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Exhibit R-2, RDT&E Budget Item Justification: PB 2020 Air Force										Date: February 2019		
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 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	-	3.766	6.112	0.000	0.000	0.000	6.427	0.783	0.797	0.811	Continuing	Continuing
674592: R/SAOC MODERNIZATION	-	3.766	6.112	0.000	0.000	0.000	6.427	0.783	0.797	0.811	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 a bi-national development 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 integrate Automatic Dependent Surveillance-Broadcast (ADS-B) data feeds 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. Integration 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 Development 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.

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 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 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	
Previous President's Budget	3.347	9.252	0.000	0.000	0.000	
Current President's Budget	3.766	6.112	0.000	0.000	0.000	
Total Adjustments	0.419	-3.140	0.000	0.000	0.000	
• Congressional General Reductions	0.000	0.000				
• Congressional Directed Reductions	0.000	0.000				
• Congressional Rescissions	-0.087	-3.140				
• Congressional Adds	0.000	0.000				
• Congressional Directed Transfers	0.000	0.000				
• Reprogrammings	0.628	0.000				
• SBIR/STTR Transfer	-0.121	0.000				
• Other Adjustments	-0.001	0.000	0.000	0.000	0.000	
C. Accomplishments/Planned Programs (\$ in Millions)				FY 2018	FY 2019	FY 2020
Title: BATTLE CONTROL SYSTEMS MODIFICATION 1				3.766	6.112	0.000
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 Development Program between the US and Canada.						
FY 2019 Plans: Activities include, but are not limited to: - Continue developing test strategy and systems engineering related documentation - Continue the ADS-B and ECEF systems engineering development, integration, test and evaluation, risk reduction - Continue to document changes to the program that could affect the system baseline - Continue test and cyber-security planning - Conduct Technical Interchange Meetings, Preliminary Design Review, Critical Design Review and finalize technical order development and required training materials to support fielding activities in FY20.						
FY 2020 Plans: Activities include, but are not limited to: - Will continue ADS-B and ECEF integration, test and evaluation, risk reduction, and documentation - Will conduct training and fielding at operational sites. - Presently there is no funding in FY20, if no funding is found this will be treated as a skip year.						
FY 2019 to FY 2020 Increase/Decrease Statement:						

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C. Accomplishments/Planned Programs (\$ in Millions)								FY 2018	FY 2019	FY 2020	
Funding is decreased due to lack of FY20 funding.											
Accomplishments/Planned Programs Subtotals								3.766	6.112	0.000	
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
• OPAF 03 080330: Battle Control System - Fixed	6.415	3.012	3.063	-	3.063	3.119	3.175	3.232	-	0.000	27.693
Remarks											
E. Acquisition Strategy											
Acquisition Strategy: The Program Management Office (PMO) completed a full and open competition for BCS-F Modification 1 efforts. The BCS-F PMO has finalized a Project Arrangement (PA) to establish a cooperative development program with Canada for the ADS-B and ECEF efforts. These two efforts will conclude with development and 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 utilized a full and open competition 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 2020 Air Force												Date: February 2019			
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 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
BCS MODIFICATION 1	Various	Various : Various	-	3.706	Jun 2018	4.923	Apr 2019	-		-		-	Continuing	Continuing	0.000
Subtotal			-	3.706		4.923		-		-		-	Continuing	Continuing	N/A
Test and Evaluation (\$ 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
46th Test Wing/Other Test Act	Various	Various : Various	-	-		0.105	Jul 2019	-		-		-	Continuing	Continuing	0.000
Subtotal			-	-		0.105		-		-		-	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
PMA - A&AS	Various	Various : Hanscom AFB	-	0.060	Apr 2018	0.676	Oct 2018	-		-		-	Continuing	Continuing	-
PMA - FRDC	Various	Various : Hanscom AFB	-	-		0.408	Oct 2018	-		-		-	Continuing	Continuing	-
Subtotal			-	0.060		1.084		-		-		-	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			-	3.766		6.112		-		-		-	Continuing	Continuing	N/A
Remarks FY19 Milestones: Critical Design Review, Test Readiness Review, Developmental Test and Operational Test. Presently there is no funding in FY20, if no funding is found this will be treated as a skip year.															

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Exhibit R-4, RDT&E Schedule Profile: PB 2020 Air Force			Date: February 2019		
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	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
Battle Control System Fixed Modification 1																												
BCS MODIFICATION 1																												
Milestone B (MAR)																												
Contract Award Date (JUN)																												
PAC/SRR (JUL)																												
BIR/IBR (SEP)																												
TIM #1 (DEC)																												
TIM #2 (APR)																												
SAT TRR (JUN)																												
SAT (JUN)																												
DTRR (JUL)																												
DT/OT (JAN)																												
AFSIT (JAN)																												
BCS MODIFICATION 2																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2020 Air Force

Date: February 2019

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

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Battle Control System Fixed Modification 1				
BCS MODIFICATION 1	3	2018	4	2020
Milestone B (MAR)	2	2018	2	2018
Contract Award Date (JUN)	3	2018	3	2018
PAC/SRR (JUL)	4	2018	4	2018
BIR/IBR (SEP)	4	2018	4	2018
TIM #1 (DEC)	1	2019	1	2019
TIM #2 (APR)	3	2019	3	2019
SAT TRR (JUN)	3	2019	3	2019
SAT (JUN)	3	2019	3	2019
DTRR (JUL)	4	2019	4	2019
DT/OT (JAN)	2	2020	2	2020
AFSIT (JAN)	2	2020	2	2020
BCS MODIFICATION 2	2	2021	4	2023