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Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Air Force **Date:** May 2021

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 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	-	0.000	10.704	0.771	0.000	0.771	-	-	-	-	-	-
674592: <i>R/SAOC MODERNIZATION</i>	-	0.000	10.704	0.771	0.000	0.771	-	-	-	-	-	-
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 support the implementation of Automatic Dependent Surveillance-Broadcast (ADS-B) data feeds and Earth Center Earth Fixed (ECEF). The BCS-F Modification 1 effort will be executed as a Cooperative Development Program between the US and Canada.

BATTLE CONTROL SYSTEM MODERNIZATION: BCS Modernization will support NORAD/NORTHCOM Pathfinder Initiative development to include sensor integration, Integrated Fire Control (IFC), Agile Development, and system visualization for the Battle Control Center (BCC).

NATIONAL CAPITAL REGION-INTEGRATED AIR DEFENSE SYSTEM (NCR-IADS): 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 Capitol 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. Efforts may include but are not limited to, studies, system engineering, development, integration, and test & evaluation required to prevent system obsolescence and evolving cyber security requirements and evolving mission requirements.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver AF Homeland Defense battle management command and control system capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605831F. In FY20 \$0.000M and in FY21 \$0.000M was expended for civilian pay expenses in this program element.

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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.

B. Program Change Summary (\$ in Millions)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Previous President's Budget	0.000	5.929	0.782	0.000	0.782
Current President's Budget	0.000	10.704	0.771	0.000	0.771
Total Adjustments	0.000	4.775	-0.011	0.000	-0.011
• Congressional General Reductions	0.000	-0.020			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	4.795			
• 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	-0.011	0.000	-0.011

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2020	FY 2021	FY 2022
<p>Title: Battle Control System-Fixed Modification 1</p> <p>Description: Continue 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.</p> <p>FY 2021 Plans: Activities include, but are not limited to: - Continue BCS-F Modification 1 ADS-B and ECEF development, integration, test and evaluation, and documentation</p> <p>FY 2022 Plans: Activities include, but are not limited to: - Continue BCS-F Modification 1 ADS-B and ECEF test and evaluation, documentation, fielding and training at operational sites</p> <p>FY 2021 to FY 2022 Increase/Decrease Statement: FY 2022 decrease due to completion of software integration by the OEM and the program focus on finalizing test and fielding and training at operational sites.</p>	0.000	4.382	0.100
<p>Title: Battle Control System Modernization</p> <p>Description: BCS Modernization will support NORAD/NORTHCOM Pathfinder Initiative development to include sensor integration, Integrated Fire Control (IFC), Agile development, and system virtualization for the BCC.</p>	0.000	1.527	0.671

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C. Accomplishments/Planned Programs (\$ in Millions)		FY 2020	FY 2021	FY 2022
<p><i>FY 2021 Plans:</i> Activities include, but are not limited to:</p> <ul style="list-style-type: none"> - Development and integration of the Homeland Defense Ecosystem (HDE) and Intelligent Homeland Defense Application (IHDA) - Development of open architecture supporting incorporation of machine learning entity classification, artificial intelligence, and cloud-based operations improving defense sector ability to respond to emerging threats - Implementation of Air Combat Command's (ACC) Combat Identification capability and continued foundation development for continuity of operations (COOP) between defense sectors <p><i>FY 2022 Plans:</i> Activities include, but are not limited to:</p> <ul style="list-style-type: none"> - Continued development and integration of the HDE, IHDA and open architecture supporting incorporation of machine learning entity classification, artificial intelligence, and cloud-based operations - Continued implementation of ACC's Combat Identification capability and continued foundation development for continuity of operations (COOP) between defense sectors <p><i>FY 2021 to FY 2022 Increase/Decrease Statement:</i> FY 2022 funding requirements increase due to maturation of the NORAD/NORTHCOM Pathfinder development and follow on testing and certification requirements. FY 2022 modernization funding decreases and will impact NORAD/NORTHCOM Pathfinder testing and certification.</p>				
<p><i>Title:</i> National Capital Region - Integrated Air Defense System Camera Modernization</p> <p><i>Description:</i> NCR-IADS Camera System Tech Refresh of legacy camera system to address mission critical component DMSMS issues.</p> <p><i>FY 2021 Plans:</i> Activities include, but are not limited to:</p> <ul style="list-style-type: none"> - NCR-IADS studies, system engineering, development, integration of software platforms, and test & evaluation of a prototype camera sensor system <p><i>FY 2021 to FY 2022 Increase/Decrease Statement:</i> Program transitions to production in FY22 and will utilize OPAF funds.</p>		-	4.795	-
Accomplishments/Planned Programs Subtotals		0.000	10.704	0.771

