

# UNCLASSIFIED

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 0207410F I Air & Space Operations Center (AOC)							
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	0.000	86.456	104.954	114.864	0.000	114.864	116.000	113.343	113.095	104.146	Continuing	Continuing
674596: AOC WS Modifications	0.000	67.200	104.954	114.863	0.000	114.863	116.000	113.343	113.095	104.146	Continuing	Continuing
675218: Applications Development	0.000	15.429	0.000	0.001	0.000	0.001	0.000	0.000	0.000	0.000	0.000	15.430
675220: Unit Level	0.000	3.827	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.827

## Note

In FY 2020, PE 0207410F, Air & Space Operations Center (AOC), Project Number 674596, AOC WS Modifications, effort Multi Domain Command and Control, was transferred to PE 0304115F, Multi Domain Command and Control (MDC2), Project Number 673380, Multi Domain Command and Control (MDC2), in order to improve transparency of development programs.

## A. Mission Description and Budget Item Justification

The Air and Space Operations Center Weapon System (AOC WS) program element provides development of Command and Control (C2) capabilities across the entire spectrum of air and space operations from the strategic to the tactical level. There are three funded projects within the AOC WS program element:

AOC WS Modifications: Allows for the consolidation to a single baseline across the AOC WS enterprise utilizing FY16 NDAA, Section 804, Middle Tier of Acquisition for Rapid Prototyping and Rapid Fielding, as a rapid fielding effort to provide required modifications for the AOC WS to remain interoperable, certified, supportable, and compliant through the development, integration, testing, fielding, and sustainment of new capabilities and upgrades. This includes utilization of Agile software development methodologies and managed cloud infrastructure and platform services. Modifications are required for the AOC WS to keep pace with evolving Government Off the Shelf (GOTS) components, integrated Commercial Off the Shelf (COTS) components, Department of Defense (DoD) directives, changes in the underlying Information Technology (IT) environment, as well as to deliver effective operational capabilities for the user.

Applications Development: Provides worldwide operational level C2 capabilities, which include: air battle planning, management, and execution; operational level C2 of Integrated Air and Missile Defense (C2 of IAMD); in support of DoD, Coalition Partners, and other government agencies.

Unit Level: Provides both scheduling and mission preparation activities at the wing and squadron level, and the capabilities to report and track the success of each mission and influence decisions of future Air Battle Planning.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver AOC WS, Applications Development, and Unit Level capabilities. 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.

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2020 Air Force	<b>Date:</b> February 2019
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<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 0207410F / <i>Air &amp; Space Operations Center (AOC)</i>
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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.

<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020 Base</b>	<b>FY 2020 OCO</b>	<b>FY 2020 Total</b>
Previous President's Budget	26.956	106.102	113.050	0.000	113.050
Current President's Budget	86.456	104.954	114.864	0.000	114.864
Total Adjustments	59.500	-1.148	1.814	0.000	1.814
• Congressional General Reductions	-0.384	-1.148			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	61.800	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	-0.032	0.000			
• SBIR/STTR Transfer	-1.884	0.000			
• Other Adjustments	0.000	0.000	1.814	0.000	1.814

**Change Summary Explanation**

FY 2018: Increase of \$61.800M due to Air Force requested transfer from PE 0605458F, AOC 10.2 RDT&E, for the purpose of software production and sustainment activities for rapid incremental improvements to the AOC WS.

FY 2020: Increase of \$1.814M is a result of increasing AOC WS Modifications program \$8.551M; funding request was reduced by 6.737M to account for the availability of prior year execution balances.

