

## UNCLASSIFIED

PE NUMBER: 0207601F

PE TITLE: USAF Modeling and Simulation

## Exhibit R-2, RDT&amp;E Budget Item Justification

DATE

February 2005

## BUDGET ACTIVITY

## 07 Operational System Development

## PE NUMBER AND TITLE

## 0207601F USAF Modeling and Simulation

Cost (\$ in Millions)	FY 2004 Actual	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	Cost to Complete	Total
Total Program Element (PE) Cost	12.459	13.479	30.541	24.347	22.858	28.896	27.638	30.396	Continuing	TBD
4567 M&S Foundations	11.112	5.190	6.203	5.800	6.277	6.263	6.258	6.209	Continuing	TBD
4991 Accelerated Acquisitions	0.000	2.316	4.824	4.880	5.055	5.047	5.164	5.252	Continuing	TBD
5004 New and Emerging Capabilities	0.487	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	TBD
5005 Executive Agent For Air /Space Natural Environment	0.860	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	TBD
5135 Warfighter Readiness	0.000	5.973	19.514	13.667	11.526	17.586	16.216	18.935	Continuing	TBD

In FY06, PE 0207601F, United States Air Force (USAF) Modeling & Simulation (M&S) was aligned to better support customer needs into four thrusts. This resulted in project 4567, being renamed from the Joint Synthetic Battlespace (JSB) Environment to M&S Foundations (MSF); project 4991, being renamed from the Joint Distributed Engineering Plant to Accelerated Acquisitions (AA); project 5004, being renamed from Joint Model Transition to New and Emerging Warfighting Capabilities (NEWC), and project 5135, being renamed from Distributed Mission Operations to Warfighter Readiness (WR). The four thrusts enable the communities of interest to focus and prioritize the PE's capabilities.

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

Modeling & Simulation Foundations (MSF) provides realistic representations of friendly and threat warfighting capabilities, realistic representations of the natural environment where the warfighting capabilities exists, and an architecture framework to support developing representations that allow the easy and rapid integration of those representations into synthetic battlespaces. Accelerated Acquisitions (AA) connects combat system engineering sites within the Air Force-Integrated Collaborative Environment (AF-ICE), formally known as Joint Distributed Engineering Plant (JDEP)/ Center for Domain Integration (CDI), and replicates the Joint Force Combat system to create a network test-bed to assess Joint Battle Management, Command, Control, Communication, Computers and Intelligence. AA's objective is to improve interoperability of weapons systems and platforms through more rigorous interoperability evaluation in a replicated battlefield environment. AA provides the capability to improve Service and Joint system performance in a system-of-systems environment. New and Emerging Warfighting Capabilities (NEWC) focuses on future capabilities and force structure. Examples include Science and Technology, analysis, concept exploration and future wargaming. Models are being developed for a broad range of areas including acquisition, analysis, test and evaluation and training. Warfighter Readiness (WR) focuses on improving warfighting decision-making, execution, skills and processes using modeling and simulation. WR leverages AA, MSF, and Distributed Mission Operations/Training (mission rehearsal/training) programs to create the most efficient robust, collaborative M&S environment available.

For FY05, the Joint Model Transition (JMT), project 5004, supports the next generation of modeling and simulation (M&S) systems for the Air Force during transition from legacy M&S. JMT fulfills emerging models and architecture capabilities. Numerous legacy models exist and are being modified or developed for a broad range of areas including acquisition, analysis, test, evaluation, and training. For FY06, JMT efforts are included in project 5135.

For FY04, the Air and Space Natural Environment (ASNE), project 5005, DoD Modeling and Simulation Executive Agent (MSEA) coordinates all aspects of DoD M&S related to representations of the air and space natural environment. Air Force's Director of Weather is designated as the MSEA for ASNE. The Director of

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Weather ensures air and space weather is properly represented in Joint and Service models, simulations, wargames, and experiments. For FY05 and FY06, ASNE efforts are included in project 4567.

For FY04, this Program Element (PE) contained the Congressional add that enabled the development of Synthetic Theater Operations Research Model (STORM). STORM will replace the current Air Force theater level campaign model, THUNDER, with enhanced capability to feed aerospace representation in the joint analysis efforts and support Quadrennial Defense Reviews. In FY05, the work transferred to PE 0207605F, Wargaming & Simulation Centers, project 2888, Distributed Mission Operations Center (DMOC).

This program is in Budget Activity 7 - Operational System Development because it provides RDT&E funding for major USAF Modeling and Simulation efforts.

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

	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>
(U) Previous President's Budget	12.873	18.693	11.475	11.583
(U) Current PBR/President's Budget	12.459	13.479	30.541	24.347
(U) Total Adjustments	-0.414	-5.214		
(U) Congressional Program Reductions				
Congressional Rescissions		-0.165		
Congressional Increases				
Reprogrammings	-0.040	-5.049		
SBIR/STTR Transfer	-0.374			

(U) **Significant Program Changes:**

In FY06 and FY07, the increases between the previous President's Budget and the current President's Budget supports the next generation of Modeling & Simulation (M&S) in project 675135, Warfighter Readiness. This adjustment will be used to create the integration environment to facilitate exercises as stated in the Air Force Annual Planning and Programming Guidance. This integration environment brings together stand-alone simulators with constructive models and live assets. Distribution Mission Operations Integration (DMOI) permits multi-team, multi-site and operational level participation necessary for Air Operation Center and Aerospace Expeditionary Force certification. The change also supports M&S infrastructure enhancements within the DMO environment, necessary for horizontal and vertical integration with AF, Joint, and coalition combat teams and resources.

