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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)					R-1 Program Element (Number/Name) PE 0605458F I Air & Space Ops Center 10.2 RDT&E							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	86.444	55.333	28.911	119.745	0.000	119.745	103.441	38.918	4.300	0.000	0.000	437.092
654945: AOC 10.2 Development	86.444	55.333	28.911	119.745	0.000	119.745	103.441	38.918	4.300	0.000	0.000	437.092
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
Program MDAP/MAIS Code: N42												
A. Mission Description and Budget Item Justification												
<p>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.</p>												
<p>The AOC WS Increment 10.2 set of requirements keeps the AOC interoperable, certified, supportable, and compliant through the integration, testing and fielding of new capabilities and upgrades to the AOC WS baseline. The program supports mission requirements at Geographic and Global (formerly known as Functional) AOCs, as well as Support and Manpower Augmentation units. To keep the AOC current and interoperable with the Combatant Commands (CCMD), cyber requirements, and fifth generation weapon system/weapons, the AOC WS program plans to evolve the AOC through the integration and test of progressively improving capabilities by incremental and rapid delivery of requirements using commercial software development best practices. These activities ensure a system of systems engineering perspective for the AOC WS, and include weapon system standardization activities as defined by AOC WS requirements documents. AOC WS Increment 10.2 received a Milestone B decision 11 October 2013. This project will provide for design, development, integration of 3rd Party capabilities, and testing; as well as, build-up and fielding of the Help Desk (HD), Formal Training Unit (FTU), Combined Air Operations Center-experimental (CAOC-X) suite, and one geographic site. Additionally, this project supports development of 10.2.1 and 10.2.2 updates required to keep pace with evolving Commercial Off the Shelf (COTS)/Government Off the Shelf (GOTS)/Capital Equipment Replacement (CER) and cyber dependencies which enable an evolving and supportable AOC 10.2 baseline for fielding through Full Deployment (FD). Once at FD, subsequent AOC 10.2 Baseline Releases (BR) will be Operations and Maintenance funded via PE 0207410F, Air & Space Operations Center (AOC).</p>												
<p>Activities also include studies and analysis to support current program planning and execution, as well as future program planning, to include pathfinder efforts, and transition to production and sustainment contract.</p>												
<p>BA5 - This program is in Budget Activity 5, System Development and Demonstration (SDD) because the program passed Milestone B and is conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full fielding decision.</p>												

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B. Program Change Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	
Previous President's Budget	47.629	28.911	0.000	0.000	0.000	
Current President's Budget	55.333	28.911	119.745	0.000	119.745	
Total Adjustments	7.704	0.000	119.745	0.000	119.745	
• 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	9.222	0.000				
• SBIR/STTR Transfer	-1.518	0.000				
• Other Adjustments	0.000	0.000	119.745	0.000	119.745	
Change Summary Explanation						
FY 2016 funding increased \$9.222M to incrementally fund the AOC 10.2 modernization Engineering and Manufacturing Development contract.						
FY 2018 funding increased 119.745 to fund the completion of AOC 10.2 development and testing as a result of the 2016 Critical Change due to the program slip beyond Milestone C threshold.						
C. Accomplishments/Planned Programs (\$ in Millions)				FY 2016	FY 2017	FY 2018
Title: AOC WS Inc 10.2 Development				53.963	28.222	113.807
Description: AOC 10.2 infrastructure development and mission capability integration. Development of a robust, open, Net-Centric infrastructure with a Service Oriented Architecture (SOA). Conduct system maintenance and interoperability updates.						
FY 2016 Accomplishments:						
- Closed out Critical Change Report						
- Re-verified the essentiality of the program to national security, re-verified program requirements, evaluated alternatives and determined none exist that deliver the required capability at lower cost, evaluated sufficiency of the program's management structure and identified a new cost and schedule baseline requiring an iterative approach to reaching AOC 10.2 Full Deployment, which now includes AOC 10.2.0, 10.2.1 and 10.2.2						
- Began contractor Design/Development and provided contractor support for Development Testing (DT), training, and initial site deployment						
- Enhanced AOC 10.2 developmental and test suite cyber security posture to prepare for obtaining Authority to Operate (ATO)						
- Continued resolving Deficiency Reports (DR) in preparation for supporting Government DT						
FY 2017 Plans:						