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Exhibit R-2A, RDT&E Project Justification: PB 2020 Air Force										Date: February 2019		
Appropriation/Budget Activity 3600 / 7					R-1 Program Element (Number/Name) PE 0207410F / Air & Space Operations Center (AOC)				Project (Number/Name) 674596 / AOC WS Modifications			
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
674596: AOC WS Modifications	0.000	67.200	104.954	114.863	0.000	114.863	116.000	113.343	113.095	104.146	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
Note In FY 2020, PE 0207410F, Air & Space Operations Center (AOC), Project Number 674596, AOC WS Modifications, effort Multi Domain Command and Control, was transferred to PE 0304115F, Multi Domain Command and Control (MDC2), Project Number 673380, Multi Domain Command and Control (MDC2), in order to improve transparency of development programs.  A. Mission Description and Budget Item Justification The Air Operations Center Weapon System (AOC WS), AN/USQ-163 Falconer, the senior element of the Theater Air Control System (TACS), is the weapon system the Commander, Air Force Forces (COMAFFOR) provides the Combined/Joint Force Air Component Commander (C/JFACC) for planning, executing, and assessing theater-wide air and space operations. The C/JFACC provides air, space and cyber support to the Combined/Joint Forces Commander (C/JFC) by coordinating, deconflicting and assessing the progress of various weapon systems to advance the C/JFC's campaign. The AOC WS develops operations strategy and planning documents. The weapon system also disseminates tasking orders; executes day-to-day peacetime and combat air, space and cyber operations; and provides rapid reaction to immediate situations by exercising positive control of friendly forces.  In FY 2020, funding increased to support additional development capacity required for AOC WS Modifications and to enable the retirement of Theater Battle Management Core System - Force Level (TBMCS FL) and the legacy AOC 10.1 system while enabling an extensible cloud-based Infrastructure and Platform as a Service (IaaS/PaaS) hosting platform. Also, AOC WS Modifications are required for the AOC to keep pace with evolving COTS/GOTS components, DoD directives, changes in the underlying IT environment, and to remain interoperable, certified, supportable, and compliant through the development, integration, testing, fielding, training, and sustainment of new capabilities and upgrades to the AOC WS. This includes utilization managed cloud infrastructure and platform services. Additionally, in FY 2020 AOC WS Modifications activities evolve the AOC utilizing Agile Methodologies, including Extreme Programming (XP) models, and embracing DevOps relationships to foster improved capabilities in support of mission requirements at Geographic and Global (formerly Functional) AOCs, as well as Support and Manpower Augmentation units, keeping the AOC current and interoperable with the Combatant Commands (CCMDs), cyber requirements, and next generation weapon systems/ weapons.  This program element may include necessary civilian pay expenses required to manage, execute, and deliver AOC WS capabilities. 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.  B. Accomplishments/Planned Programs (\$ in Millions)												
								FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Title: AOC WS Modifications Development								56.755	64.444	83.952	0.000	83.952

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Appropriation/Budget Activity 3600 / 7		R-1 Program Element (Number/Name) PE 0207410F / Air & Space Operations Center (AOC)		Project (Number/Name) 674596 / AOC WS Modifications		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
<p><b>Description:</b> Conduct AOC WS infrastructure development and mission capability development/integration as an FY16 NDAA, Section 804, Middle Tier of Acquisition for Rapid Prototyping/Rapid Fielding effort. Leverage agile software development methodologies to develop, integrate, and test modification updates to the AOC WS leveraging test-driven development. Develop, test, and deliver effective operational capabilities utilizing continuous integration and continuous delivery (CI/CD) processes.</p> <p><b>FY 2019 Plans:</b></p> <ul style="list-style-type: none"><li>- Modify the 10.1 legacy system to achieve cloud-enabled operations; develop applications to perform in the cloud environment</li><li>- Evolve the AOC through Agile DevOps development, integration, and test of progressively improving capabilities in support of mission requirements</li></ul> <p><b>FY 2020 Base Plans:</b></p> <ul style="list-style-type: none"><li>- Continue rapid fielding of software capabilities to enable the retirement of Theater Battle Management Control System - Force Level (TBMCS FL) and Master Air Attack Plan Tool Kit (MAAPTK)</li><li>- Continue development and establishment of an enterprise infrastructure baseline to support hosting a virtual private cloud</li></ul> <p><b>FY 2020 OCO Plans:</b></p> <p>N/A</p> <p><b>FY 2019 to FY 2020 Increase/Decrease Statement:</b></p> <p>Funding increased due to scaling of product teams.</p>						
<p><b>Title:</b> AOC WS Modifications Direct Mission Support</p> <p><b>Description:</b> Plan and execute strategies to adopt commercial best practices for software development, scale out a modern IaaS/PaaS solution to the AOC WS enterprise, implement improved solutions for platform architecture and CI/CD pipeline, and maintain continuous Authority to Operate (ATO).</p> <p><b>FY 2019 Plans:</b></p> <ul style="list-style-type: none"><li>- Develop virtual private cloud architecture and execute platform scaling strategy to AOC enterprise</li><li>- Enable scaling software product teams and provide the necessary competencies to adopt commercial best practices for agile software development</li></ul> <p><b>FY 2020 Base Plans:</b></p>		10.445	25.622	30.911	0.000	30.911

