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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 0305099F I Global Air Traffic Management (GATM)							
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	-	4.887	4.106	4.544	0.000	4.544	4.654	4.750	4.837	4.924	Continuing	Continuing
674689: Global Access Architecture	-	4.887	4.106	4.544	0.000	4.544	4.654	4.750	4.837	4.924	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This program element funds the Air Force Life Cycle Management Center (AFLCMC) Aerospace Management Systems Division (AMSD), the designated Air Force (AF) Communications, Navigation, Surveillance/Air Traffic Management (CNS/ATM) and Navigation Safety Center of Excellence (COE). The COE provides highly specialized analysis, assessment and performance monitoring expertise to Headquarters Air Force, AF major commands (MAJCOM), and weapon system program offices regarding CNS/ATM system technical functions and performance standards for safe and efficient operations in the US National Airspace System (NAS) and international civil airspace. This centralized capability supplements the MAJCOMs and over 30 AF weapon system program offices with resident CNS/ATM technical expertise.

This funding enables the AMSD to monitor and participate in government and industry technical forums and U.S. and International civil aviation standards bodies such as the Federal Aviation Administration (FAA), International Civil Aviation Organization (ICAO), Radio Technical Commission for Aeronautics (RTCA), Airlines Electronic Engineering Committee (AEEC) and others, responsible for the development and assessment of international civil aviation standards for safe and efficient operations in worldwide airspace. Division personnel analyze civil standards as they are being developed and work to influence them to support Department of Defense (DoD) interests. CNS/ATM COE experts identify specific technical and engineering criteria established by DoD and these standards bodies and document them in generic performance matrices (GPMs). The COE works with MAJCOM and program office personnel to develop strategies for implementing CNS/ATM requirements on AF weapon systems and tailor the GPMs to each platform's unique avionics architecture and operational mission. Once CNS/ATM component integration and testing is completed, COE personnel validate platform CNS/ATM performance against the standards necessary to operate in worldwide civil airspace. This assessment is submitted to the aircraft program office and becomes part of their Airworthiness certification package.

The program office provides technical analysis and assessments of CNS/ATM and navigation safety avionics equipment throughout the lifecycle of aircraft platforms. Efforts include and are not limited to performance assessment, test support, performance monitoring, interoperability testing, cybersecurity assessments, and the development and assessment of CNS/ATM capabilities for unmanned platforms such as location-specific Ground Based Detect and Avoid radar and airspace (GBDAA) characterization.

The program office administers the electronic DoD Avionics Equipment Catalog (iGATM) through an Indefinite Delivery/Indefinite Quantity (IDIQ) contract vehicle that enables centralized procurement of CNS/ATM and navigation safety avionics equipment and manages other contracts offering technical engineering services to aircraft platform program offices. Technical engineering services may include and is not limited to performance monitoring, interoperability testing, cybersecurity

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assessments, and development and assessment of CNS/ATM capabilities for unmanned platforms such as location-specific GBDAA characterization. These contracts are used by aircraft program offices across the DoD, among other federal agencies, and in support of foreign military sales.						
The program office performs periodic and event driven audits required by civil aviation assurance standards on processes used to develop and distribute the Digital Aeronautical Flight Information File (DAFIF) to DoD users. This electronic navigation database, developed and maintained by the National Geospatial Intelligence Agency (NGA), contains critical safety of flight information used by all DoD flight crews to fly instrument flight rules procedures worldwide.						
This program element may include necessary civilian pay expenses required to manage, execute, and deliver CNS/ATM 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, 0605833F and 0605898F.						
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. Program Change Summary (\$ in Millions)		FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Previous President's Budget		4.453	4.492	4.575	0.000	4.575
Current President's Budget		4.887	4.106	4.544	0.000	4.544
Total Adjustments		0.434	-0.386	-0.031	0.000	-0.031
• Congressional General Reductions		-0.242	-0.386			
• 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		0.815	0.000			
• SBIR/STTR Transfer		-0.139	0.000			
• Other Adjustments		0.000	0.000	-0.031	0.000	-0.031
C. Accomplishments/Planned Programs (\$ in Millions)				FY 2018	FY 2019	FY 2020
Title: CNS/ATM COE Administration of DoD Avionics Equipment Catalog				0.783	0.796	0.798

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C. Accomplishments/Planned Programs (\$ in Millions)		FY 2018	FY 2019	FY 2020
Description: Multiple contract vehicles with multiple avionics vendors that enable centralized procurement of CNS/ATM avionics equipment/components. Supports numerous DoD, US Federal Agency, and Foreign Military Sales program offices. Provide preferred customer pricing and extended warranty. FY 2019 Plans: Continue administration of the catalog and monitor industry for new CNS/ATM Products which could be added to catalog. FY 2020 Plans: Continue administration of the DoD electronic avionics equipment catalog and monitor industry for new CNS/ATM products and technical services which could be added to catalog. Follow-on catalog ID/IQ contract planned 4QFY20. FY 2019 to FY 2020 Increase/Decrease Statement: Projected rate Increase for DMS and PMA Support.				
Title: CNS/ATM COE Digital Aeronautical Flight Information File (DAFIF) Management Description: Perform periodic audits of the processes and procedures utilized by organizations involved in the development and distribution of critical safety of flight electronic databases used by aircrews to fly instrument flight rules procedures worldwide. Ensures the validity of multiple sources of information critical to implementation of international performance based navigation (PBN) standards. FY 2019 Plans: Work with DoD agencies and the FAA to develop performance based procedures required to operate without restriction in the NAS and in international civil aviation environments. Continue to publish procedures and databases with the required degree of accuracy/performance necessary to operate manned and remotely piloted aircraft in NAS. FY 2020 Plans: Continue efforts with DoD agencies and the FAA to audit/certify electronic navigational databases and sources, and develop performance based procedures required to operate without restriction in the NAS and in international civil aviation environments. Continue to publish procedures and databases with the required degree of accuracy/performance necessary to operate manned and remotely piloted aircraft in NAS. FY 2019 to FY 2020 Increase/Decrease Statement: Projected rate Increase for DMS and PMA Support.		1.880	1.878	1.883
Title: CNS/ATM COE Standards Bodies Engagement and Generic Performance Matrix (GPM) Development		2.224	1.432	1.863