Exhibit R-2a, RDT&E Project Justification								DATE <b>February 2005</b>		
BUDGET ACTIVITY <b>07 Operational System Development</b>					PE NUMBER AND TITLE <b>0207601F USAF Modeling and Simulation</b>			PROJECT NUMBER AND TITLE <b>4567 M&amp;S Foundations</b>		
Cost (\$ in Millions)	FY 2004 Actual	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	Cost to Complete	Total
4567 M&S Foundations	11.112	5.190	6.203	5.800	6.277	6.263	6.258	6.209	Continuing	TBD
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0		

In FY06, PE 0207601F, United States Air Force (USAF) Modeling & Simulation (M&S) was aligned to better support customer needs into four thrusts. This resulted in project 4567, being renamed from the Joint Synthetic Battlespace (JSB) Environment to M&S Foundations (MSF). The four thrusts enable the communities of interest to focus and prioritize the PE's capabilities.

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

M&S Foundations (MSF) focuses on integrating foundational capabilities needed to improve the usefulness, productivity, scalability and efficiency of M&S capabilities derived from Warfighter Readiness (WR), Accelerated Acquisitions (AA), and New and Emerging Warfighting Capabilities (NEWC). The efforts supporting the M&S Foundations thrust include both concept exploration and development.

MSF will provide standards and interfaces to be used by model developers to ensure model reuse. M&S Foundations will provide the capability to rapidly create realistic and accurate synthetic operational battlespaces to support the full spectrum of activities associated with mission preparation and acquisition of warfighting capabilities by providing appropriate component representations. Users will access readily available repositories of reusable, validated, and integrated synthetic components. Synthetic components will include representations of operational battlespace entities such as friendly and enemy assets and representations of the natural environment that include the terrain, atmospheric and space weather effects, and energy and signal propagation effects. The rapid composition will be based on a durable common architecture framework and common standards.

Air Force Director of Weather (AF/XOO-W) is designated as the DoD Modeling and Simulation Executive Agent (MSEA) for Air and Space Natural Environment (ASNE). ASNE MSEA coordinates all aspects of DoD M&S related to representations of the air and space natural environment, ensuring air and space weather is properly represented in Joint and Service models, simulations, wargames, and experiments. The ASNE part of this project funds, but not limited to the following: Environmental Scenario Generator, Warfighter Weather Effects, and the Space Weather Analysis as required by Joint M&S program offices and activities like Joint National Training Capability, Distributed Mission Operations/Training, Joint Forces Command, One Semi-Automated Force, Joint Strike Fighter, Virtual Flag, Unified Engagement, and Joint Expeditionary Force Experiment support. Primary users are unified commanders and service components conducting simulations and exercises involving air, ground, sea, and space campaigns. In addition, ASNE develops environmental scenarios: necessary for robust "What-if" mission planning and rehearsal; which supply realistic data essential for valid Training, Analysis, and Acquisition simulations to support the expanding Combatant Commander customer base; and for the Defense Threat Reduction Agency on an enhanced high-resolution HAZMAT dispersion model. ASNE adheres to, develops, and promotes environmental database standards and leads in the development/execution of the DoD Integrated Natural Environment Authoritative Representation Process (INEARP) Concept of Operations.

This project includes the Synthetic Theater Operations Research Model (STORM). STORM will replace the current Air Force theater level campaign model, THUNDER, with enhanced capability to feed aerospace representations and fully support Quadrennial Defense Reviews. JMASS is a simulation support environment for the development, configuration, execution, and analysis of high fidelity, repeatable simulations with re-usable models-focus is tactical/engagement level

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4567 M&amp;S Foundations

simulations with the present concentration on electronic combat. JMASS is a full system software implementation of a modern object based simulation architecture. JMASS provides users with the tools to develop objects, assemble these objects into models, and configuration controls.

This program is in Budget Activity 7 - Operational System Development because it provides RDT&E funding for major USAF Modeling and Simulation efforts.

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

	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>
(U) MSF Concept exploration/model development/model transition	9.252	4.252	5.247	4.825
(U) Develop ASNE natural reforestation	0.860	0.938	0.956	0.975
(U) STORM implementation (Congressional Add)	1.000	0.000	0.000	0.000
(U) Total Cost	11.112	5.190	6.203	5.800

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

	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</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) Not applicable

(U) **D. Acquisition Strategy**

Electronic Systems Center (ESC) at Hanscom AFB, MA and ASC, Wright Patterson AFB, OH will manage the acquisition and model development process for all M&S Foundation activities. All major contracts will be awarded after full and open competition.

