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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2023 Air Force **Date:** April 2022

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0102326F / <i>Region/Sector Operation Control Center Modernization Program</i>
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COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
Total Program Element	-	9.846	0.771	0.451	0.000	0.451	0.829	0.845	0.863	0.882	Continuing	Continuing
674592: <i>R/SAOC MODERNIZATION</i>	-	9.846	0.771	0.451	0.000	0.451	0.829	0.845	0.863	0.882	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 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 supports the Rapid Capability Office (RCO) effort to produce a BCS-F replacement system that is interoperable with the Advanced Battle Management System (ABMS) portfolio of capabilities across multiple Combatant Commands. A limited selection of key improvements delivered through an agile process include: Integrated Fire Control (IFC), course of action generation, predictive analytics, improved visualizations.

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 in order to prosecute airborne threats to the National Capital Region (NCR). NCR-IADS provides ground-based air defense of the NCR airspace by delivering, an integrated air picture, ground air defense weapons, enhanced regional situational awareness system and forensic data collection capabilities to support 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 weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program element 0605827F, 0605828F, 0605829F, 0605831F, 0605832F, 0605833F, 0605898F,

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0606398F. In PY21 0.000M was expended for civilian pay expenses in this program element and in CY22 0.000M is forecasted for civilian pay expenses in this program element.

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>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2021</b>	<b>FY 2022</b>	<b>FY 2023 Base</b>	<b>FY 2023 OCO</b>	<b>FY 2023 Total</b>
Previous President's Budget	10.704	0.771	0.000	0.000	0.000
Current President's Budget	9.846	0.771	0.451	0.000	0.451
Total Adjustments	-0.858	0.000	0.451	0.000	0.451
• Congressional General Reductions	-0.858	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	0.451	0.000	0.451

<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2021</b>	<b>FY 2022</b>	<b>FY 2023</b>
<b>Title:</b> Battle Control System-Fixed Modification 1	3.669	0.100	0.100
<b>Description:</b> 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.			
<b>FY 2022 Plans:</b> 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			
<b>FY 2023 Plans:</b> 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.			
<b>FY 2022 to FY 2023 Increase/Decrease Statement:</b> Funding level remains the same to support BCS-F Modification 1 ADS-B and ECEF test and evaluation, documentation, fielding and training at operational sites.			
<b>Title:</b> Battle Control System Modernization	1.527	0.671	0.351

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<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2021</b>	<b>FY 2022</b>	<b>FY 2023</b>
<p><b>Description:</b> Modernizing the BCS-F system by contributing to the Rapid Capability Office (RCO) led Cloud-Based Command and Control (CBC2) project. The CBC2 project will produce a BCS-F replacement system that interoperates with Advanced Battle Management System (ABMS) portfolio of capabilities. Anticipated activities include testing, documentation, training and feature development.</p> <p><b>FY 2022 Plans:</b> Activities include, but are not limited to: - Continued development and integration of Digital Infrastructure, Joint Effects Real-time Interface for C2 Operators (JERIC20) 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> <p><b>FY 2023 Plans:</b> Activities include, but are not limited to: - Continued development and integration of the DI, JERIC20 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> <p><b>FY 2022 to FY 2023 Increase/Decrease Statement:</b> Limited FY23 modernization funding will delay the release of modern capabilities critically required by the Defensive Counter Air mission by hindering the developing of a BCS-F replacement system.</p>				
<p><b>Title:</b> National Capital Region - Integrated Air Defense System Camera Modernization</p> <p><b>Description:</b> NCR-IADS Camera System Tech Refresh of legacy camera system to address mission critical component DMSMS issues.</p> <p><b>FY 2022 Plans:</b> Activities include, but are not limited to: studies, system engineering, development, integration, and test &amp; evaluation required to prevent system obsolescence and evolving cyber security requirements and evolving mission requirements.</p> <p><b>FY 2023 Plans:</b> N/A</p> <p><b>FY 2022 to FY 2023 Increase/Decrease Statement:</b></p>		4.650	0.000	0.000

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<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2021</b>	<b>FY 2022</b>	<b>FY 2023</b>
N/A			
<b>Accomplishments/Planned Programs Subtotals</b>	9.846	0.771	0.451