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

<u>Line Item</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u> <u>Base</u>	<u>FY 2022</u> <u>OCO</u>	<u>FY 2022</u> <u>Total</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• OPAF 03 080330: <i>Battle Control System - Fixed</i>	3.063	7.909	2.951	-	2.951	-	-	-	-	-	-

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. These efforts will conclude with development and releases to the Air Defense Sectors.

Management Strategy: Efforts 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 MOD 1 capabilities. Cost Plus contract with some Fixed Price and Time & Material CLINs will be utilized where possible and appropriate. The Agile Development Modernization work is done under an Other Transaction Authority contract that was completed in the prototype phase with a strategy approve to award a follow-on production OT contract.

NCR-IADS is using a Middle Tier Acquisition (MTA) Rapid Prototyping strategy and leveraging an Other Transaction Authority (OTA) expedited contracting vehicle for the ERSA camera replacement. The laser warning system component of the camera tech refresh is using a Small Business Administration HUBZone approved vendor, which allows the government to execute a sole source contract.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Air Force												Date: May 2021				
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 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 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-F Modification 1	Various	Various : Various	-	-		2.613	Jun 2021	0.100	Dec 2021	-		0.100	-	-	0.000	
BCS Modernization	Various	Various : Various	-	-		1.487	Feb 2021	0.538	Dec 2021	-		0.538	-	-	-	
NCR-IADS Camera Modernization	Various	Various : Various	-	-		4.795	Jun 2021	-		-		-	-	-	-	
Subtotal			-	-		8.895		0.638		-		0.638	-	-	N/A	
Test and Evaluation (\$ in Millions)				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 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	-	-		0.656	Apr 2021	-		-		-	-	-	0.000	
Subtotal			-	-		0.656		-		-		-	-	-	N/A	
Management Services (\$ in Millions)				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 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	
A&AS	Various	Various : Hanscom AFB, MA	-	-		0.250	Jul 2021	0.133	Dec 2021	-		0.133	-	-	-	
FFRDC	Various	Various : Hanscom AFB, MA	-	-		0.590	Jan 2021	-		-		-	-	-	-	
Other	Various	Various : Hanscom AFB, MA	-	-		0.313	May 2021	-		-		-	-	-	-	
Subtotal			-	-		1.153		0.133		-		0.133	-	-	N/A	
Project Cost Totals			-	-		10.704		0.771		-		0.771	-	-	N/A	

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Exhibit R-4A, RDT&E Schedule Details: PB 2022 Air Force		Date: May 2021
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>				
Complete Development	1	2021	1	2022
System Acceptance Test (SAT)	1	2021	2	2022
Developmental Test (DT)	3	2021	4	2022
AF System Interoperability Test (AFSIT)	4	2021	1	2022
Operational Test and Fielding	2	2022	2	2023
<i>Battle Control System Modernization</i>				
Agile Capabilities Development	2	2021	4	2026
<i>NCR-IADS Camera Modernization</i>				
Contract Award	3	2021	3	2021
Camera Prototype Demo	3	2021	1	2022
Software/Laser Integration	2	2022	3	2022
Operational Test and Evaluation	3	2022	3	2022
Camera Selection and Fielding	3	2022	3	2022