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Exhibit R-3, RDT&E Project Cost Analysis												DATE February 2005			
BUDGET ACTIVITY 07 Operational System Development						PE NUMBER AND TITLE 0207601F USAF Modeling and Simulation					PROJECT NUMBER AND TITLE 4567 M&S Foundations				
(U) <u>Cost Categories</u> (Tailor to WBS, or System/Item Requirements) (\$ in Millions)	<u>Contract Method &amp; Type</u>	<u>Performing Activity &amp; Location</u>	<u>Total Prior to FY 2004 Cost</u>	<u>FY 2004 Cost</u>	<u>FY 2004 Award Date</u>	<u>FY 2005 Cost</u>	<u>FY 2005 Award Date</u>	<u>FY 2006 Cost</u>	<u>FY 2006 Award Date</u>	<u>FY 2007 Cost</u>	<u>FY 2007 Award Date</u>	<u>Cost to Complete</u>	<u>Total Cost</u>	<u>Target Value of Contract</u>	
(U) <u>Product Development</u> System Engineering and Technology Support	Various	Northrop Grumman, ESC, Hanscom AFB, MA	0.000	8.825	Jun-04							Continuing	TBD	TBD	
Concept Exploration and Technology Support	Various	ASC, Wright Patterson AFB, OH	13.080	0.427	Oct-03	4.252	Oct-04	5.247	Oct-05	4.825	Oct-06	Continuing	TBD	TBD	
STORM	T&M	Group W Inc.; AFSAA, Washington, DC	0.000	1.000	Apr-04							Continuing	TBD	TBD	
ASNE	Various	Various		0.860	Oct-03	0.938	Oct-04	0.956	Oct-05	0.975	Oct-06	Continuing	TBD	TBD	
Subtotal Product Development			13.080	11.112		5.190		6.203		5.800		Continuing	TBD	TBD	
Remarks:															
(U) <u>Support</u> Subtotal Support			0.000	0.000		0.000		0.000		0.000		0.000	0.000	0.000	
Remarks:															
(U) <u>Test &amp; Evaluation</u> Subtotal Test & Evaluation			0.000	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	0.000	
Remarks:															
(U) Total Cost			13.080	11.112		5.190		6.203		5.800		Continuing	TBD	TBD	

## Exhibit R-4, RDT&amp;E Schedule Profile

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## Exhibit R-4: M&amp;S Foundations (MSF)

	FY04				FY05				FY06				FY07				FY08				FY09				FY10				FY11			
	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	1	2	3	4
Concept Exploration/ Refinement					★				★				☆				☆				☆				☆				☆			
Technology Development						★				☆			☆				☆				☆				☆				☆			
STORM			★																													

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## Exhibit R-4a, RDT&amp;E Schedule Detail

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(U) **Schedule Profile**FY 2004FY 2005FY 2006FY 2007(U) Concept exploration/refinement, development, and enhancement of AF next  
generation modeling & simulation efforts

1-4Q

1-4Q

1-4Q

1-4Q

(U) Storm development

4Q

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BUDGET ACTIVITY 07 Operational System Development					PE NUMBER AND TITLE 0207601F USAF Modeling and Simulation			PROJECT NUMBER AND TITLE 4991 Accelerated Acquisitions		
Cost (\$ in Millions)	FY 2004 Actual	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	Cost to Complete	Total
4991 Accelerated Acquisitions	0.000	2.316	4.824	4.880	5.055	5.047	5.164	5.252	Continuing	TBD
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0		

In FY06, PE 0207601F, United States Air Force (USAF) Modeling & Simulation (M&S) was aligned to better support customer needs into four thrusts. This resulted in project 4991, being renamed from the Joint Distributed Engineering Plant to Accelerated Acquisitions (AA). The four thrusts enable the communities of interest to focus and prioritize the PE's capabilities.

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

Accelerated Acquisitions (AA) focuses on reducing the time and resources required to provide material solutions to the Warfighter. Examples include more efficient and coordinated processes for design, development, test and evaluation, maintainability and sustainment.

AA's objective is to improve interoperability of weapon systems and platforms through more rigorous interoperability evaluation in a replicated battlefield environment. The AA thrust area includes the Joint Distributed Engineering Plant (JDEP) which connects combat system engineering sites and replicates Joint Force Combat Systems to create a network testbed to assess network centric systems and Command, Control, Communication, Computers and Intelligence (C4I).

In addition, AA provides the capability to improve both Service and Joint system performance in a System-of-Systems environment. Air Force-Integrated Collaborative Environment (AF-ICE) will use this network to build upon existing Service and Joint combat system engineering and test sites, such as C4I hardware in the loop and computer-program-in-the-loop engineering sites (including Design Activities, software support activities, test & evaluation facilities and training commands). AF-ICE will develop the concept of operations, business rules, and procedures to enable acquisition managers to effectively use the network. The AF-ICE initiative supports the Homeland Defense Testbed, Command & Control (C2) Constellation, Node Additions, and various other activities that use the network infrastructure located around the country.

The AF-ICE will coordinate activities involving Air Force engineering and test sites. AF-ICE will ensure that accurately represented C4I networks are established for system development and testing activities and will evaluate those systems for interoperability and integration into a joint environment.

This project is in Budget Activity 7 - Operational System Development because it enhances operational system developments.

