

UNCLASSIFIED

PE NUMBER: 0303131F

PE TITLE: Minimum Essential Emergency Communications Network (MEECN)

Exhibit R-2, RDT&E Budget Item Justification	DATE February 2008
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BUDGET ACTIVITY 07 Operational System Development	PE NUMBER AND TITLE 0303131F Minimum Essential Emergency Communications Network (MEECN)
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Cost (\$ in Millions)	FY 2007 Actual	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	Cost to Complete	Total
Total Program Element (PE) Cost	64.556	88.224	70.995	9.762	9.839	7.859	4.623	Continuing	TBD
2832 MEECN System Improvements	2.873	2.308	2.223	2.991	2.515	2.562	2.616	Continuing	TBD
4610 Minuteman MEECN Program (MMP)	18.716	27.383	29.887	6.771	0.002	0.002	0.002	0.000	TBD
5047 Ground Element MEECN System (GEMS)	42.967	58.533	38.885	0.000	7.322	5.295	2.005	0.000	TBD

(U) A. Mission Description and Budget Item Justification

Minimum Essential Emergency Communications Network (MEECN) systems provide assured communications connectivity between the President and the strategic deterrent forces in stressed environments. There are three on-going MEECN activities working to modernize strategic forces' communication networks.

- MEECN Systems Improvements (MSI) is a long-range planning process with Users (Air Combat Command (ACC), Air Force Space Command (AFSPC), and the Navy) to develop positions for current and future requirements/issues based on available technology.
- Minuteman MEECN Program (MMP) is the combination of Minuteman ICBM Launch Control Center (LCC) Very Low Frequency/Low Frequency (VLF/LF) upgrade efforts along with a new Minuteman ICBM LCC Extremely High Frequency (EHF) communications capability. The MMP system will be upgraded to provide a capability for the Missile Combat Crew Members to have operator control of the terminal in the LCC to switch among various EHF/AEHF satellite constallations and be compatible with Advanced EHF (AEHF). AEHF is an Extended Data Rate (XDR) waveform that provides more secure transmit/receive at frequencies above 20 GHz.
- Ground Element MEECN Systems (GEMS) provides a secure, survivable inter-site and intra-site and mobile VLF and EHF communication to bomber, tanker, reconnaissance units and other communications facilities with strategic responsibilities. GEMS replaces existing mission-deficient systems. GEMS will also be upgraded to AEHF with the XDR waveform.

This program is Budget Activity 07, Operational System Development, because it supports work on currently fielded weapon systems.

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(U) **B. Program Change Summary (\$ in Millions)**

	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>
(U) Previous President's Budget	63.765	103.846	32.818
(U) Current PBR/President's Budget	64.556	88.224	70.995
(U) Total Adjustments	0.791		
(U) Congressional Program Reductions		-15.622	
Congressional Rescissions			
Congressional Increases			
Reprogrammings	2.487		
SBIR/STTR Transfer	-1.696		
(U) <u>Significant Program Changes:</u>			
FY 08: Restructure of GEMS Program due to \$15.622M congressional reduction.			
FY 09: Restructure of GEMS Program due to late delivery of security software/hardware.			

Exhibit R-2a, RDT&E Project Justification

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BUDGET ACTIVITY 07 Operational System Development				PE NUMBER AND TITLE 0303131F Minimum Essential Emergency Communications Network (MEECN)			PROJECT NUMBER AND TITLE 2832 MEECN System Improvements			
Cost (\$ in Millions)	FY 2007 Actual	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	Cost to Complete	Total	
2832 MEECN System Improvements	2.873	2.308	2.223	2.991	2.515	2.562	2.616	Continuing	TBD	
Quantity of RDT&E Articles	0	0	0	0	0	0	0			

