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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 7: Operational Systems Development					R-1 Program Element (Number/Name) PE 0207444F I Tactical Air Control Party-Mod							
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	-	10.747	11.843	10.623	0.000	10.623	10.794	10.996	11.188	11.418	Continuing	Continuing
676013: Equipment Modernizaton	-	10.747	11.843	10.623	0.000	10.623	10.794	10.996	11.188	11.418	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Tactical Air Control Partys (TACP) are Air Force units manned by airmen who advise Army Ground Commanders and plan, request and control air power in support of army ground maneuver operations. TACPs also coordinate, request, and control airlift support and intelligence, surveillance, and reconnaissance (ISR) support for Army combat operations, and they provide ground communications support for federal disaster response and Homeland Defense operations. TACPs deploy with their aligned Army units and operate in a variety of environments including fixed operations from Tactical Operations Centers (TOC), mobile operations in tactical vehicles, and dismounted (on foot) operations with Army infantry patrols.

The purpose of the TACP-Modernization program is to upgrade TACP voice, data and video communications capabilities, upgrade targeting capabilities, and improve TACP battlefield awareness capabilities. These capabilities are employed at all echelons of Army organizations by: Air Support Operation Centers (ASOC), Division TACPs, Brigade TACPs, Battalion TACPs, and Joint Terminal Attack Controllers (JTAC) deployed with Army companies or scout teams on the front lines. Improved targeting and data communications capabilities provide more accurate target coordinates, reduce Close Air Support (CAS) response times, and reduce the probability of fratricide or collateral damage through the use of networked data communications.

The TACP-M program provides and modernizes capabilities in three major categories/areas:(1) ASCOC/TOC Systems (used in fixed ASOCs and Army TOCs), (2) Dismounted and Mobile Systems (used by JTACs during infantry operations and vehicle-mounted mobile operations), and (3) Close Air Support System (CASS) software. CASS v1.4.5 software comes in two versions: A) Dismounted version for dismounted mission operations and a B) ASOC, TOC, and Mounted (ATM) version for ASOC, TOC, and Mobile systems.

CASS software segment interfaces with all TACP-M components and provides interoperability with joint strike aircraft (F-35, A-10, F-16, F-15, F/A-18, AV-8B, B-52, etc.), remotely piloted aircraft (RPA), artillery fire support systems, network-enabled weapons, and C2 nodes. To enable data communications with those systems / nodes, CASS incorporates several communications protocols including Variable Message Format (VMF), Link 16, Situational Awareness Data Link (SADL), Marine Tactical System (MTS), and U.S. Message Text Format (USMTF). CASS software will provide advanced communication, advanced targeting capability, and significant interoperability improvements for mobile computing devices used by Dismounted JTACs, for vehicle-mounted systems, and for stationary systems used in operations centers. Future upgrades necessary to maintain interoperability with strike aircraft, joint fire support systems, and emerging data networking waveforms will be guided by the TACP CASS Information System Initial Capabilities Document (IS ICD) approved by the Air Force Requirement Oversight Council (AFROC), Functional Capabilities Board (FCB), and Joint Capabilities Board (JCB).

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CASS v2.0 provides a modular architecture for digital communications, messaging, data handling, hardware management, and targeting, and battle space awareness capabilities. The architecture includes a Core Module, an HMI module, and an Application Logic module with multiple mission plug-in features. The software is being developed in two versions ASOC/TOC (A/T) and Dismounted/Mounted (D/M) to support a wide variety of radio systems (including but not limited to AN/PRC-117F, AN/PRC-117G, AN/ PRC-148, AN/PRC-152A, AN/PRC-154, AN/PRC-158, Harris RF-335M-HH, AN/PRC-150C, and other emerging systems that are expected to be employed by TACPs in the future). The key characteristic of the software will be the Open System, Modular architecture that will enable rapid integration with new external devices (such as laser range finders and radios) and rapid development, testing and fielding of new mission capability modules to meet future requirements.						
This program is in Budget Activity 07, 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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget		12.411	11.843	10.592	0.000	10.592
Current President's Budget		10.747	11.843	10.623	0.000	10.623
Total Adjustments		-1.664	0.000	0.031	0.000	0.031
• 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		-1.300	0.000			
• SBIR/STTR Transfer		-0.364	0.000			
• Other Adjustments		0.000	0.000	0.031	0.000	0.031
Change Summary Explanation						
FY2016 Below Threshold Reprogramming of -1.3M to JSTARS Recap, Radar Risk Reduction activities.						
C. Accomplishments/Planned Programs (\$ in Millions)				FY 2016	FY 2017	FY 2018
Title: Close Air Support System (CASS)				10.747	11.843	10.623
Description: The CASS Software program will modernize software for Communications, Command and Control (C3) processing systems for multiple TACP mission areas, i.e., the Air Support Operations Centers (ASOC), Tactical Operation Centers (TOC), Mounted operations, and Dismounted operations.						

