

UNCLASSIFIED

PE NUMBER: 0305099F

PE TITLE: Communication, Navigation, Surveillance/Air Traffic Management (CNS/ATM)

Exhibit R-2, RDT&E Budget Item Justification

DATE

May 2009

BUDGET ACTIVITY

07 Operational System Development

PE NUMBER AND TITLE

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

Cost (\$ in Millions)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost to Complete	Total
Total Program Element (PE) Cost	7.203	6.258	6.028	0.000	0.000	0.000	0.000	0.000	Continuing	TBD
4689 Global Access Architecture	7.203	6.258	6.028	0.000	0.000	0.000	0.000	0.000	Continuing	TBD

(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 ACPD 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.

R-1 Line Item No. 182

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Exhibit R-2 (PE 0305099F)

Exhibit R-2, RDT&E Budget Item Justification

DATE

May 2009

BUDGET ACTIVITY

07 Operational System Development

PE NUMBER AND TITLE

0305099F Communication, Navigation, Surveillance/Air Traffic Management
(CNS/ATM)(U) **B. Program Change Summary (\$ in Millions)**

	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
(U) Previous President's Budget	6.681	6.275	6.120
(U) Current PBR/President's Budget	7.203	6.258	6.028
(U) Total Adjustments	0.522	-0.017	
(U) Congressional Program Reductions			
Congressional Rescissions	-0.043	-0.017	
Congressional Increases			
Reprogrammings	0.750		
SBIR/STTR Transfer	-0.185		
(U) <u>Significant Program Changes:</u>			
FY08 : Increase via BTR for characterization of national airspace for study/data gathering to support safety case to FAA.			

Exhibit R-2a, RDT&E Project Justification

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

Cost (\$ in Millions)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost to Complete	Total
4689 Global Access Architecture	7.203	6.258	6.028	0.000	0.000	0.000	0.000	0.000	Continuing	TBD
Quantity of RDT&E Articles	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.

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Exhibit R-2a, RDT&E Project Justification			DATE May 2009																																																																		
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(U) <u>B. Accomplishments/Planned Program (\$ in Millions)</u> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 70%;"></th> <th style="width: 10%; text-align: center;"><u>FY 2008</u></th> <th style="width: 10%; text-align: center;"><u>FY 2009</u></th> <th style="width: 10%; text-align: center;"><u>FY 2010</u></th> </tr> </thead> <tbody> <tr> <td>(U) Continue operational requirements analysis, demonstration, and evaluation</td> <td style="text-align: center;">1.122</td> <td style="text-align: center;">1.122</td> <td style="text-align: center;">1.084</td> </tr> <tr> <td>(U) Continue development of common avionics and technologies</td> <td style="text-align: center;">1.709</td> <td style="text-align: center;">1.684</td> <td style="text-align: center;">1.584</td> </tr> <tr> <td>(U) Continue acquisition of ID/IQ aviation equipment</td> <td style="text-align: center;">0.840</td> <td style="text-align: center;">0.840</td> <td style="text-align: center;">0.840</td> </tr> <tr> <td>(U) Continue Nav/Safety and GPS/NAVWAR integration and interoperability evaluations</td> <td style="text-align: center;">0.506</td> <td style="text-align: center;">0.506</td> <td style="text-align: center;">0.506</td> </tr> <tr> <td>(U) Continue system architecture definitions, development, and certification</td> <td style="text-align: center;">2.276</td> <td style="text-align: center;">2.106</td> <td style="text-align: center;">2.014</td> </tr> <tr> <td>(U) Continue on going data gathering at Beale AFB, CA to support safety case to the FAA</td> <td style="text-align: center;">0.750</td> <td style="text-align: center;">0.000</td> <td style="text-align: center;">0.000</td> </tr> <tr> <td>(U) Total Cost</td> <td style="text-align: center;">7.203</td> <td style="text-align: center;">6.258</td> <td style="text-align: center;">6.028</td> </tr> </tbody> </table> (U) <u>C. Other Program Funding Summary (\$ in Millions)</u> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 20%;"></th> <th style="width: 5%; text-align: center;"><u>FY 2008</u></th> <th style="width: 5%; text-align: center;"><u>FY 2009</u></th> <th style="width: 5%; text-align: center;"><u>FY 2010</u></th> <th style="width: 5%; text-align: center;"><u>FY 2011</u></th> <th style="width: 5%; text-align: center;"><u>FY 2012</u></th> <th style="width: 5%; text-align: center;"><u>FY 2013</u></th> <th style="width: 5%; text-align: center;"><u>FY 2014</u></th> <th style="width: 5%; text-align: center;"><u>FY 2015</u></th> <th style="width: 5%; text-align: center;"><u>Cost to</u></th> <th style="width: 10%; text-align: center;"><u>Total Cost</u></th> </tr> <tr> <th></th> <th style="text-align: center;"><u>Actual</u></th> <th style="text-align: center;"><u>Estimate</u></th> <th style="text-align: center;"><u>Estimate</u></th> <th style="text-align: center;"><u>Estimate</u></th> <th style="text-align: center;"><u>Estimate</u></th> <th style="text-align: center;"><u>Estimate</u></th> <th style="text-align: center;"><u>Estimate</u></th> <th style="text-align: center;"><u>Estimate</u></th> <th style="text-align: center;"><u>Complete</u></th> <th></th> </tr> </thead> <tbody> <tr> <td colspan="11"> (U) The methodology used to attain CNS/ATM capabilities as required by the MAJCOMs for each platform varies widely - the estimating and tracking of these costs varies even more from program to program. Funding summary information can only be provided by analyzing the specific platform's budget/PE. Please refer to each particular PE affected by CNS/ATM for funding data. </td> </tr> </tbody> </table> (U) <u>D. Acquisition Strategy</u> 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.						<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	(U) Continue operational requirements analysis, demonstration, and evaluation	1.122	1.122	1.084	(U) Continue development of common avionics and technologies	1.709	1.684	1.584	(U) Continue acquisition of ID/IQ aviation equipment	0.840	0.840	0.840	(U) Continue Nav/Safety and GPS/NAVWAR integration and interoperability evaluations	0.506	0.506	0.506	(U) Continue system architecture definitions, development, and certification	2.276	2.106	2.014	(U) Continue on going data gathering at Beale AFB, CA to support safety case to the FAA	0.750	0.000	0.000	(U) Total Cost	7.203	6.258	6.028		<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>FY 2012</u>	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>Cost to</u>	<u>Total Cost</u>		<u>Actual</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Complete</u>		(U) The methodology used to attain CNS/ATM capabilities as required by the MAJCOMs for each platform varies widely - the estimating and tracking of these costs varies even more from program to program. 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Exhibit R-3, RDT&E Project Cost Analysis

