Accomplishments/Planned Programs (\$ in Millions)										FY 2017	FY 2018	FY 2019
- Will conduct Technical Interchange Meetings, Preliminary Design Review, Critical Design Review and draft final technical order development and required training materials to support fielding activities.												
FY 2018 to FY 2019 Increase/Decrease Statement: Funding was increased in FY19 due to RDT&E activity. FY18 funding was to cover pre-EMD efforts and preparation for contract award. FY19 funding onward will cover de facto development efforts.												
Accomplishments/Planned Programs Subtotals										10.868	3.347	9.252
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	
• OPAF 03 080330: Battle Control System - Fixed	5.677	6.415	3.012	-	3.012	3.063	3.119	3.175	3.232	0.000	27.693	
Remarks												
E. Acquisition Strategy												
Acquisition Strategy: The Program Management Office (PMO) will pursue full and open competition for BCS-F Modification 1 efforts. The BCS-F PMO is finalizing a Project Arrangement (PA) to become a cooperative program with Canada for the ADS-B and ECEF efforts. These two efforts are anticipated to be awarded concurrently for development in a single release to the Air Defense Sectors.												
Management Strategy: Efforts supporting ADS-B and ECEF will be managed by BCS-F PMO in conjunction with Canada PMO and are under the purview of the Air Force Program Executive Officer for Battle Management (AFPEO BM). Air Force Life Cycle Management Center (AFLCMC) is the Contracting Authority.												
Contracting Strategy: The BCS-F PMO will utilize full and open competition with a small business set-aside where viable to complete the development and integration of ADS-B and ECEF capabilities. Cost Plus contract with some Fixed Price and Time & Material 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 2019 Air Force												Date: February 2018			
Appropriation/Budget Activity 3600 / 7						R-1 Program Element (Number/Name) PE 0102326F / Region/Sector Operation Control Center Modernization Program				Project (Number/Name) 674592 / R/SAOC MODERNIZATION					
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
BCS MODIFICATION 1	Various	Various : Various	-	8.129	Jul 2018	3.287	Jul 2018	7.783	Oct 2018	-		7.783	Continuing	Continuing	0.000
Subtotal			-	8.129		3.287		7.783		-		7.783	Continuing	Continuing	N/A
Test and Evaluation (\$ 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
46th Test Wing/Other Test Act	Various	Various : Various	-	-		-		0.107	Oct 2018	-		0.107	Continuing	Continuing	0.000
Subtotal			-	-		-		0.107		-		0.107	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
Program Management and Administration	Various	Various : Hanscom AFB	-	0.155	Feb 2017	0.060	Apr 2018	0.389	Oct 2018	-		0.389	Continuing	Continuing	0.000
A&AS	Various	Various : Hanscom AFB	-	2.584		-		0.973	Oct 2018	-		0.973	Continuing	Continuing	-
Subtotal			-	2.739		0.060		1.362		-		1.362	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			-	10.868		3.347		9.252		-		9.252	Continuing	Continuing	N/A
Remarks FY19 Milestones: Critical Design Review, Test Readiness Review, Developmental Test and Operational Test.															

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force																Date: February 2018			
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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
Battle Control System Fixed Modification 1																												
BCS MODIFICATION 1																												
Milestone B (JAN)																												
Contract Award Date (JUL)																												
SRR/IBR (AUG)																												
Critical Design Review (OCT)																												
Developmental Testing (AUG)																												
Initial Operation Capability (JUL)																												
BCS MODIFICATION 2																												

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

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>Battle Control System Fixed Modification 1</i>				
BCS MODIFICATION 1	3	2017	1	2021
Milestone B (JAN)	2	2018	2	2018
Contract Award Date (JUL)	4	2018	4	2018
SRR/IBR (AUG)	4	2018	4	2018
Critical Design Review (OCT)	1	2019	1	2019
Developmental Testing (AUG)	4	2019	4	2019
Initial Operation Capability (JUL)	4	2020	4	2020
BCS MODIFICATION 2	2	2021	4	2023