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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

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|--|---|
| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0305099F / <i>Global Air Traffic Management (GATM)</i> |
|--|---|

| COST (\$ in Millions) | Prior Years | FY 2015 | FY 2016 | FY 2017 Base | FY 2017 OCO | FY 2017 Total | FY 2018 | FY 2019 | FY 2020 | FY 2021 | Cost To Complete | Total Cost |
|---|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element | - | 4.157 | 4.217 | 4.354 | 0.000 | 4.354 | 4.440 | 4.524 | 4.608 | 4.689 | Continuing | Continuing |
| 674689: <i>Global Access Architecture</i> | - | 4.157 | 4.217 | 4.354 | 0.000 | 4.354 | 4.440 | 4.524 | 4.608 | 4.689 | 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 System 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 expertise to Headquarters Air Force, AF major commands (MAJCOM), and weapon system program offices regarding CNS/ATM system technical functions and performance standards for operation in the US National Airspace System (NAS) and international civil airspace. This centralized capability supplements the MAJCOMs and over 50 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 responsible for the development and assessment of international civil aviation standards for 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 experts identify specific technical and engineering criteria 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. Specifically, CNS/ATM experts work with program office systems engineers to tailor the GPMs to apply civil standards to each platform's unique avionics architecture. Once CNS/ATM component integration and testing is completed, COE personnel validate platform CNS/ATM performance against the standards necessary to operate in civil airspace.

The program office manages an Indefinite Delivery/Indefinite Quantity (IDIQ) contract that enables a centralized procurement of CNS/ATM and navigation safety avionics equipment. These contracts are used by aircraft program offices across the DOD, among other federal agencies, and in support of foreign military sales.

This program performs periodic 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 DOD flight crews to fly instrument flight rules procedures worldwide.

This program is in Budget Activity 7, Operational System Development because this budget activity includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate production funding in the current or subsequent fiscal year.

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| B. Program Change Summary (\$ in Millions) | FY 2015 | FY 2016 | FY 2017 Base | FY 2017 OCO | FY 2017 Total | |
| Previous President's Budget | 4.157 | 4.235 | 4.398 | 0.000 | 4.398 | |
| Current President's Budget | 4.157 | 4.217 | 4.354 | 0.000 | 4.354 | |
| Total Adjustments | 0.000 | -0.018 | -0.044 | 0.000 | -0.044 | |
| • Congressional General Reductions | 0.000 | 0.000 | | | | |
| • Congressional Directed Reductions | 0.000 | 0.000 | | | | |
| • Congressional Rescissions | 0.000 | 0.000 | | | | |
| • Congressional Adds | 0.000 | 0.000 | | | | |
| • Congressional Directed Transfers | 0.000 | 0.000 | | | | |
| • Reprogrammings | 0.000 | 0.000 | | | | |
| • SBIR/STTR Transfer | 0.000 | 0.000 | | | | |
| • Other Adjustments | 0.000 | -0.018 | -0.044 | 0.000 | -0.044 | |
| C. Accomplishments/Planned Programs (\$ in Millions) | | | | FY 2015 | FY 2016 | FY 2017 |
| Title: Contract Support and Administration of DOD Avionics Equipment Catalog | | | | 0.710 | 0.728 | 0.757 |
| 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. Provides preferred customer pricing and extended warranties. | | | | | | |
| FY 2015 Accomplishments: Generated \$10M in sales and \$1.5M in savings. Provided growth capable equipment to meet Aircraft Dependent Surveillance - Broadcast (ADS-B), area navigation (RNAV) and required navigation perform (RNP) standards, and emerging aircraft identification transponder requirements. Awarded first contract and garnered approval for the next two sole source follow-on contracts through February 2019. | | | | | | |
| FY 2016 Plans: Continue administration of current contracts. Evaluate proposals and award new contracts through February 2019. Ensure availability of avionics components required for Federal Aviation Administration (FAA) mandated ADS-B requirements | | | | | | |
| FY 2017 Plans: Continue administration of the catalog and monitor industry for new CNS/ATM products which could be added to the catalog. | | | | | | |
| Title: Digital Aeronautical Flight Information File (DAFIF) Management | | | | 1.800 | 1.818 | 1.887 |
| 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. | | | | | | |