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

(U) <u>Cost Categories</u> (Tailor to WBS, or System/Item Requirements) (\$ in Millions)	<u>Contract</u> <u>Method &</u> <u>Type</u>	<u>Performing</u> <u>Activity &</u> <u>Location</u>	<u>Total</u> <u>Prior to FY</u> <u>2008</u> <u>Cost</u>	<u>FY 2008</u> <u>Cost</u>	<u>FY 2008</u> <u>Award</u> <u>Date</u>	<u>FY 2009</u> <u>Cost</u>	<u>FY 2009</u> <u>Award</u> <u>Date</u>	<u>FY 2010</u> <u>Cost</u>	<u>FY 2010</u> <u>Award</u> <u>Date</u>	<u>Cost to</u> <u>Complete</u>	<u>Total Cost</u>	<u>Target Value</u> <u>of Contract</u>
(U) <u>Product Development</u>												
MIT	FFP		7.143	1.070	Jul-08	0.592	Jul-09	0.592	Dec-09	Continuing	TBD	
Honeywell	FFP		2.745							Continuing	TBD	
Allied Signal	FFP		1.975							0.000	1.975	
Rockwell Collins	FFP		1.504							Continuing	TBD	
MITRE Corporation	Cost		20.136	3.134	Oct-07	3.010	Jan-09	3.010	Oct-09	Continuing	TBD	
Horizons Technology Inc	FFP		3.974							Continuing	TBD	
TASC	CPFF		0.728							0.000	0.728	
Smiths Industries	FFP		0.194							Continuing	TBD	
SAIC	T&M		0.530							0.000	0.530	
ARINC Inc	FFP		0.946			0.024	Mar-09			Continuing	TBD	
Lockheed Martin	CPAF		0.159							0.000	0.159	
Bremmer Associates	FFP		0.729							0.000	0.729	
Northrop Grumman	CPAF		2.499							0.000	2.499	
SCS	T&M		2.370	0.200	May-07	0.063	Mar-09	0.063	May-09	Continuing	TBD	
Federal Tech Services	FFP		0.300							0.000	0.300	
DISA/DIT	FFP					0.073	Nov-08	0.073	Nov-09	Continuing	TBD	
ACS Defense	FFP		7.515	1.376	May-07						8.891	
A&AS Support	T&M					1.230	Dec-08	1.430	Dec-09		2.660	
Boeing	FFP										0.000	
WBB	FFP										0.000	
Various	various		4.782	0.890						Continuing	TBD	
Subtotal Product Development			58.229	6.670		4.992		5.168		Continuing	TBD	0.000
Remarks:												
(U) <u>Support</u>												
MITRE Corporation			1.369							Continuing	TBD	
Various	Various		2.587	0.533		1.266		0.860	Nov-09	Continuing	TBD	
Subtotal Support			3.956	0.533		1.266		0.860		Continuing	TBD	0.000
Remarks:												
(U) <u>Test & Evaluation</u>												
412th FLTS (Edwards AFB)			0.111							Continuing	TBD	
Subtotal Test & Evaluation			0.111	0.000		0.000		0.000		Continuing	TBD	0.000
Remarks:												
(U) <u>Management</u>												
Subtotal Management			0.000	0.000		0.000		0.000		0.000	0.000	0.000
Remarks:												