(U) <b><u>B. Accomplishments/Planned Program (\$ in Millions)</u></b>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>
(U) Continue communications architectures, links and operations support Air Force-Integrated Collaborative Environment (AF-ICE) activities	0.000	1.000	1.526	1.735
(U) Continue to expand existing JDEP to support AF-ICE activities to include the management, operations and test support along with contracted personnel to assist in DT/OT activities	0.000	1.000	1.500	1.656
(U) Provide event analysis support to product centers	0.000	0.316	0.898	0.589
(U) Develop and execute various simulations/stimulation environments for CDI test events	0.000	0.000	0.900	0.900
(U) Total Cost	0.000	2.316	4.824	4.880



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4991 Accelerated Acquisitions

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

<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</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) Not applicable

(U) D. Acquisition Strategy

Electronic Systems Center (ESC) at Hanscom AFB, MA will manage the acquisition and development process for the experimentation, integration, and site activation activities for AA. All major contracts will be awarded after full and open competition

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Exhibit R-3, RDT&E Project Cost Analysis												DATE February 2005		
BUDGET ACTIVITY 07 Operational System Development						PE NUMBER AND TITLE 0207601F USAF Modeling and Simulation						PROJECT NUMBER AND TITLE 4991 Accelerated Acquisitions		
(U) <u>Cost Categories</u> (Tailor to WBS, or System/Item Requirements) (\$ in Millions)	<u>Contract</u> <u>Method &amp;</u> <u>Type</u>	<u>Performing</u> <u>Activity &amp;</u> <u>Location</u>	<u>Total</u> <u>Prior to FY</u> <u>2004</u> <u>Cost</u>	<u>FY 2004</u> <u>Cost</u>	<u>FY 2004</u> <u>Award</u> <u>Date</u>	<u>FY 2005</u> <u>Cost</u>	<u>FY 2005</u> <u>Award</u> <u>Date</u>	<u>FY 2006</u> <u>Cost</u>	<u>FY 2006</u> <u>Award</u> <u>Date</u>	<u>FY 2007</u> <u>Cost</u>	<u>FY 2007</u> <u>Award</u> <u>Date</u>	<u>Cost to</u> <u>Complete</u>	<u>Total Cost</u>	<u>Target</u> <u>Value of</u> <u>Contract</u>
(U) <u>Product Development</u> HLD Testbed	Various	ESC Hanscom AFB, MA		0.000		0.220	Nov-04					Continuing	TBD	TBD
AF-ICE Activities Support	Various	BOEING, ESC Hanscom AFB, MA		0.000		0.000		0.526	Nov-05	0.391	Nov-06	Continuing	TBD	TBD
AWSIM Support	T&M	NORTHROP GRUMMAN, ESC Hanscom AFB, MA		0.000		0.000		0.500	Nov-05	0.350	Nov-06	Continuing	TBD	TBD
Node Activities	MIPR	Defense Information Systems Agency (DISA)		0.000		1.000	Oct-04	1.600	Nov-05	1.600	Nov-06	Continuing	TBD	TBD
HLD Testbed/AF-ICE Activities Support	C/CPFF	Solipsys, ESC Hanscom AFB, MA		0.000		0.000		0.200	Dec-05	0.200	Jan-07	Continuing	TBD	TBD
AA Requirements/Capabilities	Various	Aeronautical Systems Center (ASC)		0.000		1.000	Dec-04	0.500	Dec-05	0.600	Jan-07	Continuing	TBD	TBD
AF-ICE Support	C/CPFF	RAYTHEON , ESC Hanscom AFB, MA		0.000		0.000		0.298	Dec-05	0.289	Jan-07	Continuing	TBD	TBD
Various	Various	Mitre, ESC Hanscom AFB, MA				0.000		0.300	Oct-05	0.350	Oct-06	Continuing	TBD	TBD
ITSP Support	Various	ESC Hanscom AFB, MA				0.096	Oct-04	0.500	Mar-06	0.500	Mar-07	Continuing	TBD	TBD
Subtotal Product Development			0.000	0.000		2.316		4.424		4.280		Continuing	TBD	TBD
Remarks:														
(U) <u>Support</u> 46th Test Squadron	Project Order	Various						0.400	Nov-05	0.600	Nov-06	Continuing	TBD	TBD
Project 4991														

R-1 Shopping List - Item No. 158-10 of 158-26

Exhibit R-3 (PE 0207601F)

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4991 Accelerated Acquisitions

Subtotal Support	0.000	0.000	0.000	0.400	0.600	Continuing	TBD	TBD
Remarks:								
(U) <u>Test &amp; Evaluation</u>							0.000	
Subtotal Test & Evaluation	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Remarks:								
(U) <u>Management</u>							0.000	
Subtotal Management	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Remarks:								
(U) Total Cost	0.000	0.000	2.316	4.824	4.880	Continuing	TBD	TBD