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C. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017	FY 2018
<p>FY 2016 Accomplishments:</p> <ul style="list-style-type: none"> - This included, but was not limited to: - Completed Dismount testing. - Continued integration and testing for Dismount CASS software developed for the Operational Control System (OCS). - Continued development, integration and testing for CASS software developed for ATM. - Continued developing software to operate on new TACP-M platforms such as; Mobile Communications System (MCS), TACP-M Transportable Gateway (TTG), and other TACP systems. - Continued to develop, integrate, and test Machine to Machine (MTM) interfaces with C2 Nodes, USAF aircraft, and Ground Forces as well as interoperability with the Army Tactical Network (ATN), which will enhance communication capability among TACP and Army warfighters. - Continued the integration and test of the software modem capability for the Dismount software. - Continued Call For Fires (CFF) and Small Diameter Bomb II (SDB) engineering builds to enhance interoperability of future CASS software. <p>FY 2017 Plans:</p> <ul style="list-style-type: none"> - This includes, but is not limited to: - Complete fielding of the Dismounted CASS v1.4.5 software, including the software modem, for use with the Operational Control System (OCS) - Continue testing, training and fielding CASS v1.4.5 software for use in ASOCs, TOCs, and Mobil Systems (ATM). - Initiate risk reduction, design, development and integration of CASS version 2.0 software for government testing starting in late FY18. - Continue to integration, and test of CASS data communications interfaces with C2 Nodes, CAS aircraft, Army Tactical Networks, Soldier Radio Waveform (SRW) networks, and Mobile User Objective System (MUOS) SATCOM networks to enhance interoperability between TACPs, and other joint warfighters. - Continue development of Call-for-Fire (CFF) and Small Diameter Bomb II (SDB II) control messages. - Training in FY 17 for both Dismounted and ATM. <p>FY 2018 Plans:</p> <ul style="list-style-type: none"> - This includes, but is not limited to: - Complete fielding of the Dismount software, including the software modem, for use with the OCS - Complete fielding of ATM. - Will continue risk reduction and initiate test activities for developing of the initial CASS v2.0 software. - Will establish TACP common software architecture for further development to meet other battlefield airman operational needs. - Will complete upgrades and fixes to Dismounted CASS v1.4.5 software. 				

