Communication, Navigation, Surveillance/Air Traffic Management (CNS/ATM): the Air Force (AF) program is designed to ensure that all AF acquisitions and modifications conform to appropriate CNS/ATM and Navigation Safety performance requirements to enable access to worldwide civil managed airspace. CNS/ATM and Navigation Warfare (NAVWAR) are major components of the DoD's Global Access, Navigation, and Safety (GANS) management effort. The 853 Electronic Systems Group (ELSG) supports CNS/ATM as the AF's central focal point for identifying, analyzing, and evaluating aviation authority civil operational airspace requirements worldwide. Additionally, they identify, analyze, and evaluate the technical performance requirements of the CNS capabilities and assist the platform program offices in the specific integration of the tailored capabilities required to ensure access to civil airspace. Furthermore, Department of Defense policy states that military platforms conducting peacetime operations will conform to applicable rules to ensure interoperability and transparency within national and international airspace. Also the 853 ELSG supports AF aircraft Single Managers in verifying the system's end-to-end performance for each CNS capability integrated into AF aircraft. The 853 ELSG will provide acquisition and engineering support services through the entire acquisition framework to include development of technical architectures, program management reviews and test planning. Furthermore, the 853 ELSG will develop and award Indefinite Delivery/Indefinite Quantity contracts for centralized procurement and sustainment of CNS/ATM and Nav Safety products and promote commonality of CNS equipment and architectures between aircraft. The 853 ELSG will also participate in the development of Operational Safety, Suitability and Effectiveness assurance and Airworthiness Certification Plans. Dual-use capabilities of avionics to satisfy both civil and military CNS/ATM requirements will be explored as well as enhancements to net-centric concepts. The 853 ELSG will facilitate and participate in the development and testing of CNS box-level prototypes. The 853 ELSG will continue projections of studies and prototyping efforts necessary to ensure AF aircraft are postured to meet current civil standards and future changes to civil standards leading to the concept of free flight. No other program satisfies civil CNS/ATM initiatives. This program is assigned Budget Activity 7, Operational Systems Development, based on RDT&E work to implement and integrate appropriate civil standards to ensure transparent Air Force operations and access to worldwide civil airspace. The 853 ELSG has also started providing Air Force management oversight support within the federal multi-departmental (Departments of Transportation, Defense, Homeland Security, Commerce, White House Office of Science & Technology Policy, FAA & NASA) Next Generation Air Transportation System (NextGen) initiative. The Next Gen initiative, and similar initiatives globally (e.g. Single European Sky) will impact all Air Force platforms and future CNS/ATM Navigation Safety performance requirements in both civil and military environments. 853 ELSG will develop and coordinate CNS/ATM architectures with the FAA and other regulatory agencies to allow unrestricted access for Unmanned Aerial Systems (UAS) into global civil airspace. Furthermore, they will identify UAS equipage roadmaps, facilitate technology development and advocate policy changes to allow unfettered airspace access.

Historical Note: FY06: Global Air Traffic Management (GATM) name changed to Communication, Navigation, Surveillance/Air Traffic Management (CNS/ATM). FY07: 5.7M reprogramming to support the development of the NextGen/DoD Network Enabled Operation (NEO) Spiral 1 Demonstration.
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### B. Program Change Summary ($ in Millions)

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<td>SBIR/STTR Transfer</td>
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### Significant Program Changes:
- **FY08**: Increase via BTR for characterization of national airspace for study/data gathering to support safety case to FAA.
UNCLASSIFIED

Exhibit R-2a, RDT&E Project Justification

BUDGET ACTIVITY
07 Operational System Development

PE NUMBER AND TITLE
0305099F Communication, Navigation, Surveillance/Air Traffic Management (CNS/ATM)

PROJECT NUMBER AND TITLE
4689 Global Access Architecture

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Quantity of RDT&E Articles
0 0 0 0 0 0 0 0 0