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Appropriation/Budget Activity 3600 / 7		R-1 Program Element (Number/Name) PE 0207410F / Air & Space Operations Center (AOC)		Project (Number/Name) 674596 / AOC WS Modifications		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
<p>- Continue to provide the competencies necessary to scale software development capacity and enable retirement of Theater Battle Management Core System - Force Level (TBMCS FL)</p> <p>- Continue to enable development and establishment of extensible cloud-based IaaS/PaaS hosting platform/ enterprise architecture baseline environment</p> <p><b>FY 2020 OCO Plans:</b> N/A</p> <p><b>FY 2019 to FY 2020 Increase/Decrease Statement:</b> Funding increased due to option years of contracts.</p>						
<p><b>Title:</b> Multi-Domain Command and Control (MDC2) Development</p> <p><b>Description:</b> Development of enduring capability for a scalable operational infrastructure and data architecture to acquire and develop MDC2 capability; procure/lease a virtualized (cloud-based) data structure for all relevant information (mission data, business data, applications, enterprise services, etc.). Experiment, explore, and develop innovative C2 tools designed for multi-domain; multi-level security tools and capabilities to enhance C2 interoperability and data sharing for the 2030 and beyond fight. Utilize for program support and other activities that may include, but are not limited to experiments, infrastructure/architecture needs, coding, technical analysis, etc.</p> <p><b>FY 2019 Plans:</b> - Begin to evolve the MDC2 capability through Agile DevOps development, integration, and test of progressively improving capabilities in support of mission requirements</p> <p><b>FY 2020 Base Plans:</b> See PE 0304115F, Multi Domain Command and Control (MDC2), Project Number 673380, MDC2.</p> <p><b>FY 2020 OCO Plans:</b> N/A</p> <p><b>FY 2019 to FY 2020 Increase/Decrease Statement:</b> Funding decreased due to transfer to PE 0304115F, Multi Domain Command and Control (MDC2), Project Number 673380, MDC2.</p>		0.000	14.888	0.000	0.000	0.000
Accomplishments/Planned Programs Subtotals		67.200	104.954	114.863	0.000	114.863

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Exhibit R-2A, RDT&E Project Justification: PB 2020 Air Force										Date: February 2019	
Appropriation/Budget Activity 3600 / 7				R-1 Program Element (Number/Name) PE 0207410F / Air & Space Operations Center (AOC)				Project (Number/Name) 674596 / AOC WS Modifications			
C. 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 834520: Theater Battle Mgt C2 System	4.976	2.923	5.514	-	5.514	5.284	4.739	0.000	0.000	0.000	23.436
• OPAF 03 Line Item 834530: Air and Space Operations Ctr-WPN SYS	25.498	38.589	33.243	-	33.243	26.021	14.606	19.208	18.336	Continuing	Continuing
Remarks											
D. Acquisition Strategy											
<p>The acquisition strategy builds on agile development and modification of existing capabilities using evolutionary acquisition to standardize and modify the AOC WS. The initial capability was AOC WS Increment 10.0, which fielded the 10.0 configuration to five operational sites, plus a Help Desk and a Formal Training Unit. The second increment, Increment 10.1, upgraded these locations to an integrated baseline and fielded the baseline to additional operational and reserve units worldwide. The AOC 10.2 sought to evolve the AOC to a Net-Centric environment compliant with DoD Services Oriented Architecture standards but proved late to need using legacy approaches, so the contract was terminated in July 2017 and Program of Record was canceled in January 2018. AOC WS Modifications will utilize FY16 NDAA Section 804, Middle Tier of Acquisition for Rapid Prototyping and Rapid Fielding, leveraging commercial best practices of Agile DevOps to scale out a modern virtual private cloud to the AOCs and scale up additional software product teams in support of retiring Theater Battle Management Core System - Force Level (TBMCS FL) and other legacy mission critical applications allowing for eventual disposal of the AOC 10.1 infrastructure. Using Sec 804 authority, time lines are reduced by modularizing both the development work and the associated contracting and funding strategies. This enables dynamic resource allocation based on current warfighter needs. The desired end state is continuous delivery of all AOC WS software.</p>											
<p>AOC WS Modifications will leverage the AOC WS Long-Term Modification and Sustainment (LTM&amp;S) contract which will provide for government led integration of the AOC WS enterprise. AOC WS Modifications will also use Other Transaction Authority (OTA) to adopt commercial best practices for software development and to scale out a modern Infrastructure as a Service/Platform as a Service (IaaS/PaaS) solution. Activities are also accomplished via Military Interdepartmental Purchase Requests (MIPR). Additionally, significant technical expertise will be sought after via modular contracting approach and provided by Government Agencies, DoD Laboratory, Federally Funded Research and Development Centers (FFRDC), Academia, and Engineering &amp; Professional Acquisition Support Services contractors as well as commercial industry partners.</p>											
E. Performance Metrics											
<p>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.</p>											