## Exhibit R-4, RDT&amp;E Schedule Profile

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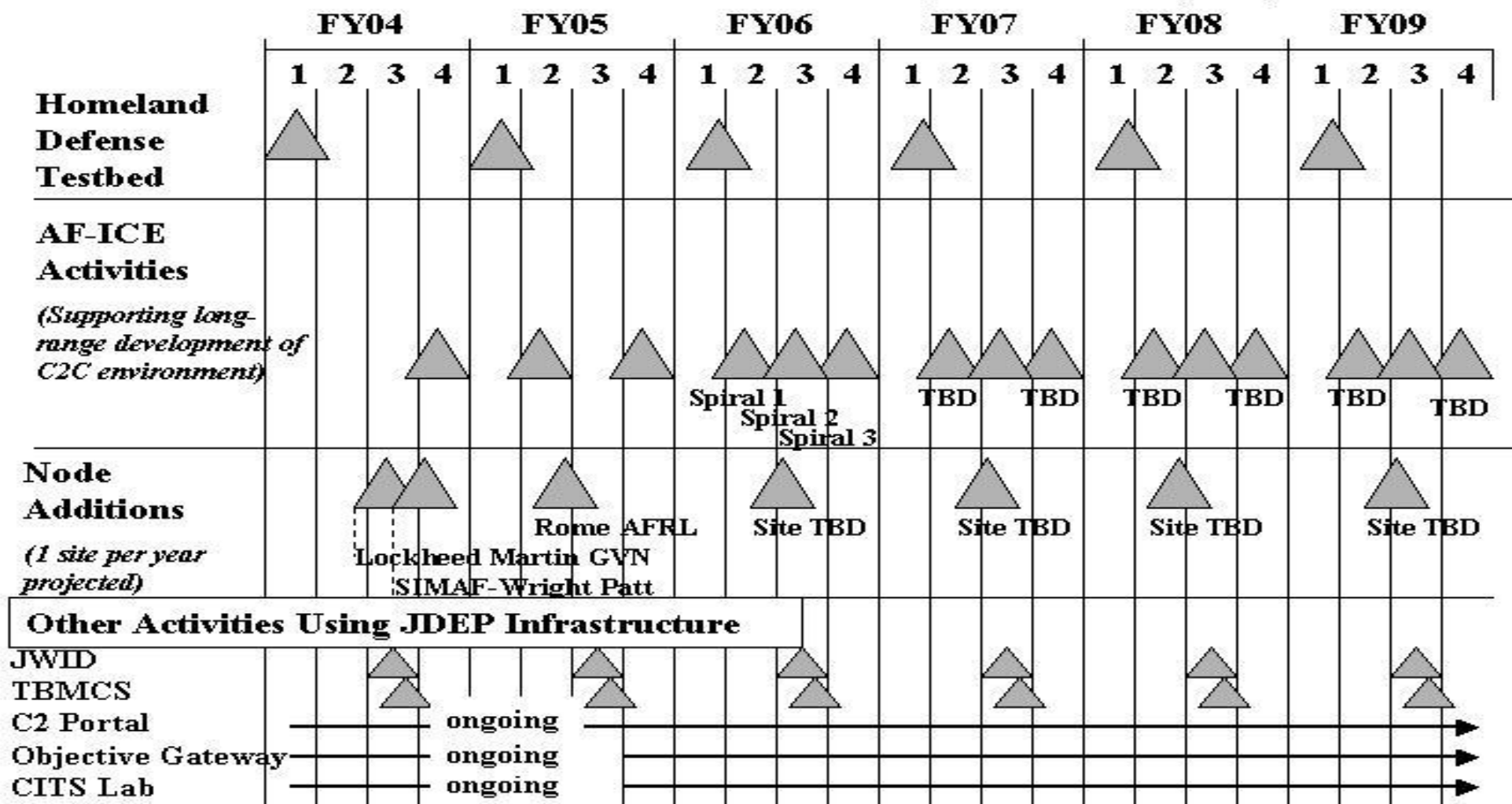
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4991 Accelerated Acquisitions

## Accelerated Acquisitions (AA)



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4991 Accelerated Acquisitions

(U) Schedule ProfileFY 2004FY 2005FY 2006FY 2007

(U) Event Planning

1-4Q

1-4Q

1-4Q

(U) Conduct Homeland Defense Testbed event

1Q

1Q

1Q

(U) Implement C2 Constellation (JDEP/AF-ICE) and node connectivity events at Air  
Force sites

2-4Q

2-4Q

2-4Q

(U) Support other events using JDEP/AF-ICE infrastructure

3Q

3Q

3Q

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5004 New and Emerging Capabilities

Cost (\$ in Millions)	FY 2004 Actual	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	Cost to Complete	Total
5004 New and Emerging Capabilities	0.487	0.000	0.000	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		

In FY06, PE 0207601F, United States Air Force (USAF) Modeling & Simulation (M&S) was aligned to better support customer needs into four thrusts. This resulted in project 5004, being renamed from Joint Model Transition to New and Emerging Warfighting Capabilities (NEWC). The four thrusts enable the communities of interest to focus and prioritize the PE's capabilities.

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

New and Emerging Warfighting Capabilities (NEWC) focuses on future capabilities and force structure. Examples include Science & Technology, analysis, concept exploration and futures wargaming. Numerous models are being developed for a broad range of areas including acquisition, analysis, test and evaluation, and training.

For FY04, this project supported Joint Model Transition (JMT). JMT developed and upgraded of R&D models selected through a board process. The selection process allowed the board to influence the direction of model development and integration for the M&S community. Digital System Models (DSMs) are digitally represented weapon system platforms and are used to evaluate existing capabilities. In FY05, the work was moved to project 5135, Warfighter Readiness.

No activity is currently planned for FY06.

This program is in Budget Activity 7 - Operational System Development, Research Category because it provides RDT&E funding for major USAF Modeling and Simulation efforts.

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

	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>
(U) Developed and integrated service models according to M&S architecture roadmap	0.187	0.000	0.000	0.000
(U) Developed cost benefit analysis for Next Generation Mission Model	0.215	0.000	0.000	0.000
(U) Developed comprehensive Digital System Models (DSMs) and Simulations to support potential development programs	0.085	0.000	0.000	0.000
(U) Total Cost	0.487	0.000	0.000	0.000

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

	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</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) Not Applicable										

(U) **D. Acquisition Strategy**

All major contracts for model development were awarded after full and open competition.

