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Exhibit R-2, RDT&E Budget Item Justification: PB 2020 Air Force										Date: February 2019		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development					R-1 Program Element (Number/Name) PE 0207412F I Control and Reporting Center (CRC)							
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	-	2.374	6.413	8.109	0.000	8.109	16.070	10.562	10.478	17.152	Continuing	Continuing
67485L: Theater Air Control System Imp (TACSI)	-	2.374	6.413	8.109	0.000	8.109	16.070	10.562	10.478	17.152	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

CONTROL AND REPORTING CENTER (CRC)

The CRC is a mobile, ground-based theater air control system (TACS) surveillance and battle management command and control (BMC2) element. It is a customizable, modular, transportable, and persistent weapon system employed at the tactical level to support air and surface operations to provide direct command and control to all air assets in an assigned Area of Responsibility (AOR) and to report back to the Joint Force Air Combat Commander (JFACC). The CRC is a family of systems which include: AN/TYQ-23A(V)1 Tactical Air Operations Module (TAOM), AN/TSC-147, AN/TRC-213/214 Remote Radio Secure Voice System (RRSVS), and the AN/TPS-75 Radar, CRC's organic radar. Air Combat Command (ACC) CRC Capability Road map provides for the modernization of this family of systems and will be programmed into phased updates through 2037.

CRC is part of an ABMS initiative to give capability to ingest GMTI data. CRC FY20 development efforts that will support ABMS efforts include an AN/TRC-213/214 RRSVS radio modernization upgrade, a Multiple Source Correlator Tracker (MSCT) software upgrade, and incorporation of a Ground Moving Target Indicator (GMTI) tracker into the CRC. In FY19, these efforts fell under one thrust known as Phase 2. For FY20 and out, these efforts will be broken out with individual AML names and, therefore, the efforts will no longer collectively be referred to as Phase 2.

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 elements 0605826F, 0605827F, 0605828F, 0605829F, 0605830F, 0605831F, 0605832F, 0605898F, and 0605833F.

The FY2020 funding request was reduced by \$1.305M to account for the availability of prior year execution balances.

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	2.450	6.413	9.414	0.000	9.414
Current President's Budget	2.374	6.413	8.109	0.000	8.109
Total Adjustments	-0.076	0.000	-1.305	0.000	-1.305
• 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	-0.076	0.000			
• Other Adjustments	0.000	0.000	-1.305	0.000	-1.305
C. Accomplishments/Planned Programs (\$ in Millions)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Title: CRC Modernization Phase 1	2.374	0.000	0.000	0.000	0.000
Description: CRC Modernization Phase 1 efforts: MSCT software upgrades, 3 Dimensional Expeditionary Long Range Radar(3DELRR) Integration, Secret Internet Protocol Network (SIPR integration), and Multi Functional Information Distribution System Joint Tactical Radio System (MIDS JTRS Link 16 Upgrade) is completed.					
FY 2019 Plans: N/A					
FY 2020 Base Plans: N/A					
FY 2020 OCO Plans: None					
Title: CRC AN/TRC-213/214 RRSVS Radio Modernization Upgrade	0.000	3.103	5.000	0.000	5.000
Description: RRSVS radio modernization upgrade includes, but is not limited to: Software located in AN/TRC-213 (V) 3 to be upgraded in order to operate with upgraded AN/TRC-214. This will allow AN/TRC-214 to utilize the Mobile User Objective System (MUOS) constellation of satellites, support Integrated Waveform (IW), Second generation Anti-jam Tactical Ultra high frequency Radio for NATO (SATURN), Ensure sufficient channel					

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C. Accomplishments/Planned Programs (\$ in Millions)		FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
capacity for remote radio interface, interoperability with required crypto equipment, combine channel inputs, enable operators to use J-voice, full IP capability, and allow for external VoIP/VoSIP connectivity. FY 2019 Plans: Begin development of AN/TRC-213/214 RRSVS radio upgrade to include design and materials acquisition for the prototype. FY 2020 Base Plans: Continue development of AN/TRC-214 RRSVS radio prototypes and begin testing process. Begin AN/TRC-213 RRSVS radio software upgrade development. FY 2020 OCO Plans: N/A FY 2019 to FY 2020 Increase/Decrease Statement: Funding increased due to continuing efforts in the AN/TRC-213/214 RRSVS radio modernization upgrades that include, but is not limited to, the build of the prototypes for the AN/TRC 214 radio upgrade, testing, and development of software upgrades to the AN/TRC 213 radios.						
Title: Multiple Source Correlator Tracker (MSCT) 5.9 Software Upgrade Description: The MSCT 5.9 software upgrade will incorporate increments 2 & 3 from CRC Functional Capabilities Document (FCD) v1.1. The intent of this upgrade is to ingest GMTI data into the CRC. FY 2019 Plans: Develop and test MSCT 5.9 software. FY 2020 Base Plans: Integrate, test and field MSCT 5.9 software. FY 2020 OCO Plans: None FY 2019 to FY 2020 Increase/Decrease Statement: Funding decreased because cost of integration, test and fielding MSCT 5.9 software is less than development.		-	3.300	0.500	0.000	0.500
Title: Ground Moving Target Indicator (GMTI) Tracker		-	0.010	2.609	0.000	2.609