(U) **A. Mission Description and Budget Item Justification**

- MEECN System Improvements (MSI) is a long range planning process with Users (Air Combat Command (ACC), Air Force Space Command (AFSPC), and Navy) to develop positions for current and future requirements/issues based on available technology.
- Trade-off analysis is performed to identify benefits and drawbacks of maintaining current systems. Studies are conducted to monitor communications system technology and potential integration complexities into current and future capabilities. The MEECN architecture is currently evaluating/planning modernization of the VLF/LF cryptographic capability and the application of using Defense Injection Reception Emergency Action Message (EAM) Command and Control (C2) Terminal (DIRECT) in mobile configurations and the Distributed Ground Network command and control nodes.
- MSI provides pro-active support to the Nuclear and National C2 community:
 - Supports the ASD/NII study on a Distributed Ground Network for New Triad Missions
 - Develops an Air Force National Command and Control (NC2) Roadmap for FY10 POM budget inputs
 - Provides support for JCS Vol VII Emergency Action Message (EAM) updates
- This program is in Budget Activity 07, Operational System Development, because it supports work on currently fielded weapon systems.

(U) **B. Accomplishments/Planned Program (\$ in Millions)**

	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>
(U) CEP Analysis	0.250		
(U) Nuclear Command & Control Performance Study (NC2 Roadmap) & simulator for testing of communication architectures	1.728	0.903	0.800
(U) Vol VII EAM format updates	0.300	0.550	0.550
(U) Analytical Support	0.595	0.855	0.873
(U) Total Cost	2.873	2.308	2.223

(U) **C. Other Program Funding Summary (\$ in Millions)**

	<u>FY 2007</u>	<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>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>Complete</u>	
(U) None									

(U) **D. Acquisition Strategy**

Johns Hopkins University (JHU) Applied Physics Lab (APL) is on contract to provide an NC2 Roadmap in terms of the New Triad. An AEHF satellite simulator (test equipment) was acquired through MIT Lincoln Labs.

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Exhibit R-3, RDT&E Project Cost Analysis

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BUDGET ACTIVITY 07 Operational System Development	PE NUMBER AND TITLE 0303131F Minimum Essential Emergency Communications Network (MEECN)	PROJECT NUMBER AND TITLE 2832 MEECN System Improvements
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<u>(U) Cost Categories</u> (Tailor to WBS, or System/Item Requirements) (\$ in Millions)	<u>Contract Method & Type</u>	<u>Performing Activity & Location</u>	<u>Total Prior to FY 2007 Cost</u>	<u>FY 2007 Cost</u>	<u>FY 2007 Award Date</u>	<u>FY 2008 Cost</u>	<u>FY 2008 Award Date</u>	<u>FY 2009 Cost</u>	<u>FY 2009 Award Date</u>	<u>Cost to Complete</u>	<u>Total Cost</u>	<u>Target Value of Contract</u>
<u>(U) Product Development</u>												
CEP Analysis	MIPR	JHU APL, Laurel, MD	0.555	0.250	Oct-06					Continuing	TBD	
NC2 Roadmap	MIPR	JHU APL, Laurel, MD	0.730	0.755	Dec-06	0.903	Dec-07	0.800	Dec-07	Continuing	TBD	
Simulation/Modeling Equipment	MIPR	Lincoln Labs, Bedford, MA	1.251	0.973	Nov-06						2.224	
Vol VII EAM Format Updates		GDCS, Needham, MA		0.300		0.550	Jun-08	0.550	Jun-09		1.400	
Subtotal Product Development			2.536	2.278		1.453		1.350		Continuing	TBD	0.000
Remarks:												
<u>(U) Support</u>												
SE/TA Integrated Technical Support Program (ITSP)	Various	Various	6.480	0.595	Dec-06	0.855	Dec-07	0.873	Dec-08	Continuing	TBD	
MITRE	LOE	Bedford, MA	0.633								0.633	
Subtotal Support			7.113	0.595		0.855		0.873		Continuing	TBD	0.000
Remarks:												
<u>(U) Test & Evaluation</u>												
Subtotal Test & Evaluation			0.000	0.000		0.000		0.000		0.000	0.000	0.000
Remarks:												
<u>(U) Management</u>												
Subtotal Management			0.000	0.000		0.000		0.000		0.000	0.000	0.000
Remarks:												
<u>(U) Total Cost</u>			9.649	2.873		2.308		2.223		Continuing	TBD	0.000

Exhibit R-4a, RDT&E Schedule Detail

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07 Operational System Development

PE NUMBER AND TITLE

0303131F Minimum Essential
Emergency Communications Network
(MEECN)