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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 0207410F / Air & Space Operations Center (AOC)				Project (Number/Name) 674596 / AOC WS Modifications					
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
AOC WS Modifications Development	C/CPFF	Raytheon : Waltham, MA	0.000	36.600	Oct 2017	42.703	Dec 2018	45.130	Dec 2019	0.000		45.130	Continuing	Continuing	-
AOC WS Modifications Other Transaction	Various	Pivotal : Multiple	0.000	14.642	Nov 2017	12.148	Dec 2018	28.365	Dec 2019	0.000		28.365	Continuing	Continuing	-
Multi-Domain Command and Control (MDC2)	MIPR	Various : Multiple	0.000	0.000		14.888	Apr 2019	0.000		0.000		0.000	0.000	14.888	-
Subtotal			0.000	51.242		69.739		73.495		0.000		73.495	Continuing	Continuing	N/A
Remarks MDC2 funding transfered to PE 0304115F, Multi Domain Command and Control (MDC2), Project Number 673380, MDC2.															
Support (\$ 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
AOC WS Modifications Direct Mission Support	C/TBD	Various : Various	0.000	10.445	Oct 2017	25.622	Oct 2018	30.911	Oct 2019	0.000		30.911	Continuing	Continuing	-
Subtotal			0.000	10.445		25.622		30.911		0.000		30.911	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
AOC WS Modifications Engineering Services	Various	Various : Various	0.000	1.056	Oct 2017	2.308	Oct 2018	2.377	Oct 2019	0.000		2.377	Continuing	Continuing	-
AOC WS Modifications Program Management Administration	C/Various	Various : Various	0.000	4.457	Nov 2017	7.285	Nov 2018	8.080	Nov 2019	0.000		8.080	Continuing	Continuing	-
Subtotal			0.000	5.513		9.593		10.457		0.000		10.457	Continuing	Continuing	N/A

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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 0207410F / Air & Space Operations Center (AOC)					Project (Number/Name) 674596 / AOC WS Modifications					
			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			0.000	67.200		104.954		114.863		0.000		114.863	Continuing	Continuing	N/A

Remarks



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Exhibit R-4, RDT&E Schedule Profile: PB 2020 Air Force										Date: February 2019																			
Appropriation/Budget Activity 3600 / 7										R-1 Program Element (Number/Name) PE 0207410F / Air & Space Operations Center (AOC)										Project (Number/Name) 674596 / AOC WS Modifications									

	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
AOC WS Modifications																												
AOC WS Modifications Pathfinder																												
AOC WS Modifications Development																												
Multi-Domain Command and Control (MDC2)																												
MDC2 Development																												

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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 0207410F / Air & Space Operations Center (AOC)	Project (Number/Name) 674596 / AOC WS Modifications

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>AOC WS Modifications</b>				
AOC WS Modifications Pathfinder	1	2018	4	2018
AOC WS Modifications Development	4	2018	4	2024
<b>Multi-Domain Command and Control (MDC2)</b>				
MDC2 Development	3	2019	4	2019