(U) A. Mission Description and Budget Item Justification

Communication, Navigation, Surveillance/Air Traffic Management (CNS/ATM): the Air Force (AF) program is designed to ensure that all AF acquisitions and modifications conform to appropriate CNS/ATM and Navigation Safety performance requirements to enable access to worldwide civil managed airspace. CNS/ATM and Navigation Warfare (NAVWAR) are major components of the DoD's Global Access, Navigation, and Safety (GANS) management effort. The 853 Electronic Systems Group (ELSG) supports CNS/ATM as the AF's central focal point for identifying, analyzing, and evaluating aviation authority civil operational airspace requirements worldwide. Additionally, they identify, analyze, and evaluate the technical performance requirements of the CNS capabilities and assist the platform program offices in the specific integration of the tailored capabilities required to ensure access to civil airspace. Furthermore, Department of Defense policy states that military platforms conducting peacetime operations will conform to applicable rules to ensure interoperability and transparency within national and international airspace. Also the 853 ELSG supports AF aircraft Single Managers in verifying the system's end-to-end performance for each CNS capability integrated into AF aircraft. Per AFPD 63-13, the 853 ELSG will develop and maintain CNS/ATM performance matrices used to identify specific CNS/ATM requirements for each AF aircraft. The 853 ELSG will provide acquisition and engineering support services through the entire acquisition framework to include development of technical architectures, program management reviews and test planning. Furthermore, the 853 ELSG will develop and award Indefinite Delivery/Indefinite Quantity contracts for centralized procurement and sustainment of CNS/ATM and Nav Safety products and promote commonality of CNS equipment and architectures between aircraft. The 853 ELSG will also participate in the development of Operational Safety, Suitability and Effectiveness assurance and Airworthiness Certification Plans. Dual-use capabilities of avionics to satisfy both civil and military CNS/ATM requirements will be explored as well as enhancements to net-centric concepts. The 853 ELSG will facilitate and participate in the development and testing of CNS box-level prototypes. The 853 ELSG will continue projections of studies and prototyping efforts necessary to ensure AF aircraft are postured to meet current civil standards and future changes to civil standards leading to the concept of free flight. No other program satisfies civil CNS/ATM initiatives. This program is assigned Budget Activity 7, Operational Systems Development, based on RDT&E work to implement and integrate appropriate civil standards to ensure transparent Air Force operations and access to worldwide civil airspace. The 853 ELSG has also started providing Air Force management oversight support within the federal multi-departmental (Departments of Transportation, Defense, Homeland Security, Commerce, White House Office of Science & Technology Policy, FAA & NASA) Next Generation Air Transportation System (NextGen) initiative. The Next Gen initiative, and similar initiatives globally (e.g. Single European Sky) will impact all Air Force platforms and future CNS/ATM Navigation Safety performance requirements in both civil and military environments. 853 ELSG will develop and coordinate CNS/ATM architectures with the FAA and other regulatory agencies to allow unrestricted access for Unmanned Aerial Systems (UAS) into global civil airspace. Furthermore, they will identify UAS equipage roadmaps, facilitate technology development and advocate policy changes to allow unfettered airspace access.

Historical Note: FY06: Global Air Traffic Management (GATM) name changed to Communication, Navigation, Surveillance/Air Traffic Management (CNS/ATM). FY07: 5.7M reprogramming to support the development of the NextGen/DoD Network Enabled Operation (NEO) Spiral 1 Demonstration.
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(U) **B. Accomplishments/Planned Program ($ in Millions)**

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<td>Continue operational requirements analysis, demonstration, and evaluation</td>
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<tr>
<td>Continue development of common avionics and technologies</td>
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<tr>
<td>Continue acquisition of ID/IQ aviation equipment</td>
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<tr>
<td>Continue Nav/Safety and GPS/NAVWAR integration and interoperability evaluations</td>
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<tr>
<td>Continue system architecture definitions, development, and certification</td>
<td>2.276</td>
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<td>Continue on going data gathering at Beale AFB, CA to support safety case to the FAA</td>
<td>0.750</td>
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<tr>
<td>Total Cost</td>
<td>7.203</td>
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(U) **C. Other Program Funding Summary ($ in Millions)**

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(U) **D. Acquisition Strategy**

CNS/ATM acquisition strategy enables the 853 ELSG to guide CNS/ATM and Nav Safety equipment procurements for AF aircraft Single Managers. The 853 ELSG will ensure standardization and support airworthiness certification of AF platforms/systems that operate in the national and global air traffic environments. The Group will collaborate on performance assessment efforts, provide technical expertise and interface with appropriate product/support centers, battle labs, and Department of Defense research and development facilities in the execution of assigned tasks. Program Research and Development Agreements (PDRAs), Cooperative Research and Development Agreements (CDRAs), and Indefinite Delivery/Indefinite Quantity (ID/IQ) contracts will be competitively awarded.
### Exhibit R-3, RDT&E Project Cost Analysis