PROJECT NUMBER AND TITLE

2832 MEECN System Improvements

(U) Schedule Profile

FY 2007

FY 2008

FY 2009

(U) NC2 Roadmap Outbriefs

2Q

2Q

2Q

(U) AEHF Satellite Simulator

3Q

Exhibit R-2a, RDT&E Project Justification

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BUDGET ACTIVITY 07 Operational System Development				PE NUMBER AND TITLE 0303131F Minimum Essential Emergency Communications Network (MEECN)			PROJECT NUMBER AND TITLE 4610 Minuteman MEECN Program (MMP)			
Cost (\$ in Millions)	FY 2007 Actual	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	Cost to Complete	Total	
4610 Minuteman MEECN Program (MMP)	18.716	27.383	29.887	6.771	0.002	0.002	0.002	0.000	TBD	
Quantity of RDT&E Articles	0	0	0	0	0	0	0			

(U) **A. Mission Description and Budget Item Justification**

This project implements a Minuteman ICBM Launch Control Center (LCC) Very Low Frequency/Low Frequency (VLF/LF) capability and a Minuteman ICBM Extremely High Frequency (EHF) communications capability. The Extremely High Frequency (EHF) terminal provides both receive and report-back capability. Specifically, the MMP effort replaces the Ultra High Frequency (UHF) satellite link with a MILSTAR EHF link and adds a High Data Rate (HIDAR) capability for VLF/LF.

The MMP system will be upgraded to provide a capability for Missile Combat Crew Members to have operator control of the terminal in the Launch Control Center to switch among various EHF/AEHF satellite constellations and be compatible with Advanced EHF (AEHF). AEHF is an Extended Data Rate (XDR) waveform that provides more secure transmit/receive at frequencies above 20 GHz.

The terminal operator control modification will allow missile combat crews to transition between MILSTAR, UFO/E and UFO/EE satellite constellations without dispatch of a maintenance team. These modifications comply with USSTRATCOM requirement for MMP terminals to communicate at higher data rates.

This program is in Budget Activity 07, Operational System Development, because it supports work on fielded operating weapon systems.

(U) **B. Accomplishments/Planned Program (\$ in Millions)**

	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>
(U) MMP Upgrade Technology Development	15.797		
(U) System Development and Demonstration (SDD) to include: AEHF terminal integration, AEHF modem design, cryptographic upgrade, weapon system hardiness analysis, hardware development and software development for AEHF and improved operator control, analysis of power and cooling requirements, antenna integration, analysis of Software Compliant Architecture (SCA).	0.541	24.324	25.831
(U) Analytical Support	2.378	3.059	4.056
(U) Total Cost	18.716	27.383	29.887

(U) **C. Other Program Funding Summary (\$ in Millions)**

	<u>FY 2007</u> <u>Actual</u>	<u>FY 2008</u> <u>Estimate</u>	<u>FY 2009</u> <u>Estimate</u>	<u>FY 2010</u> <u>Estimate</u>	<u>FY 2011</u> <u>Estimate</u>	<u>FY 2012</u> <u>Estimate</u>	<u>FY 2013</u> <u>Estimate</u>	<u>Cost to</u> <u>Complete</u>	<u>Total Cost</u>
(U) MPAF, Missile Modifications (MEECN, PE 0303131F, BA 03, P-012)					32.870	24.614	10.407		67.891

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**0303131F Minimum Essential
Emergency Communications Network
(MEECN)**

PROJECT NUMBER AND TITLE

**4610 Minuteman MEECN Program
(MMP)****(U) D. Acquisition Strategy**

The ICBM Prime Integrating Contract (through OO-ALC, Hill AFB, UT) was used as a contracting vehicle for the Minuteman MEECN Program (MMP) and will continue to be used to provide an advisory role for integration support for the MMP Upgrade program.

Two Concept and Technology Demonstration (C&TD) contracts were awarded to separate vendors following full and open competition. The MMP Upgrade System Development Demonstration (SDD) effort is a full and open competition and currently in source selection.