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C. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017	FY 2018
<ul style="list-style-type: none"> - Integrate 3rd Party Application updates - Continue to update infrastructure - Iteratively conduct combined Risk Reduction Testing (RRT) with the contractor and Test community to mature the system via operationally relevant test scenarios - Continue to resolve DRs in prep for Government DT - Begin work on 10.2.1 release which will be fielded to the Help Desk, 612th AOC, 609th AOC and FTU - Commence AOC 10.2.1 Baseline Release - Consolidate all patches into updated system build and invest in build/test automation to improve build repeatability and system maintainability - Re-initiate initial site deployments <p>FY 2018 Plans:</p> <ul style="list-style-type: none"> - Conduct DT and obtain an ATO - Continue to update 3rd Party Applications, infrastructure components and fix DRs as identified - Continue work on 10.2 set of requirements and initial site deployments - Explore future phases of pathfinder to deliver in a cloud-based environment 				
<p>Title: AOC WS Inc 10.2 Test and Evaluation</p> <p>Description: Test and Evaluation</p> <p>FY 2016 Accomplishments:</p> <ul style="list-style-type: none"> - Completed DT1 - Began DT2, but due to system problems, this was turned in to a Risk Reduction Event - Continued contractor Design/Development and provide contractor support for DT, training, and initial site deployment - Enhanced AOC 10.2 developmental and test suite cyber security posture to prepare for obtaining ATO - Continued resolving DRs in preparation for supporting Government DT <p>FY 2017 Plans:</p> <ul style="list-style-type: none"> - Iteratively conduct combined RRT with the contractor and Test community to mature the system via operationally relevant test scenarios <p>FY 2018 Plans:</p> <ul style="list-style-type: none"> - Execute DT / Operational Assessment (OA) event 		1.370	0.689	2.438
<p>Title: AOC WS Inc 10.2 Training</p> <p>Description: Training</p>		0.000	0.000	3.500

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C. Accomplishments/Planned Programs (\$ in Millions)										FY 2016	FY 2017	FY 2018
FY 2016 Accomplishments: - Training was not completed in FY 2016 due to the Critical Change												
FY 2017 Plans: - Training was not completed in FY 2017 due to the Critical Change												
FY 2018 Plans: - Effort includes, but is not limited to, support of the Modernization effort for AOC 10.2 requirements training analysis, planning, and development during EMD and Post Milestone C efforts (Production and Deployment) to include both contractor-developed capabilities and supplemental training for contractor modified 3rd Party capabilities - Effort includes curriculum and courseware/material development, instructor training, class/Computer Based Training conduct, and training surveys/analysis/updates/enhanced simulation capabilities												
Accomplishments/Planned Programs Subtotals										55.333	28.911	119.745
D. Other Program Funding Summary (\$ in Millions)												
Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost	
• RDTE: BA07: PE 0207410F: Air & Space Operations Center (AOC), Project 675117, Integration Development	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	197.833	
• RDTE: BA04: PE 0604458F: Air & Space Ops Center	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	66.970	
• OPAF: BA03: Line Item # 834560: Air Operations Center (AOC) 10.2	14.846	30.623	0.000	0.000	0.000	5.756	52.920	52.114	0.000	0.000	146.469	
Remarks												
For OPAF BA03 Line Item # 834560, the FY17 PB described the Geographic AOC fielding plan with installations of 1/2/3 in FYs 16/17/18. Due to the AOC 10.2 Critical Change, the new fielding plan calls for installations of 4/4 in FYs 20/21, including iterative installs of 10.2.1 and 10.2.2 at the help desk and FTU.												
E. Acquisition Strategy												
The acquisition strategy builds on existing capabilities using evolutionary acquisition to standardize, modernize and sustain the AOC. 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 latest increment is AOC 10.2, which leverages the Cost Plus Incentive Fee (CPIF) AOC Modernization Contract, competitively awarded on 25 October 2011, covering initial development plus options												