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

<b>Line Item</b>	<b>FY 2021</b>	<b>FY 2022</b>	<b>FY 2023 Base</b>	<b>FY 2023 OCO</b>	<b>FY 2023 Total</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>FY 2026</b>	<b>FY 2027</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
• OPAF 03 833030: <i>Battle Control System - Fixed</i>	7.172	2.940	1.597	-	1.597	3.115	3.370	3.465	3.534	0.000	25.193

**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 ERSA software sustainment contract will also be modified to support required software development for the camera prototypes.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Air Force												Date: April 2022			
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					
<b>Product Development (\$ in Millions)</b>				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 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	-	0.608	Aug 2021	0.100	Dec 2021	0.100	Dec 2022	-		0.100	Continuing	Continuing	0.000
BCS Modernization	Various	Various : Various	-	1.527	Feb 2021	0.538	Dec 2021	0.218	Dec 2023	-		0.218	Continuing	Continuing	-
NCR-IADS Camera Modernization	Various	Various : Various	-	4.650	Aug 2021	-		-		-		-	Continuing	Continuing	-
<b>Subtotal</b>			-	6.785		0.638		0.318		-		0.318	Continuing	Continuing	N/A
<b>Test and Evaluation (\$ in Millions)</b>				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 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	-	0.735	Apr 2021	-		-		-		-	Continuing	Continuing	0.000
<b>Subtotal</b>			-	0.735		-		-		-		-	Continuing	Continuing	N/A
<b>Management Services (\$ in Millions)</b>				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 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	-	0.791	Jul 2021	0.133	Dec 2021	0.133	Dec 2022	-		0.133	Continuing	Continuing	-
FFRDC	Various	Various : Hanscom AFB, MA	-	1.223	Mar 2021	-		-		-		-	Continuing	Continuing	-
Other	Various	Various : Hanscom AFB, MA	-	0.312	May 2021	-		-		-		-	Continuing	Continuing	-
<b>Subtotal</b>			-	2.326		0.133		0.133		-		0.133	Continuing	Continuing	N/A
<b>Project Cost Totals</b>			-	9.846		0.771		0.451		-		0.451	Continuing	Continuing	N/A



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<b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2023 Air Force		<b>Date:</b> April 2022
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0102326F / <i>Region/Sector Operation Control Center Modernization Program</i>	<b>Project (Number/Name)</b> 674592 / <i>R/SAOC MODERNIZATION</i>

	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
	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
<b><i>Battle Control System Fixed Modification 1</i></b>																												
System Acceptance Test (SAT)	■																											
Developmental Test (DT)			■																									
AF System Interoperability Test (AFSIT)				■	■	■	■																					
Operational Test and Fielding						■	■	■	■	■	■																	
<b><i>Battle Control System Modernization</i></b>																												
Agile Capabilities Development		■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	
<b><i>NCR-IADS Camera Modernization</i></b>																												
Contract Award			■	■																								
Camera Prototype Prep and Delivery				■	■	■	■																					
Software/Laser Integration							■	■																				
Prototype Test and Evaluation									■	■																		
Camera Selection								■	■																			

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2023 Air Force		<b>Date:</b> April 2022
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0102326F / <i>Region/Sector Operation Control Center Modernization Program</i>	<b>Project (Number/Name)</b> 674592 / <i>R/SAOC MODERNIZATION</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>Battle Control System Fixed Modification 1</i></b>				
System Acceptance Test (SAT)	1	2021	1	2021
Developmental Test (DT)	3	2021	3	2021
AF System Interoperability Test (AFSIT)	4	2021	2	2022
Operational Test and Fielding	2	2022	2	2023
<b><i>Battle Control System Modernization</i></b>				
Agile Capabilities Development	2	2021	4	2027
<b><i>NCR-IADS Camera Modernization</i></b>				
Contract Award	3	2021	4	2021
Camera Prototype Prep and Delivery	4	2021	2	2022
Software/Laser Integration	3	2022	4	2022
Prototype Test and Evaluation	4	2022	4	2022
Camera Selection	4	2022	4	2022