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Exhibit R-3, RDT&E Project Cost Analysis

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BUDGET ACTIVITY				PE NUMBER AND TITLE						PROJECT NUMBER AND TITLE			
07 Operational System Development				0303131F Minimum Essential Emergency Communications Network (MEECN)						4610 Minuteman MEECN Program (MMP)			
(U) Cost Categories (Tailor to WBS, or System/Item Requirements) (\$ in Millions)	Contract Method & Type	Performing Activity & Location	Total Prior to FY 2007 Cost	FY 2007 Cost	FY 2007 Award Date	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	Cost to Complete	Total Cost	Target Value of Contract	
(U) <u>Product Development</u>													
MMP Development	SS/CPAF	Northrup Grumman	46.069								46.069		
MMP Upgrade Technology Development	FFP	Rockwell Collins & Raytheon	1.381	15.185	Oct-06						16.566		
MMP Upgrade Program Integrator (Advisor)	FFP	Northrup Grumman		0.612	Oct-06	2.000	Oct-07	2.000	Oct-08		4.612		
MMP Upgrade System Development and Demonstration (SDD)	Open Competitio n	TBD		0.541	Sep-07	22.324	Nov-07	23.831	Nov-08	Continuing	TBD		
Subtotal Product Development Remarks:			47.450	16.338		24.324		25.831		Continuing	TBD	0.000	
(U) <u>Support</u>													
SETA	LOE	Various	2.898	1.127	Dec-06	1.246	Dec-07	1.100	Dec-08	Continuing	TBD		
MITRE			0.984	0.957	Nov-06	1.363	Nov-07	0.850	Nov-08		4.154		
PMA			0.105	0.132		0.250		0.202			0.689		
Subtotal Support Remarks: Various Award Dates			3.987	2.216		2.859		2.152		Continuing	TBD	0.000	
(U) <u>Test & Evaluation</u>													
Various	Various	Various	0.006	0.162		0.200		1.904			2.272		
Subtotal Test & Evaluation Remarks:			0.006	0.162		0.200		1.904		0.000	2.272	0.000	
(U) <u>Management</u>													
Subtotal Management Remarks:			0.000	0.000		0.000		0.000		0.000	0.000	0.000	
(U) Total Cost			51.443	18.716		27.383		29.887		Continuing	TBD	0.000	

Exhibit R-4, RDT&E Schedule Profile

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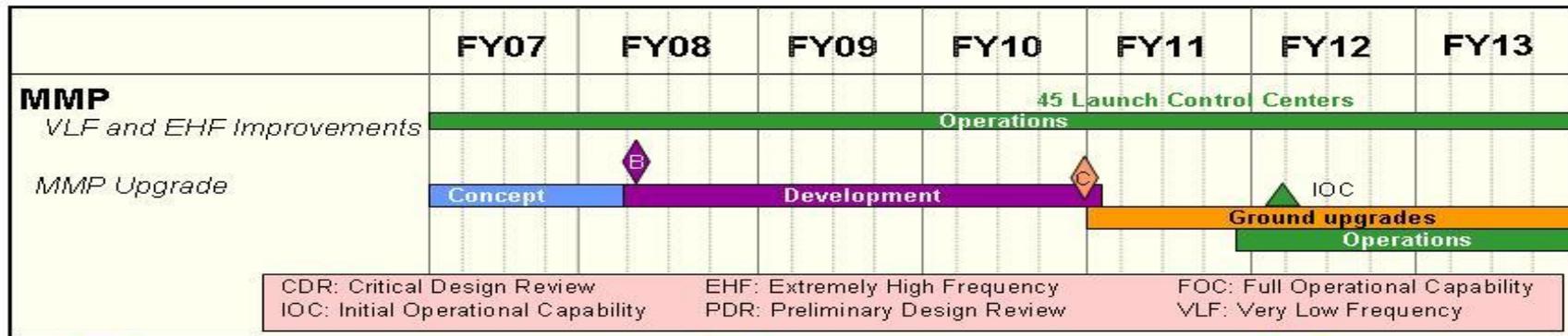
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07 Operational System Development

PE NUMBER AND TITLE
0303131F Minimum Essential
Emergency Communications Network
(MEECN)

PROJECT NUMBER AND TITLE
4610 Minuteman MEECN Program
(MMP)

MMP Upgrade Schedule



- Concept activities
- Production / fielding
- Design / development
- Operations / sustainment
- Integration / test
- Key events