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Exhibit R-2A, RDT&E Project Justification: PB 2020 Air Force										Date: February 2019		
Appropriation/Budget Activity 3600 / 7					R-1 Program Element (Number/Name) PE 0207410F / Air & Space Operations Center (AOC)				Project (Number/Name) 675218 / Applications Development			
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
675218: Applications Development	0.000	15.429	0.000	0.001	0.000	0.001	0.000	0.000	0.000	0.000	0.000	15.430
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

**Note**

FY 2020: The \$0.001M amount will be executed in Project 674596, AOC WS Modifications

**A. Mission Description and Budget Item Justification**

This project funds operational development necessary to acquire and modify segments of Air Force's (AF) Command and Control (C2) capabilities and services. Applications Development provides worldwide operational capabilities for AF C2 in support of DoD, Coalition Partners, and other government agencies. These efforts focus on support of the Joint Forces Air Component Commander (JFACC) that provides air, space and cyber support as presented to the AOC and to other AF and Joint Services C2 systems. Applications Development efforts deliver capabilities identified in the Joint Command and Control (JC2) Capability Development Document (CDD) (2013). These activities include C2 Air Operations Suite - C2 Information Services (C2AOS-C2IS) needs identified in the Capability Definition Package (CDP) (2012). C2AOS-C2IS creates web-enabled information services to expose air operations data using standardized schemas, such as those developed by the Air Operations Community of Interest. C2AOS-C2IS also develops and matures modular net-centric C2 applications for air battle planning, execution, and management functions. These applications include Network Enabled Weapons (NEW); the remainder of the CDP and Theater Battle Management Core Systems - Force Level (TBMCS FL) functionality; services to support air mission and Friendly Order of Battle execution, Alerting, Publish and Subscribe, Content Management and Reporting; and integration with a JC2 Reference Architecture (RA) host infrastructure environment.

Activities also include studies and analysis to support both current and future program planning and execution.

No FY 2020 funding requested; FY 2020 project efforts are detailed in PE 0305015F, C2AOS-C2IS.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver Applications Development capabilities. 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.

**B. Accomplishments/Planned Programs (\$ in Millions)**

	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020 Base</b>	<b>FY 2020 OCO</b>	<b>FY 2020 Total</b>
<b>Title:</b> C2AOS-C2IS Development	13.363	0.000	0.001	0.000	0.001
<b>Description:</b> C2AOS-C2IS Development effort develops modular net-centric C2 applications for air battle planning, execution and management functions and creates web-enabled information services to expose					

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Appropriation/Budget Activity 3600 / 7		R-1 Program Element (Number/Name) PE 0207410F / Air & Space Operations Center (AOC)		Project (Number/Name) 675218 / Applications Development		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
air operations data in Theater Battle Management Core System (TBMCS) applications and systems using standardized schemas including Capability Packages (CP) 1, 2, & 3. - CP 1: Air Tasking Order Management System (ATOMS), Request Information Services for Command and Control (RISC2) and Network Enabled Weapons (NEW) - CP 2: C2 of Integrated Air Missile Defense (IAMD) Planner and Airspace Management Application - Airspace Information Service (ASMA-ASIS) - CP 3: Air Execution Information System (AXIS)  <b>FY 2019 Plans:</b> See PE 0305015F, C2 Air Operations Suite - C2 Info Services, Project Number 675218, Applications Development.  <b>FY 2020 Base Plans:</b> See PE 0305015F, C2 Air Operations Suite - C2 Info Services, Project Number 675218, Applications Development.  <b>FY 2020 OCO Plans:</b> N/A  <b>FY 2019 to FY 2020 Increase/Decrease Statement:</b> Funding increased \$0.001M due to database error; will be executed in Project 674596, AOC WS Modifications.						
<b>Title:</b> C2AOS-C2IS Test and Evaluation  <b>Description:</b> Test and Evaluation  <b>FY 2019 Plans:</b> See PE 0305015F, C2 Air Operations Suite - C2 Info Services, Project Number 675218, Applications Development.  <b>FY 2020 Base Plans:</b> See PE 0305015F, C2 Air Operations Suite - C2 Info Services, Project Number 675218, Applications Development.  <b>FY 2020 OCO Plans:</b> N/A  <b>FY 2019 to FY 2020 Increase/Decrease Statement:</b>		2.066	0.000	0.000	0.000	0.000