## UNCLASSIFIED

## Exhibit R-3, RDT&amp;E Project Cost Analysis

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February 2005

## BUDGET ACTIVITY

07 Operational System Development

## PE NUMBER AND TITLE

0207601F USAF Modeling and  
Simulation

## PROJECT NUMBER AND TITLE

5004 New and Emerging Capabilities

(U) <u>Cost Categories</u> (Tailor to WBS, or System/Item Requirements) (\$ in Millions)	<u>Contract</u> <u>Method &amp;</u> <u>Type</u>	<u>Performing</u> <u>Activity &amp;</u> <u>Location</u>	<u>Total</u> <u>Prior to FY</u> <u>2004</u> <u>Cost</u>	<u>FY 2004</u> <u>Cost</u>	<u>FY 2004</u> <u>Award</u> <u>Date</u>	<u>FY 2005</u> <u>Cost</u>	<u>FY 2005</u> <u>Award</u> <u>Date</u>	<u>FY 2006</u> <u>Cost</u>	<u>FY 2006</u> <u>Award</u> <u>Date</u>	<u>FY 2007</u> <u>Cost</u>	<u>FY 2007</u> <u>Award</u> <u>Date</u>	<u>Cost to</u> <u>Complete</u>	<u>Total Cost</u>	<u>Target</u> <u>Value of</u> <u>Contract</u>
(U) <u>Product Development</u>														
Various	Various	Various		0.487	Mar-05							Continuing	TBD	TBD
Subtotal Product Development			0.000	0.487		0.000		0.000		0.000		Continuing	TBD	TBD
Remarks:														
(U) <u>Support</u>													0.000	
Subtotal Support			0.000	0.000		0.000		0.000		0.000		0.000	0.000	0.000
Remarks:														
(U) <u>Test &amp; Evaluation</u>													0.000	
Subtotal Test & Evaluation			0.000	0.000		0.000		0.000		0.000		0.000	0.000	0.000
Remarks:														
(U) <u>Management</u>													0.000	
Subtotal Management			0.000	0.000		0.000		0.000		0.000		0.000	0.000	0.000
Remarks:														
(U) Total Cost			0.000	0.487		0.000		0.000		0.000		Continuing	TBD	TBD

## Exhibit R-4, RDT&amp;E Schedule Profile

DATE

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BUDGET ACTIVITY

07 Operational System Development


PE NUMBER AND TITLE

0207601F USAF Modeling and  
Simulation

PROJECT NUMBER AND TITLE

5004 New and Emerging Capabilities

## Exhibit R-4a, RDT&E Schedule: Joint Model Transition

	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11
	234							
Develop Digital System Models								
Develop Interfaces	*							
Implement M&S Architecture	*							



## UNCLASSIFIED

## Exhibit R-4a, RDT&amp;E Schedule Detail

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BUDGET ACTIVITY

07 Operational System Development

PE NUMBER AND TITLE

0207601F USAF Modeling and  
Simulation

PROJECT NUMBER AND TITLE

5004 New and Emerging Capabilities

(U) **Schedule Profile**FY 2004FY 2005FY 2006FY 2007

(U) Develop Digital System Models (DSM)

1-4Q

(U) Develop/Extend Enhance AF Models

3Q

(U) Develop/Implement M&amp;S Architecture

2Q

## UNCLASSIFIED

## Exhibit R-2a, RDT&amp;E Project Justification

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BUDGET ACTIVITY 07 Operational System Development					PE NUMBER AND TITLE 0207601F USAF Modeling and Simulation			PROJECT NUMBER AND TITLE 5005 Executive Agent For Air /Space Natural Environment		
Cost (\$ in Millions)	FY 2004 Actual	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	Cost to Complete	Total
5005 Executive Agent For Air /Space Natural Environment	0.860	0.000	0.000	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		

In FY05, work transferred to project 4567, M&S Foundations.

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

Air Force Director of Weather (AF/XOW) is designated as the Department of Defense (DoD) Modeling and Simulation Executive Agent (MSEA) for Air and Space Natural Environment (ASNE). This program provides funds for MSEA joint wargaming architecture, data base, model development support for Joint Warfare Simulation (JWARS), Joint Modeling and Simulation System (JMASS), and other joint M&S program offices. Primary users will be unified commanders and service components for use in joint exercises involving air, ground, sea, and space campaigns.

This program is in Budget Activity 7 - Operational System Development because it provides RDT&E funding for major USAF Modeling and Simulation efforts.

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

	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>
(U) Complete Space Weather Prototyping and Integration	0.327	0.000	0.000	0.000
(U) Complete Production Center Integration	0.323	0.000	0.000	0.000
(U) Complete Air/Land Battlefield Integration	0.210	0.000	0.000	0.000
(U) Total Cost	0.860	0.000	0.000	0.000

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

	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</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) Not applicable										

(U) **D. Acquisition Strategy**

All major contracts under ASNE were awarded after full and open competition.