Exhibit R-4a, RDT&E Schedule Detail

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PE NUMBER AND TITLE

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Emergency Communications Network
(MEECN)

PROJECT NUMBER AND TITLE

4610 Minuteman MEECN Program
(MMP)

(U) Schedule Profile

FY 2007

FY 2008

FY 2009

(U) Award MMP Upgrade Program System Development & Demonstration (SDD)

2Q

(U) Continue SDD

2-4Q

1-4Q

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BUDGET ACTIVITY 07 Operational System Development				PE NUMBER AND TITLE 0303131F Minimum Essential Emergency Communications Network (MEECN)			PROJECT NUMBER AND TITLE 5047 Ground Element MEECN System (GEMS)		
Cost (\$ in Millions)	FY 2007 Actual	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	Cost to Complete	Total
5047 Ground Element MEECN System (GEMS)	42.967	58.533	38.885	0.000	7.322	5.295	2.005	0.000	TBD
Quantity of RDT&E Articles	0	0	0	0	0	0	0		

(U) A. Mission Description and Budget Item Justification

Ground Element MEECN Systems (GEMS) will be comprised of EHF/AEHF, VLF/LF, HF, UHF and Aircrew Alerting components and will provide secure, survivable inter-site, intra-site and mobile communications to bomber, tanker, reconnaissance and other communications facilities with strategic responsibilities. GEMS terminals will be developed and fielded to replace strategic mobile and fixed-site Single Channel Anti-jam Man-Portable (SCAMP) terminals. GEMS will also replace the Aircraft Alerting Communications Electromagnetic Pulse System/Electromagnetic Pulse Hardened Dispersal Communications (AAACE/EHDC) systems.

- GEMS' primary mission is to provide strategic Wing Command Posts and mobile support teams survivable communication paths to receive EAMs and Force Management messages from Nuclear Command and Control (NC2) nodes and disseminate them to bomber, tanker, and recce aircrews, as specified by OPLAN 8044.
- GEMS will provide solution to existing capability shortfalls for NC2 and has significant potential to provide distributed and transportable command and control capabilities beyond the traditional NC2 mission - it is the last line of operational comm when all other peacetime links fail.

This program is in Budget Activity 07, Operational System Development, because it supports work on fielded operating weapon systems.

(U) B. Accomplishments/Planned Program (\$ in Millions)

	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>
(U) System Development and Demonstration (SDD) contract to include: EHF, VLF, HF and UHF terminal integration; EHF, VLF, HF and UHF modem design; cryptographic upgrade; weapon system hardness analysis; EHF, VLF, HF and UHF hardware development; EHF, VLF, HF and UHF software development; analysis of power and cooling requirements, antenna integration, analysis of Software Compliant Architecture (SCA); and pager/klaxon system development.	36.664	50.061	32.976
(U) Analytical Support	6.303	8.472	5.909
(U) Total Cost	42.967	58.533	38.885

(U) C. Other Program Funding Summary (\$ in Millions)

	<u>FY 2007</u>	<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>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>Complete</u>	
(U) Other Procurement - AF, (MEECN, PE0303131F, BA-03, P-053)				72.775	21.569	36.306	31.971	0.000	162.621

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(MEECN)

PROJECT NUMBER AND TITLE

5047 Ground Element MEECN System
(GEMS)(U) D. Acquisition Strategy

Two Concept and Technology Demonstration (C&TD) contracts were awarded to separate vendors following full and open competition. Rockwell Collins of Cedar Rapids, IA was awarded the SDD (CPAF) and production contract on 23 June 2005.