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| C. Accomplishments/Planned Programs (\$ in Millions) | | FY 2015 | FY 2016 | FY 2017 |
| Ensures the validity of multiple sources of information critical to implementation of international performance based navigation (PBN) standards. | | | | |
| <p>FY 2015 Accomplishments: Assisted the NGA to address previously identified process deficiencies and maintain their FAA approvals. COE personnel conducted several navigation data chain audits required to ensure the data/information needed for oceanic/remote and terminal area navigation requirements is accurate and acceptable for use in worldwide airspace. Drove the update to the Radio Technical Commission for Aeronautics' DO-200, Standards for Processing Aeronautical Data. Delivered tool to NGA to automatically validate aeronautical data.</p> <p>FY 2016 Plans: Continue assisting DOD agencies and the NGA to validate the accuracy of DAFIF data and investigate potential automation tools/capabilities to increase database accuracy. Work with AF Flight Standards Agency terminal instrument approach procedure specialists to continue development and publication of Global Positioning System (GPS) based instrument procedures.</p> <p>FY 2017 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 the NAS.</p> | | | | |
| <p>Title: Generic Performance Matrix (GPM) Development</p> <p>Description: Participate in technical forums to understand and influence civil aviation standards to incorporate DOD interests. Create new and/or revise the 22 existing 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 50+ 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 2015 Accomplishments: Updated 11 GPMs. Provided standards for platform program offices to plan for equipment upgrades needed to meet the FAA's 1 January 2020 ADS-B Out mandate. Harmonized GPMs with Navy for F-35 and Army for UH-60. Evaluated ability of currently fielded GPS equipment to meet ADS-B requirements</p> <p>FY 2016 Plans:</p> | | 1.647 | 1.671 | 1.710 |

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| C. Accomplishments/Planned Programs (\$ in Millions) | | FY 2015 | FY 2016 | FY 2017 |
| Continue to engage at industry and civil authority technical working groups to influence aviation standards that benefit DOD users. Continue to define the standards and assist AF and DOD program offices to plan and equip aircraft to meet CNS/ATM requirements. Perform tests on additional fielded GPS systems to determine if they can meet ADS-B requirements. FY 2017 Plans: Continue development of performance matrices to ensure AF manned and remotely piloted aircraft are capable and certified to operate in accordance with emerging International Civil Aviation Organization performance based CNS/ATM requirements. | | | | |
| Accomplishments/Planned Programs Subtotals | | 4.157 | 4.217 | 4.354 |
| 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 2017 Air Force **Date:** February 2016

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| 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> |
|--|---|--|

| Product Development (\$ in Millions) | | | | FY 2015 | | FY 2016 | | FY 2017 Base | | FY 2017 OCO | | FY 2017 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item | Contract Method & Type | Performing Activity & Location | Prior Years | Cost | Award Date | Cost | Award Date | Cost | Award Date | Cost | Award Date | Cost | | | |
| Subtotal | | | - | - | - | - | - | - | - | - | - | - | - | - | - |

| Support (\$ in Millions) | | | | FY 2015 | | FY 2016 | | FY 2017 Base | | FY 2017 OCO | | FY 2017 Total | Cost To Complete | Total Cost | Target Value of Contract |
|--|------------------------|---------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item | Contract Method & Type | Performing Activity & Location | Prior Years | Cost | Award Date | Cost | Award Date | Cost | Award Date | Cost | Award Date | Cost | | | |
| 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 | - | 2.574 | Oct 2014 | 2.578 | Oct 2015 | 2.668 | Oct 2016 | 0.000 | | 2.668 | 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 | Jacobs Technology : Lincoln, MA | - | 0.800 | Dec 2014 | 0.810 | Dec 2015 | 0.820 | Dec 2016 | 0.000 | | 0.820 | Continuing | Continuing | - |
| CNS/ATM Center of Excellence: Reconfigurable Cockpit Avionics Testbed Laboratory Data Link Subscription | SS/FFP | ARINC : Annapolis, MD | - | 0.027 | Mar 2015 | 0.030 | Mar 2016 | 0.030 | Mar 2017 | 0.000 | | 0.030 | Continuing | Continuing | - |
| Subtotal | | | - | 3.401 | | 3.418 | | 3.518 | | 0.000 | | 3.518 | - | - | - |

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| Exhibit R-4, RDT&E Schedule Profile: PB 2017 Air Force | | Date: February 2016 |
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| | FY 2015 | | | | FY 2016 | | | | FY 2017 | | | | FY 2018 | | | | FY 2019 | | | | FY 2020 | | | | FY 2021 | | | |
|--|------------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| | 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 |
| Generic Performance Matrix Development | [REDACTED] | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| DAFIF Management | [REDACTED] | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CNS/ATM iGATM I Contract Administration | [REDACTED] | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CNS/ATM iGATM II Contract Proposal Evaluations | [REDACTED] | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CNS/ATM iGATM II Contract Administration | [REDACTED] | | | | | | | | | | | | | | | | | | | | | | | | | | | |

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| Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force | | Date: February 2016 |
| 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 | Start | | End | |
|--|---------|------|---------|------|
| | Quarter | Year | Quarter | Year |
| Generic Performance Matrix Development | 1 | 2015 | 4 | 2021 |
| DAFIF Management | 1 | 2015 | 4 | 2021 |
| CNS/ATM iGATM I Contract Administration | 1 | 2015 | 2 | 2016 |
| CNS/ATM iGATM II Contract Proposal Evaluations | 1 | 2015 | 2 | 2019 |
| CNS/ATM iGATM II Contract Administration | 2 | 2015 | 2 | 2021 |