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<p>for fielding, Capital Equipment Replacement, help desk and sustainment. Following the 2016 Critical Change, the AOC 10.2 program now includes Baseline Releases 10.2.0, 10.2.1, and 10.2.2 to ensure supportable baseline configurations through Full Deployment (FD). The baseline release delivery approach are designed to mirror commercial software best practices to incrementally deliver capability to the warfighter at a rapid and efficient pace. The Modernization prime contractor is using a system of systems perspective and following systems engineering rigor to evolve AOC to a Net-Centric environment, compliant with DoD SOA standards. The AOC 10.2 Program Management Office (PMO) provides technical oversight to the AOC 10.2 Modernization effort, led by a Government AOC Weapon System (WS) Chief Engineer and a modernization Lead Engineer. Additionally, significant technical expertise is provided by MITRE, MIT Lincoln Laboratory, and Engineering & Technology Acquisition Support Services contractors.</p> <p>F. Performance Metrics</p> <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: FY 2018 Air Force												Date: May 2017			
Appropriation/Budget Activity 3600 / 5						R-1 Program Element (Number/Name) PE 0605458F / Air & Space Ops Center 10.2 RDT&E						Project (Number/Name) 654945 / AOC 10.2 Development			
Product Development (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 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 10.2 Modernization Government Furnished Equipment	Various	Various : Various	2.027	0.000		1.140	Mar 2017	1.340	Mar 2018	0.000		1.340	0.000	4.507	-
AOC 10.2 Modernization Contract	C/CPIF	Northrop Grumman : Herndon, VA	68.641	45.746	Oct 2015	17.102	Nov 2016	101.357	Oct 2017	0.000		101.357	0.000	232.846	212.958
AOC 10.2 Training	C/Various	Various : Various	2.926	0.000		0.000		3.500	May 2018	0.000		3.500	0.000	6.426	-
Subtotal			73.594	45.746		18.242		106.197		0.000		106.197	0.000	243.779	-
Support (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 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
Subtotal			-	-		-		-		-		-	-	-	-
Test and Evaluation (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 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	Various	Various : Various	3.303	1.370	Jan 2016	0.689	Apr 2017	2.438	Oct 2017	0.000		2.438	0.000	7.800	-
Subtotal			3.303	1.370		0.689		2.438		0.000		2.438	0.000	7.800	-
Management Services (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 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
System Engineering	C/Various	MITRE : Bedford, MA	5.035	4.401	Oct 2015	4.530	Oct 2016	4.380	Oct 2017	0.000		4.380	0.000	18.346	-
Program Management Adminstration	C/Various	Various : Hanscom AFB, MA	4.512	3.816	Oct 2015	5.450	Dec 2016	6.730	Nov 2017	0.000		6.730	0.000	20.508	-
Subtotal			9.547	8.217		9.980		11.110		0.000		11.110	0.000	38.854	-

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		Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals		86.444	55.333		28.911		119.745		0.000		119.745	0.000	290.433	-

Remarks

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force			Date: May 2017		
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			Project (Number/Name) 654945 / AOC 10.2 Development		

	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022			
	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 Inc 10.2 Milestone C																												
AOC Inc 10.2 Full Deployment Decision																												
AOC Inc 10.2.0 Design / Development																												
AOC Inc 10.2.0 Fielding to CAOC-X, Help Desk and Geo #1 / Development Test (DT) / Initial Operational Test and Evaluation (IOTE)																												
AOC Inc 10.2.1 Design / Development																												
AOC Inc 10.2.1 Fielding to CAOC-X, Help Desk, Geo #1 and FTU / Development Test (DT) / Initial Operational Test and Evaluation (IOTE)																												
AOC Inc 10.2.2 Design / Development																												

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force			Date: May 2017
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Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
AOC Inc 10.2 Milestone C	2	2019	2	2019
AOC Inc 10.2 Full Deployment Decision	4	2019	4	2019
AOC Inc 10.2.0 Design / Development	1	2016	2	2019
AOC Inc 10.2.0 Fielding to CAOC-X, Help Desk and Geo #1 / Development Test (DT) / Initial Operational Test and Evaluation (IOTE)	1	2016	3	2019
AOC Inc 10.2.1 Design / Development	4	2017	2	2020
AOC Inc 10.2.1 Fielding to CAOC-X, Help Desk, Geo #1 and FTU / Development Test (DT) / Initial Operational Test and Evaluation (IOTE)	2	2020	1	2021
AOC Inc 10.2.2 Design / Development	3	2019	3	2021