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2020 Air Force				<b>Date:</b> February 2019	
<b>Appropriation/Budget Activity</b> 3600 / 7		<b>R-1 Program Element (Number/Name)</b> PE 0207410F / <i>Air &amp; Space Operations Center (AOC)</i>		<b>Project (Number/Name)</b> 675218 / <i>Applications Development</i>	
<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>				<b>FY 2018</b>	<b>FY 2019</b>
				<b>FY 2020 Base</b>	<b>FY 2020 OCO</b>
				<b>FY 2020 Total</b>	
N/A					
<b>Accomplishments/Planned Programs Subtotals</b>				15.429	0.000
				0.001	0.000
				0.001	
<b>C. Other Program Funding Summary (\$ in Millions)</b>					
N/A					
<b>Remarks</b>					
<b>D. Acquisition Strategy</b>					
Projects will be awarded following full and open competition and will use an evolutionary acquisition strategy based on incremental development leveraging the C2 Applications and Information Services Development Indefinite Delivery/Indefinite Quantity contract. The Air Force Life Cycle Management Center, Operations C2 Division manages the integration of C2AOS-C2IS efforts into the AOC WS.					
<b>E. Performance Metrics</b>					
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 0207410F / Air & Space Operations Center (AOC)				Project (Number/Name) 675218 / Applications Development					
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
C2AOS-C2IS Test and Integration 1	C/T&M	Leidos, Inc. : Reston, VA	0.000	2.366	Jan 2018	0.000		0.000		0.000		0.000	0.000	2.366	-
C2AOS-C2IS Test and Integration 2	C/T&M	Lockheed Martin : Colorado Springs, CO	0.000	6.261	Nov 2017	0.000		0.000		0.000		0.000	0.000	6.261	-
Subtotal			0.000	8.627		0.000		0.000		0.000		0.000	0.000	8.627	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
C2AOS-C2IS Test Support (Joint)	MIPR	Joint Interoperability Test Command : Fort Huachucha, AZ	0.000	0.058	Jan 2018	0.000		0.000		0.000		0.000	0.000	0.058	-
C2AOS-C2IS Lead Developmental Test and Evaluation Organization	PO	96th Test Wing : Eglin AFB, FL	0.000	2.008	Feb 2018	0.000		0.000		0.000		0.000	0.000	2.008	-
Subtotal			0.000	2.066		0.000		0.000		0.000		0.000	0.000	2.066	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
C2AOS-C2IS Systems Engineering	SS/ Various	MITRE : Bedford, MA	0.000	3.003	Oct 2017	0.000		0.000		0.000		0.000	0.000	3.003	-
C2AOS-C2IS Program Management Administration	C/Various	Various : Hanscom AFB, MA	0.000	1.666	Oct 2017	0.000		0.001	Oct 2019	0.000		0.001	0.000	1.667	-
C2AOS-C2IS Cyber Support	MIPR	Various : Hanscom AFB, MA	0.000	0.067	Jan 2018	0.000		0.000		0.000		0.000	0.000	0.067	-
Subtotal			0.000	4.736		0.000		0.001		0.000		0.001	0.000	4.737	N/A

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<b>Exhibit R-3, RDT&amp;E Project Cost Analysis:</b> PB 2020 Air Force										<b>Date:</b> February 2019			
<b>Appropriation/Budget Activity</b> 3600 / 7					<b>R-1 Program Element (Number/Name)</b> PE 0207410F / Air & Space Operations Center (AOC)					<b>Project (Number/Name)</b> 675218 / Applications Development			
	<b>Prior Years</b>	<b>FY 2018</b>		<b>FY 2019</b>		<b>FY 2020 Base</b>		<b>FY 2020 OCO</b>		<b>FY 2020 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Project Cost Totals</b>	0.000	15.429		0.000		0.001		0.000		0.001	0.000	15.430	N/A
<b>Remarks</b> FY 2020: The \$0.001M amount will be executed in Project 674596, AOC WS Modifications													

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<b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2020 Air Force			<b>Date:</b> February 2019		
<b>Appropriation/Budget Activity</b> 3600 / 7		<b>R-1 Program Element (Number/Name)</b> PE 0207410F / <i>Air &amp; Space Operations Center (AOC)</i>			<b>Project (Number/Name)</b> 675218 / <i>Applications Development</i>