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C. Accomplishments/Planned Programs (\$ in Millions)		FY 2018	FY 2019	FY 2020
<p>Description: Participate in technical forums to understand and influence civil aviation standards to incorporate DoD interests. Create new and/or revise GPMs used by AF platform program offices to ensure aircraft comply with civil aviation requirements. Tailor GPMs for program offices to apply standards to unique aircraft avionics architectures. Assist 30 aircraft program offices with the development of CNS/ATM related test and evaluation plans, the analysis of test/performance data, and the certification of aircraft CNS/ATM performance.</p> <p>FY 2019 Plans: Continue development of performance matrices to ensure AF manned and remotely piloted aircraft are capable and certified to operate in accordance with emerging ICAO performance based CNS/ATM requirements.</p> <p>FY 2020 Plans: Continue development of generic and tailored performance matrices to ensure AF manned and remotely piloted aircraft are capable and certified to operate safely and efficiently in worldwide civil airspace in accordance with emerging performance based CNS/ATM requirements. Anticipated support to aircraft platforms in FY20 includes and is not limited to: A-10, B-1, B-52, C-5, C-17, C-130, C-130, E-8, E-3, F-16, F-22, F-35, UH-1N, KC-135, KC-46A, RQ-4, MQ-9, HH-60W and VC-25A/B.</p> <p>FY 2019 to FY 2020 Increase/Decrease Statement: Projected rate Increase for DMS and PMA Support.</p>				
Accomplishments/Planned Programs Subtotals		4.887	4.106	4.544
D. Other Program Funding Summary (\$ in Millions)				
N/A				
Remarks				
E. Acquisition Strategy				
This program primarily supports the acquisition of contractor advisory and assistance service (A&AS) and other technical support personnel to support the efforts described in Section C. This program also provides for the acquisition of contractor services in support of various program management activities within the COE. All of these services are acquired via the issuance of task/delivery orders against existing contractor support contract vehicles available to the CNS/ATM COE.				
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 0305099F / Global Air Traffic Management (GATM)				Project (Number/Name) 674689 / Global Access Architecture					
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
CNS/ATM Center of Excellence: Technical support for CNS/ATM requirement assessments, GPM development, DAFIF navigation data chain audits/certification, and CNS/ATM ID/IQ contract management.	C/T&M	MITRE : Bedford, MA	-	3.236	Oct 2017	2.204	Oct 2018	2.614	Oct 2019	-		2.614	Continuing	Continuing	-
CNS/ATM Center of Excellence: Technical support for operational requirement assessments, GPM development, DAFIF navigation data chain audits/certification, and CNS/ATM ID/IQ contract management.	C/CPFF	Oasis Systems : Lexington, MA	-	0.923	Dec 2017	1.069	Jul 2019	1.090	Jul 2020	-		1.090	Continuing	Continuing	-
Subtotal			-	4.159		3.273		3.704		-		3.704	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 office support - PMA (Contract Services)	C/T&M	Oasis Systems : Lexington, MA	-	0.517	Aug 2018	0.540	Jul 2019	0.549	Jul 2020	-		0.549	Continuing	Continuing	-
Program office support - PMA (Contract Svcs)	C/T&M	Tecolote/Quantech : Bedford, MA	-	0.013	Oct 2017	0.055	Oct 2018	0.073	Oct 2019	-		0.073	Continuing	Continuing	-
Program office support - PMA (Other Govt Costs)	Various	Various : Bedford, MA	-	0.198	Oct 2017	0.238	Oct 2018	0.218	Oct 2019	-		0.218	Continuing	Continuing	-
Subtotal			-	0.728		0.833		0.840		-		0.840	Continuing	Continuing	N/A

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Appropriation/Budget Activity 3600 / 7				R-1 Program Element (Number/Name) PE 0305099F / Global Air Traffic Management (GATM)				Project (Number/Name) 674689 / Global Access Architecture						
		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		-	4.887		4.106		4.544		-		4.544	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 0305099F / Global Air Traffic Management (GATM)										Project (Number/Name) 674689 / Global Access Architecture									

	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
CNS/ATM COE																												
Generic Performance Matrix Development																												
DAFIF Management																												
CNS/ATM iGATM II Contract Proposal Evaluations																												
CNS/ATM iGATM II Contract Administration																												

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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 0305099F / <i>Global Air Traffic Management (GATM)</i>	Project (Number/Name) 674689 / <i>Global Access Architecture</i>	

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>CNS/ATM COE</i>				
Generic Performance Matrix Development	1	2018	4	2024
DAFIF Management	1	2018	4	2024
CNS/ATM iGATM II Contract Proposal Evaluations	1	2018	2	2019
CNS/ATM iGATM II Contract Administration	1	2018	2	2022