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C. Accomplishments/Planned Programs (\$ in Millions)										FY 2016	FY 2017	FY 2018
<ul style="list-style-type: none"> - Will conduct source selection activities to provide additional feature (capabilities) for the CASS software. - Will continue design and development of CASS software v2.0 architecture and software in preparation for government testing. - Will continue to integrate, and test CASS data communications interfaces with C2 Nodes, CAS aircraft, ATN, SRW networks, and MUOS SATCOM networks to enhance interoperability between TACPs, and other joint warfighters. - Will continue to develop CFF and SDBII control messages. 												
Accomplishments/Planned Programs Subtotals										10.747	11.843	10.623
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	
• OPAF: BA03: Line item	33.327	41.823	43.084	0.000	43.084	56.096	30.159	30.701	31.256	Continuing	Continuing	
#837100: <i>Tactical C-E Equipment</i>												
Remarks												
E. Acquisition Strategy												
TACP-M is executing an incremental development for the TACP-M CASS software. CASS v2.0 strategy continues the incremental development through conducting risk reduction efforts with DoD's Defense Innovation Unit Experimental (DIUx) initiative and coordinating with the BAO program office on developing the next Dismount solution. CASS v2.0 Acquisition Strategy Panel (ASP) and start of source selection are planned for late FY17, with contract award in late FY18. CASS v2.0 contract to provide new open-system, modular software to support Android and/or Windows OS platforms, with additional capabilities interfacing with the ATN as well. PEO for Special Operations Forces/ISR will be exercising management control.												
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: FY 2018 Air Force												Date: May 2017			
Appropriation/Budget Activity 3600 / 7						R-1 Program Element (Number/Name) PE 0207444F / Tactical Air Control Party-Mod				Project (Number/Name) 676013 / Equipment Modernizaton					
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
CASS 1.4.5 Sys Int Software Dev	C/CPIF	Rockwell Collins : Poway, CA	-	6.094	Feb 2016	0.000	Jan 2017	0.000		0.000		0.000	Continuing	Continuing	-
CASS 2.0 Sys INT Software Dev't	TBD	TBD : TBD	-	0.000		0.000		5.296	Jun 2018	0.000		5.296	Continuing	Continuing	-
CASS 1.4.5 Sys Int Software Dev't	TBD	TBD : TBD	-	0.000		1.310	Jun 2017	0.000		0.000		0.000	Continuing	Continuing	-
CASS 1.4.5 NSWC Crane (Naval Surface Warefare Center)	MIPR	NSWC Crane : Crane, IN	-	1.000	Feb 2016	2.179	Jan 2017	2.431	Jan 2018	0.000		2.431	Continuing	Continuing	-
CASS 2.0 Application Logic Plug-ins	TBD	TBD : TBD	-	0.000		2.500	Oct 2017	0.000		0.000		0.000	Continuing	Continuing	-
CASS 1.4.5 GFE (DIUx)	TBD	TBD : TBD	-	0.000		1.000	Jun 2017	0.000		0.000		0.000	Continuing	Continuing	-
CASS 1.4.5 Risk Reduction (DIUx)	MIPR	Rockwell Collins : Cedar Rapids, IA	-	0.522	Feb 2017	1.000	Feb 2017	0.000		0.000		0.000	Continuing	Continuing	-
CASS 2.0 Risk Reduction (DIUx)	TBD	TBD : TBD	-	0.000		2.000	Oct 2017	0.000		0.000		0.000	Continuing	Continuing	-
Subtotal			-	7.616		9.989		7.727		0.000		7.727	-	-	-
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 Agency Support	MIPR	Various : Multiple	-	0.818	Jan 2016	0.906	Jan 2017	0.896	Jan 2018	0.000		0.896	Continuing	Continuing	-
Subtotal			-	0.818		0.906		0.896		0.000		0.896	-	-	-

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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
Remarks Development, operational and interoperability testing															
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
Program Management Administration	C/CPFF	PMO : Bedford, MA	-	2.313	Jan 2016	0.948	Jan 2017	2.000	Oct 2017	0.000		2.000	Continuing	Continuing	-
Subtotal			-	2.313		0.948		2.000		0.000		2.000	-	-	-
Remarks PMA funds MITRE, ETASS, PASS, SCS, all mulitple contractors.															
			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			-	10.747		11.843		10.623		0.000		10.623	-	-	-
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force			Date: May 2017
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0207444F / <i>Tactical Air Control Party-Mod</i>	Project (Number/Name) 676013 / <i>Equipment Modernizaton</i>	

	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
Close Air Support System (CASS) v1.4.5 Force Dev Eval (FDE)																												
Close Air Support System (CASS) v1.4.5 IOC																												
Close Air Support System (CASS) v1.4.5 FOC																												
Close Air Support System (CASS) v2.0 Contract Award																												
Close Air Support System (CASS) v2.0 ASOC/TOC and Dismount/Mount Design and Development Rel 1																												
Close Air Support System (CASS) v2.0 ASOC/TOC and Dismount/Mount Design and Development Rel 2																												
Close Air Support System (CASS) v2.0 ASOC/TOC and Dismount/Mount Rel 3 Design and Dev																												
Close Air Support System(CASS) v 2.0 ASOC/TOC and Dismount/Mount Rel 4 Design and Development																												

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force			Date: May 2017
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0207444F / <i>Tactical Air Control Party-Mod</i>	Project (Number/Name) 676013 / <i>Equipment Modernization</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Close Air Support System (CASS) v1.4.5 Force Dev Eval (FDE)	3	2016	4	2016
Close Air Support System (CASS) v1.4.5 IOC	1	2017	1	2018
Close Air Support System (CASS) v1.4.5 FOC	2	2018	3	2018
Close Air Support System (CASS) v2.0 Contract Award	4	2018	1	2019
Close Air Support System (CASS) v2.0 ASOC/TOC and Dismount/Mount Design and Development Rel 1	2	2019	3	2020
Close Air Support System (CASS) v2.0 ASOC/TOC and Dismount/Mount Design and Development Rel 2	4	2020	3	2021
Close Air Support System (CASS) v2.0 ASOC/TOC and Dismount/Mount Rel 3 Design and Dev	4	2021	3	2022
Close Air Support System(CASS) v 2.0 ASOC/TOC and Dismount/Mount Rel 4 Design and Development	4	2022	4	2022

Note

IOC & FOC dates are based on Objective and not Threshold dates.