	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
<b><i>Applications Development</i></b>																												
C2AOS-C2IS Test and Integration 1 (TI1) - Leidos																												
C2AOS-C2IS Test and Integration 2 (TI2) - Lockheed Martin																												



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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2020 Air Force			<b>Date:</b> February 2019
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0207410F / <i>Air &amp; Space Operations Center (AOC)</i>	<b>Project (Number/Name)</b> 675218 / <i>Applications Development</i>	

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>Applications Development</i></b>				
C2AOS-C2IS Test and Integration 1 (TI1) - Leidos	1	2018	4	2018
C2AOS-C2IS Test and Integration 2 (TI2) - Lockheed Martin	1	2018	4	2018

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Exhibit R-2A, RDT&E Project Justification: PB 2020 Air Force										Date: February 2019		
Appropriation/Budget Activity 3600 / 7					R-1 Program Element (Number/Name) PE 0207410F / Air & Space Operations Center (AOC)				Project (Number/Name) 675220 / Unit Level			
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
675220: Unit Level	0.000	3.827	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.827
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
A. Mission Description and Budget Item Justification												
Project funds are used to develop and integrate Command and Control, Incident Management, Emergency Response Application (C2IMERA; formerly Unit Command and Control [UC2]) as an evolving sequence of increasing software capabilities that support the execution of the air battle plan and the air tasking order message received from the AOC. C2IMERA operations software systems meet needs identified in the TBMCS Operational Requirements Document (ORD) (2001), the UC2 Baseline System Requirements Document (SRD), and AF Form 1067, Modification Proposal, by providing both the scheduling and mission preparation activities at the wing, group and squadron level, and the capabilities to report and track the success of each mission and influence decisions on future air battle planning. C2IMERA is fielded to the Wing Operations Center (WOC), the Maintenance Operations Center (MOC), the Emergency Operations Center (EOC), Crisis Action Team (CAT), and many other work-centers.												
Activities also include studies and analysis to support both current and future program planning and execution.												
No FY 2020 funding requested; FY 2020 project efforts are detailed in PE 0305015F, C2AOS-C2IS.												
This program element may include necessary civilian pay expenses required to manage, execute, and deliver Unit Level capabilities. 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.												
B. Accomplishments/Planned Programs (\$ in Millions)								FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Title: UC2/C2IMERA Software Development								3.309	0.000	0.000	0.000	0.000
Description: C2IMERA capabilities development/integration.												
FY 2019 Plans: See PE 0305015F, C2 Air Operations Suite - C2 Info Services, Project Number 675220, Unit Level.												
FY 2020 Base Plans: See PE 0305015F, C2 Air Operations Suite - C2 Info Services, Project Number 675220, Unit Level.												
FY 2020 OCO Plans:												

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2020 Air Force										<b>Date:</b> February 2019	
<b>Appropriation/Budget Activity</b> 3600 / 7				<b>R-1 Program Element (Number/Name)</b> PE 0207410F / Air & Space Operations Center (AOC)				<b>Project (Number/Name)</b> 675220 / Unit Level			
<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>											
				<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020 Base</b>	<b>FY 2020 OCO</b>	<b>FY 2020 Total</b>			
N/A											
<b>FY 2019 to FY 2020 Increase/Decrease Statement:</b> N/A											
<b>Title:</b> UC2/C2IMERA Testing and Test Support				0.518	0.000	0.000	0.000	0.000			
<b>Description:</b> C2IMERA testing and test support activities.											
<b>FY 2019 Plans:</b> See PE 0305015F, C2 Air Operations Suite - C2 Info Services, Project Number 675220, Unit Level.											
<b>FY 2020 Base Plans:</b> See PE 0305015F, C2 Air Operations Suite - C2 Info Services, Project Number 675220, Unit Level.											
<b>FY 2020 OCO Plans:</b> N/A											
<b>FY 2019 to FY 2020 Increase/Decrease Statement:</b> N/A											
<b>Accomplishments/Planned Programs Subtotals</b>				3.827	0.000	0.000	0.000	0.000			
<b>C. Other Program Funding Summary (\$ in Millions)</b>											
<b>Line Item</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020 Base</b>	<b>FY 2020 OCO</b>	<b>FY 2020 Total</b>	<b>FY 2021</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
• OPAF 03 Line Item 834520: Theater Battle Management C2 System	3.384	0.967	0.500	-	0.500	0.000	0.000	0.000	0.000	0.000	4.851
<b>Remarks</b>											
<b>D. Acquisition Strategy</b> Projects will be awarded following full and open competition and will use an evolutionary acquisition strategy based on incremental development while incorporating agile development and testing principals. The contracting strategy is Cost Plus Fixed Fee. The acquisition and contracting strategies were approved by Program Executive Officer, Digital, on 20 March 2014.											