#### BUDGET ACTIVITY

**07 Operational System Development**

#### PE NUMBER AND TITLE

**0305099F Communication, Navigation, Surveillance/Air Traffic Management (CNS/ATM)**

#### PROJECT NUMBER AND TITLE

**4689 Global Access Architecture**

| Cost Categories | Contract Method & Activity & Location | Total Prior to FY 2008 Cost | FY 2008 Award Date | FY 2008 Cost | FY 2009 Award Date | FY 2009 Cost | FY 2010 Award Date | FY 2010 Cost | Cost to Complete Total Cost Target Value of Contract |
|---|---|---|---|---|---|---|---|---|---|---|
| **(U) Product Development** | | | | | | | | | | |
| MIT | FFP | 7.143 | 0.592 | 0.592 | Dec-09 | Continuing | TBD |
| Honeywell | FFP | 2.745 | 0.000 | 2.745 | TBD | TBD | TBD |
| Allied Signal | FFP | 1.975 | 0.000 | 1.975 | TBD | TBD | TBD |
| Rockwell Collins | FFP | 1.504 | 0.000 | 1.504 | TBD | TBD | TBD |
| Horizons Technology Inc | FFP | 3.974 | 0.000 | 3.974 | TBD | TBD | TBD |
| TASC | CPF | 0.728 | 0.000 | 0.728 | TBD | TBD | TBD |
| Smiths Industries | FFP | 0.194 | 0.000 | 0.194 | TBD | TBD | TBD |
| SAIC | T&M | 0.530 | 0.000 | 0.530 | TBD | TBD | TBD |
| ARINC Inc | FFP | 0.946 | 0.024 | 0.970 | Mar-09 | Continuing | TBD |
| Lockheed Martin | CPAF | 0.159 | 0.000 | 0.159 | TBD | TBD | TBD |
| Bremner Associates | FFP | 0.729 | 0.000 | 0.729 | TBD | TBD | TBD |
| Northrop Grumman | CPAF | 2.499 | 0.000 | 2.499 | TBD | TBD | TBD |
| SCS | T&M | 2.370 | 0.063 | 2.433 | Mar-09 | Continuing | TBD |
| Federal Tech Services | FFP | 0.300 | 0.063 | 0.363 | May-09 | Continuing | TBD |
| DISA/DIT | FFP | 0.073 | 0.073 | 0.073 | Nov-08 | Continuing | TBD |
| ACS Defense | FFP | 7.515 | 0.860 | 7.355 | Nov-08 | Continuing | TBD |
| Boeing | FFP | 0.000 | 0.000 | 0.000 | TBD | TBD | TBD |
| WBB | FFP | 0.000 | 0.000 | 0.000 | TBD | TBD | TBD |
| Various | various | 4.782 | 0.890 | 4.782 | Dec-09 | Continuing | TBD |
| **Subtotal Product Development** | | 58.229 | 6.670 | 4.992 | 5.168 | Continuing | TBD 0.000 | |
| **Remarks:** | | | | | | | | | |
| **(U) Support** | | | | | | | | | |
| MITRE Corporation | Various | 1.369 | 0.000 | 1.369 | TBD | Continuing | TBD |
| Various | Various | 2.587 | 1.266 | 0.860 | Nov-09 | Continuing | TBD |
| **Subtotal Support** | | 3.956 | 1.266 | 0.860 | Nov-09 | Continuing | TBD 0.000 | |
| **Remarks:** | | | | | | | | | |
| **(U) Test & Evaluation** | | | | | | | | | |
| 412th FLTS (Edwards AFB) | Various | 0.111 | 0.000 | 0.000 | TBD | Continuing | TBD 0.000 | |
| **Subtotal Test & Evaluation** | | 0.111 | 0.000 | 0.000 | TBD | Continuing | TBD 0.000 | |
| **Remarks:** | | | | | | | | | |
| **(U) Management** | | | | | | | | | |
| Various | | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |

R-1 Line Item No. 182

Page-5 of 8

Exhibit R-3 (PE 0305099F)

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<td>0305099F Communication, Navigation, Surveillance/Air Traffic Management (CNS/ATM)</td>
<td>4689 Global Access Architecture</td>
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| (U) Total Cost | 62.296 | 7.203 | 6.258 | 6.028 | Continuing | TBD | 0.000 |

**May 2009**
UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile

DATE
May 2009

BUDGET ACTIVITY
07 Operational System Development

PE NUMBER AND TITLE
0305099F Communication, Navigation, Surveillance/Air Traffic Management (CNS/ATM)

PROJECT NUMBER AND TITLE
4689 Global Access Architecture

CNS/ATM Schedule

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FY10 PB Funding ($M) Prior FY08 FY09 FY10 FY11 FY12 FY13 FY14 FY15 Comp Total

RDT&E 62.3 6.6 6.2 6.0

Key Milestones
Performance Assessment

Integrity - Service - Excellence

Project 4689
R-1 Line Item No. 182
Page-7 of 8
Exhibit R-4 (PE 0305099F)

573
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(U) System Architecture Definitions
(U) Operational Requirements Analysis
(U) Development of common avionics and technologies
(U) Acquisition of ID/IQ equipment
(U) GPS/NAVWAR Integration Activities