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Exhibit R-3, RDT&E Project Cost Analysis

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07 Operational System Development				0303131F Minimum Essential Emergency Communications Network (MEECN)						5047 Ground Element MEECN System (GEMS)			
(U) Cost Categories (Tailor to WBS, or System/Item Requirements) (\$ in Millions)	<u>Contract Method & Type</u>	<u>Performing Activity & Location</u>	<u>Total Prior to FY 2007 Cost</u>	<u>FY 2007 Cost</u>	<u>FY 2007 Award Date</u>	<u>FY 2008 Cost</u>	<u>FY 2008 Award Date</u>	<u>FY 2009 Cost</u>	<u>FY 2009 Award Date</u>	<u>Cost to Complete</u>	<u>Total Cost</u>	<u>Target Value of Contract</u>	
(U) <u>Product Development</u> SDD Contract	CPAF	Rockwell Collins, IA	50.158	36.664	Nov-06	50.061	Dec-07	32.976	Dec-08		169.859		
Subtotal Product Development			50.158	36.664		50.061		32.976		0.000	169.859	0.000	
Remarks:													
(U) <u>Support</u> ITSP	SETA Contract	Various	3.201	3.472	Dec-06	2.635	Dec-07	1.440	Dec-08	Continuing	TBD		
MITRE	MIPR	Bedford, MA	2.218	1.863	Nov-06	1.891	Nov-07	1.230	Nov-08	Continuing	TBD		
PMA			0.977	0.433		2.661		0.980			5.051		
Subtotal Support			6.396	5.768		7.187		3.650		Continuing	TBD	0.000	
Remarks:													
(U) <u>Test & Evaluation</u> Various	Various	Various	0.250	0.535		1.285		2.259			4.329		
Subtotal Test & Evaluation			0.250	0.535		1.285		2.259		0.000	4.329	0.000	
Remarks:													
(U) <u>Management</u> Subtotal Management			0.000	0.000		0.000		0.000		0.000	0.000	0.000	
Remarks:													
(U) Total Cost			56.804	42.967		58.533		38.885		Continuing	TBD	0.000	

Exhibit R-4, RDT&E Schedule Profile

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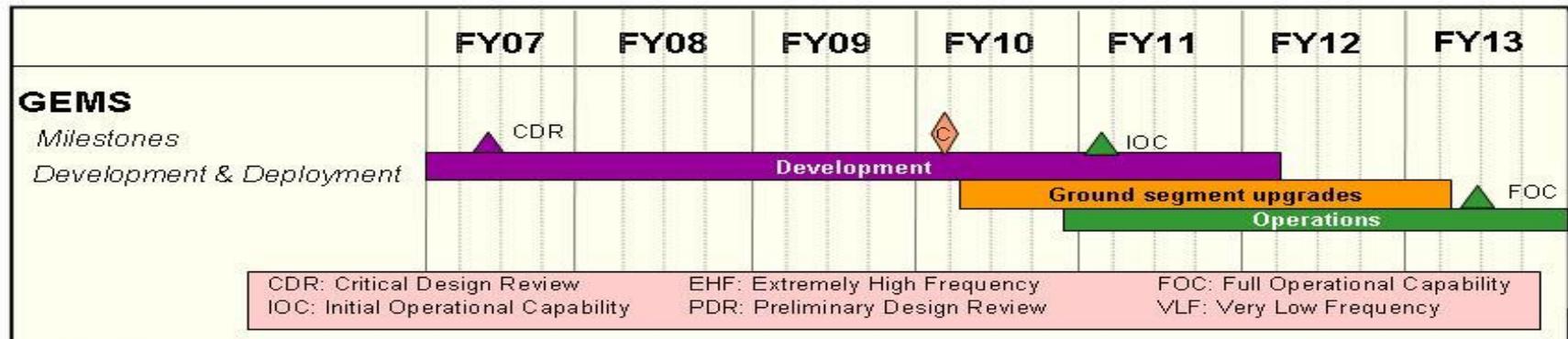
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07 Operational System Development

PE NUMBER AND TITLE
0303131F Minimum Essential
Emergency Communications Network
(MEECN)

PROJECT NUMBER AND TITLE
5047 Ground Element MEECN System
(GEMS)

GEMS Schedule



Concept activities
Production / fielding

Design / development
Operations / sustainment

Integration / test
Key events

Exhibit R-4a, RDT&E Schedule Detail	DATE February 2008
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BUDGET ACTIVITY 07 Operational System Development	PE NUMBER AND TITLE 0303131F Minimum Essential Emergency Communications Network (MEECN)	PROJECT NUMBER AND TITLE 5047 Ground Element MEECN System (GEMS)
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(U) <u>Schedule Profile</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>
(U) SDD	1-4Q	1-4Q	1-4Q
(U) Development Testing	1-4Q		