## UNCLASSIFIED

## Exhibit R-3, RDT&amp;E Project Cost Analysis

DATE

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## BUDGET ACTIVITY

## 07 Operational System Development

## PE NUMBER AND TITLE

0207601F USAF Modeling and  
Simulation

## PROJECT NUMBER AND TITLE

5005 Executive Agent For Air /Space  
Natural Environment

(U) <u>Cost Categories</u> (Tailor to WBS, or System/Item Requirements) (\$ in Millions)	<u>Contract</u> <u>Method &amp;</u> <u>Type</u>	<u>Performing</u> <u>Activity &amp;</u> <u>Location</u>	<u>Total</u> <u>Prior to FY</u> <u>2004</u> <u>Cost</u>	<u>FY 2004</u> <u>Cost</u>	<u>FY 2004</u> <u>Award</u> <u>Date</u>	<u>FY 2005</u> <u>Cost</u>	<u>FY 2005</u> <u>Award</u> <u>Date</u>	<u>FY 2006</u> <u>Cost</u>	<u>FY 2006</u> <u>Award</u> <u>Date</u>	<u>FY 2007</u> <u>Cost</u>	<u>FY 2007</u> <u>Award</u> <u>Date</u>	<u>Cost to</u> <u>Complete</u>	<u>Total Cost</u>	<u>Target</u> <u>Value of</u> <u>Contract</u>
(U) <u>Product Development</u>														
ASNE	Various	Various		0.860	Oct-03	0.000						Continuing	TBD	TBD
Subtotal Product Development			0.000	0.860		0.000		0.000		0.000		Continuing	TBD	TBD
Remarks:														
(U) <u>Support</u>													0.000	
Subtotal Support			0.000	0.000		0.000		0.000		0.000		0.000	0.000	0.000
Remarks:														
(U) <u>Test &amp; Evaluation</u>													0.000	
Subtotal Test & Evaluation			0.000	0.000		0.000		0.000		0.000		0.000	0.000	0.000
Remarks:														
(U) <u>Management</u>													0.000	
Subtotal Management			0.000	0.000		0.000		0.000		0.000		0.000	0.000	0.000
Remarks:														
(U) Total Cost			0.000	0.860		0.000		0.000		0.000		Continuing	TBD	TBD

## Exhibit R-4, RDT&amp;E Schedule Profile

DATE

February 2005

BUDGET ACTIVITY

07 Operational System Development

PE NUMBER AND TITLE

0207601F USAF Modeling and  
Simulation

PROJECT NUMBER AND TITLE

5005 Executive Agent For Air /Space  
Natural Environment

## Exhibit R-4A, RDT&amp;E Schedule, ASNE

Acquisition Milestones	FY04				FY05	FY06	FY07	FY09	FY10	FY11
	1	2	3	4						
Weather Scenario IOC	*									
Weather Scenario FOC	*									
Space Environment IOC	*									

## UNCLASSIFIED

## Exhibit R-4a, RDT&amp;E Schedule Detail

DATE

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BUDGET ACTIVITY

07 Operational System Development

PE NUMBER AND TITLE

0207601F USAF Modeling and  
Simulation

PROJECT NUMBER AND TITLE

5005 Executive Agent For Air /Space  
Natural Environment(U) Schedule ProfileFY 2004FY 2005FY 2006FY 2007

(U) Weather Scenario Production Initial Operating Capability (IOC)

1Q

(U) Weather Scenario Production Final Operating Capability (FOC)

1Q

(U) Space Environmental Effects IOC

3Q

## Exhibit R-2a, RDT&amp;E Project Justification

DATE

February 2005

## BUDGET ACTIVITY

07 Operational System Development

## PE NUMBER AND TITLE

0207601F USAF Modeling and Simulation

## PROJECT NUMBER AND TITLE

5135 Warfighter Readiness

Cost (\$ in Millions)	FY 2004 Actual	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	Cost to Complete	Total
5135 Warfighter Readiness	0.000	5.973	19.514	13.667	11.526	17.586	16.216	18.935	Continuing	TBD
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0		

In FY06, PE 0207601F, United States Air Force (USAF) Modeling & Simulation (M&S) was aligned to better support customer needs into four thrusts. This resulted in project 5135, being renamed from Distributed Mission Operations to Warfighter Readiness (WR). The four thrusts enable the communities of interest to focus and prioritize the PE's capabilities.

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

Warfighter Readiness (WR) focuses on putting the Warfighter in a simulated environment to improve warfighting decision-making, execution, skills and processes. Examples include operational training, mission rehearsal, operational decision-making, mission execution, concept development and wargaming.

WR includes the Air and Space Constructive Environment, provided by Distributed Mission Operations (DMO) which is the constructive back plane for live and virtual assets to work within. Distributive Mission Operations (DMO) is the Air Force's contribution to the Joint National Training Concept (JNTC). WR's capabilities provided within the environment are the AF's contribution to the Joint Training Confederation's battle staff training environment used to support Combatant Commanders, Joint Task Force, and component commander staff readiness training. The capabilities support Joint/Service exercises including, but not limited to: Joint National Training Concept (JNTC), Yama Sakura, Reception, Staging, Onward-movement & Integration (RSO&I), Ulchi Focus Lens, Roving Sands, Austere Challenge, Flexible Leader, Blue Flag, Joint Expeditionary Force Experiment, and Virtual Flag.

Other capabilities will provide for Intelligence, Surveillance, and Reconnaissance (ISR) training and exercise supported by using a virtual ISR system for command and staff level training. The simulation provides commanders, staffs and operators with a common training system for the employment, tasking, exploitation and dissemination of imagery. The environment also provides models simulating electronic combat, electronic warfare, targeting, ISR representation, and intelligence integral to the Air and Space Operations Center training.