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Project 4689

Exhibit R-3 (PE 0305099F)

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Exhibit R-3, RDT&E Project Cost Analysis

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BUDGET ACTIVITY

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PE NUMBER AND TITLE

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

PROJECT NUMBER AND TITLE

4689 Global Access Architecture

(U) Total Cost

62.296

7.203

6.258

6.028

Continuing

TBD

0.000

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Exhibit R-3 (PE 0305099F)

Project 4689

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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)

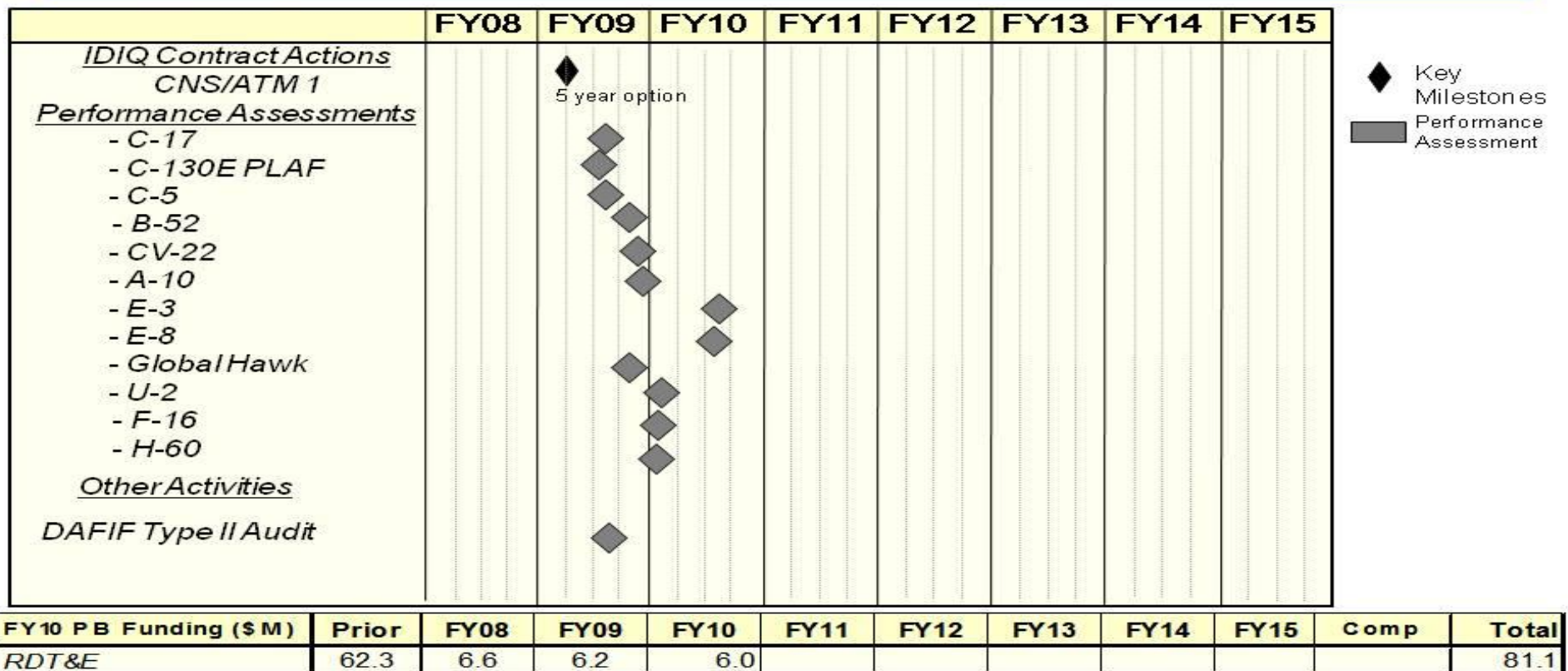
PROJECT NUMBER AND TITLE

4689 Global Access Architecture



U.S. AIR FORCE

CNS/ATM Schedule



Integrity - Service - Excellence

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Exhibit R-4 (PE 0305099F)

Project 4689

Exhibit R-4a, RDT&E Schedule Detail

DATE

May 2009

BUDGET ACTIVITY

07 Operational System Development

PE NUMBER AND TITLE

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Navigation, Surveillance/Air Traffic
Management (CNS/ATM)

PROJECT NUMBER AND TITLE

4689 Global Access Architecture

(U) **Schedule Profile**FY 2008FY 2009FY 2010

(U) System Architecture Definitions

1-4Q

1-4Q

1-4Q

(U) Operational Requirements Analysis

1-4Q

1-4Q

1-4Q

(U) Development of common avionics and technologies

1-4Q

1-4Q

1-4Q

(U) Acquisition of ID/IQ equipment

1-4Q

1-4Q

1-4Q

(U) GPS/NAVWAR Integration Activities

1-4Q

1-4Q

1-4Q