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Exhibit R-2A, RDT&E Project Justification: PB 2020 Air Force		Date: February 2019
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0207410F / Air & Space Operations Center (AOC)	Project (Number/Name) 675220 / Unit Level

E. 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 0207410F / Air & Space Operations Center (AOC)				Project (Number/Name) 675220 / Unit Level					
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
UC2/C2IMERA Development	C/CPFF	Leidos Inc. : Reston, VA	0.000	2.263	Jan 2018	0.000		0.000		0.000		0.000	0.000	2.263	-
Subtotal			0.000	2.263		0.000		0.000		0.000		0.000	0.000	2.263	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
UC2/C2IMERA Test Support	PO	96th Test Wing : Eglin AFB, FL	0.000	0.518	Dec 2017	0.000		0.000		0.000		0.000	0.000	0.518	-
Subtotal			0.000	0.518		0.000		0.000		0.000		0.000	0.000	0.518	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
UC2/C2IMERA Systems Engineering	SS/ Various	MITRE : Bedford, MA	0.000	0.327	Oct 2017	0.000		0.000		0.000		0.000	0.000	0.327	-
UC2/C2IMERA Program Management Administration	Various	Various : Hanscom AFB, MA	0.000	0.537	Nov 2017	0.000		0.000		0.000		0.000	0.000	0.537	-
UC2/C2IMERA Cyber Support	MIPR	Various : Hanscom AFB, MA	0.000	0.182	Dec 2017	0.000		0.000		0.000		0.000	0.000	0.182	-
Subtotal			0.000	1.046		0.000		0.000		0.000		0.000	0.000	1.046	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			0.000	3.827		0.000		0.000		0.000		0.000	0.000	3.827	N/A
Remarks															

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<b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2020 Air Force			<b>Date:</b> February 2019		
<b>Appropriation/Budget Activity</b> 3600 / 7		<b>R-1 Program Element (Number/Name)</b> PE 0207410F / <i>Air &amp; Space Operations Center (AOC)</i>			<b>Project (Number/Name)</b> 675220 / <i>Unit Level</i>

	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
<b>UC2/C2IMERA</b>																												
C2IMERA Rel 1.2 Testing																												
C2IMERA Rel 1.2 Fielding																												
C2IMERA Rel 1.2.2 (formerly 1.3) Development																												
C2IMERA Rel 1.2.2 (formerly 1.3) Testing																												
C2IMERA Rel 1.2.2 (formerly 1.3) Fielding																												
C2IMERA Rel 1.2.3 Development & Testing (formerly 1.3.1)																												
C2IMERA Rel 1.2.3 Fielding																												

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2020 Air Force			<b>Date:</b> February 2019
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0207410F / <i>Air &amp; Space Operations Center (AOC)</i>	<b>Project (Number/Name)</b> 675220 / <i>Unit Level</i>	

**Schedule Details**

<b>Events by Sub Project</b>	<b>Start</b>		<b>End</b>	
	<b>Quarter</b>	<b>Year</b>	<b>Quarter</b>	<b>Year</b>
<b>UC2/C2IMERA</b>				
C2IMERA Rel 1.2 Testing	1	2018	1	2018
C2IMERA Rel 1.2 Fielding	2	2018	4	2018
C2IMERA Rel 1.2.2 (formerly 1.3) Development	1	2018	3	2018
C2IMERA Rel 1.2.2 (formerly 1.3) Testing	2	2018	4	2018
C2IMERA Rel 1.2.2 (formerly 1.3) Fielding	1	2019	1	2019
C2IMERA Rel 1.2.3 Development & Testing (formerly 1.3.1)	1	2019	1	2019
C2IMERA Rel 1.2.3 Fielding	2	2019	2	2019