WR also includes the Air Force Modeling & Simulation Training Toolkit (AFMSTT) modernization. AFMSTT provides: the Air Warfare Simulation System (AWSIM) which interfaces to Command, Control, Communications, Computers, and Intelligence (C4I) to Theater Battle Management Core System (TBMCS) and the Graphical Input Aggregate Control (GIAC), the Logistics Simulation (LOGSIM), the Intelligence Management Controller Node (IMCN), the AWSIM Analysis Tool (AAT), and the Air Force Synthetic Environment for Reconnaissance and Surveillance (AFSERS). AFMSTT's capabilities require modernization to support Air Force Title X requirements.

In addition, project 675135 supports the Joint Model Transition (formerly known as Legacy Model Transition) which supports the development and upgrade of models selected through a board process. The selection process allows the board to influence the direction of model development and integration for the modeling and simulation community. Emphasis is placed on standardization, integration, capabilities improvement, joint applicability and acceptance.

## Exhibit R-2a, RDT&amp;E Project Justification

DATE

February 2005

## BUDGET ACTIVITY

**07 Operational System Development**

## PE NUMBER AND TITLE

**0207601F USAF Modeling and Simulation**

## PROJECT NUMBER AND TITLE

**5135 Warfighter Readiness**

(U) Aggregate Level Simulation Protocol (ALSP)	0.000	0.000	0.150	0.200
(U) Total Cost	0.000	5.973	19.514	13.667

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

<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</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) Not applicable

**(U) D. Acquisition Strategy**

Electronic Systems Center (ESC) at Hanscom AFB, MA will manage the acquisition and model development process for all WR activities. All major contracts will be awarded after full and open competition.

## UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis												DATE February 2005			
BUDGET ACTIVITY 07 Operational System Development						PE NUMBER AND TITLE 0207601F USAF Modeling and Simulation						PROJECT NUMBER AND TITLE 5135 Warfighter Readiness			
(U) <u>Cost Categories</u> (Tailor to WBS, or System/Item Requirements) (\$ in Millions)	<u>Contract Method &amp; Type</u>	<u>Performing Activity &amp; Location</u>	<u>Total Prior to FY 2004 Cost</u>	<u>FY 2004 Cost</u>	<u>FY 2004 Award Date</u>	<u>FY 2005 Cost</u>	<u>FY 2005 Award Date</u>	<u>FY 2006 Cost</u>	<u>FY 2006 Award Date</u>	<u>FY 2007 Cost</u>	<u>FY 2007 Award Date</u>	<u>Cost to Complete</u>	<u>Total Cost</u>	<u>Target Value of Contract</u>	
(U) <u>Product Development</u> AFMSTT	Various	ESC, Hanscom AFB, MA				5.600	Dec-04	14.059	Dec-05	8.000	Dec-06	Continuing	TBD	TBD	
DMOI	Various	ESC, Hanscom AFB, MA						4.955	Dec-05	4.967	Dec-06	Continuing	TBD	TBD	
JMT	Various	General Services Administration (GSA)and Office of Aerospace Studies (OAS), Kirtland AFB, NM				0.373	Feb-05	0.350	Dec-05	0.500	Dec-06	Continuing	TBD	TBD	
ALSP	Various	ESC, Hanscom AFB, MA						0.150	Dec-05	0.200	Dec-06	Continuing	TBD	TBD	
Subtotal Product Development Remarks:			0.000	0.000		5.973		19.514		13.667		Continuing	TBD	TBD	
(U) <u>Support</u> Subtotal Support Remarks:			0.000	0.000		0.000		0.000		0.000		0.000	0.000	0.000	
(U) <u>Test &amp; Evaluation</u> Subtotal Test & Evaluation Remarks:			0.000	0.000		0.000		0.000		0.000		0.000	0.000	0.000	
(U) <u>Management</u> Subtotal Management Remarks:			0.000	0.000		0.000		0.000		0.000		0.000	0.000	0.000	
(U) Total Cost			0.000	0.000		5.973		19.514		13.667		Continuing	TBD	TBD	
Project 5135 R-1 Shopping List - Item No. 158-24 of 158-26 Exhibit R-3 (PE 0207601F)															

Project 5135

R-1 Shopping List - Item No. 158-24 of 158-26

Exhibit R-3 (PE 0207601F)



## Exhibit R-4, RDT&amp;E Schedule Profile

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BUDGET ACTIVITY

07 Operational System Development

PE NUMBER AND TITLE

0207601F USAF Modeling and  
Simulation

PROJECT NUMBER AND TITLE

5135 Warfighter Readiness

## Exhibit R-4: Warfighter Readiness (WR)



## UNCLASSIFIED

## Exhibit R-4a, RDT&amp;E Schedule Detail

DATE

February 2005

BUDGET ACTIVITY

07 Operational System Development

PE NUMBER AND TITLE

0207601F USAF Modeling and  
Simulation

PROJECT NUMBER AND TITLE

5135 Warfighter Readiness

(U) Schedule ProfileFY 2004FY 2005FY 2006FY 2007

(U) AFMSTT Modernization

1-4Q

1-4Q

1-4Q

(U) DMOI Development

1-4Q

1-4Q

(U) JMT-perform cost-benefit analysis, develop and integrate models, simulations and  
interface standards according to Modeling & Simulation Strategic Plan (MSSP) and  
architecture.

1-4Q

1-4Q

1-4Q

(U) ALSP Development

1-4Q

1-4Q