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C. Accomplishments/Planned Programs (\$ in Millions)											
			FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total				
Description: The GMTI tracker will allow Battle Managers in the CRC TOC to follow ground vehicles in the same manner current Battle Managers track aircraft and an entire site picture of the battle space. FY 2019 Plans: Preliminary research and estimates on cost FY 2020 Base Plans: Award contract, begin development of the incorporation of the GMTI tracker into the CRC. FY 2020 OCO Plans: None FY 2019 to FY 2020 Increase/Decrease Statement: Funding increased because the program is moving from preliminary research to development of how the tracker will incorporate into the CRC.											
Accomplishments/Planned Programs Subtotals			2.374	6.413	8.109	0.000	8.109				
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 Line Item 833040: <i>Theater Air Control Sys Improvements</i>	23.233	19.424	0.000	-	0.000	13.393	18.879	20.431	8.734	Continuing	Continuing
Remarks											
E. Acquisition Strategy											
The CRC Capability Roadmap provides for the modernization of the CRC family of systems and will be programmed into phased updates through 2024 to further advance current and future battlespace awareness and tactical battle management command and control capabilities. A variety of contract and organic vehicles will be used depending on type of effort and skills required. Management strategy relies on Air Force Program Executive Office for Digital (AFPEO BM) as the Milestone Decision Authority and the Air Force Life Cycle Management Center (AFLCMC) as the Contracting Authority.											
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 0207412F / <i>Control and Reporting Center (CRC)</i>				Project (Number/Name) 67485L / <i>Theater Air Control System Imp (TACSI)</i>					
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
CRC Modernization Phase 1	C/Various	Various : Various, UT	-	1.372	Sep 2018	-		-		-		-	Continuing	Continuing	-
AN/TRC-213/214 RRSVS Radio Modernization Upgrade	C/Various	Various : Various, MD	-	-		2.641	Mar 2019	3.487	Nov 2019	-		3.487	Continuing	Continuing	-
Multiple Source Correlator Tracker (MSCT) 5.9 Software Upgrade	C/Various	Various : Various, UT	-	-		2.899	Mar 2019	-		-		-	Continuing	Continuing	-
a Ground Moving Target Indicator (GMTI) Tracker	C/Various	Various : Various, UT	-	-		-		2.609	Nov 2019	-		2.609	Continuing	Continuing	-
Subtotal			-	1.372		5.540		6.096		-		6.096	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
Test Support-Radio Modernization	PO	Various : Various, FL	-	0.057	Sep 2018	-		0.640	Aug 2020	-		0.640	Continuing	Continuing	-
Test Support-MSCT 5.9	PO	Various : Various, UT	-	-		-		0.500	Feb 2020	-		0.500	Continuing	Continuing	-
Subtotal			-	0.057		-		1.140		-		1.140	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
Program Management Administration - Hill AFB	Various	Hill AFB : Hill AFB, UT	-	0.945	Aug 2018	0.873	Jun 2019	0.873	Jun 2020	-		0.873	Continuing	Continuing	-
Subtotal			-	0.945		0.873		0.873		-		0.873	Continuing	Continuing	N/A

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			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			-	2.374		6.413		8.109		-		8.109	Continuing	Continuing	N/A

Remarks

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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
<i>AN/TRC-213/214 RRSVS Radio Modernization Upgrade</i>																												
ASP																												
Design & Development																												
Integration & Testing																												
<i>Multiple Source Correlator Tracker(MSCT) 5.9 Software Upgrade</i>																												
Design & Development																												
Integration & Testing																												
<i>Ground Moving Target Indicator (GMTI) Tracker</i>																												
Research and contract award																												
Design & Development																												
Integration & Testing																												
<i>Future CRC Modernization Efforts</i>																												
Development & Integration																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2020 Air Force			Date: February 2019
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>AN/TRC-213/214 RRSVS Radio Modernization Upgrade</i>				
ASP	1	2019	2	2019
Design & Development	2	2019	4	2020
Integration & Testing	4	2020	1	2022
<i>Multiple Source Correlator Tracker(MSCT) 5.9 Software Upgrade</i>				
Design & Development	2	2019	2	2020
Integration & Testing	2	2020	4	2020
<i>Ground Moving Target Indicator (GMTI) Tracker</i>				
Research and contract award	2	2019	2	2020
Design & Development	3	2020	2	2021
Integration & Testing	3	2021	1	2022
<i>Future CRC Modernization Efforts</i>				
Development & Integration	3	2021	4	2024