PE NUMBER: 0604256F
PE TITLE: Threat Simulator Development

Exhibit R-2, RDT&E Budget Item Justification

DATE: February 2005

BUDGET ACTIVITY: 06 RDT&E Management Support

PE NUMBER AND TITLE: 0604256F Threat Simulator Development

	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	34.895	34.213	32.546	37.551	37.757	37.832	38.430	38.666	Continuing	TBD
2907	Electronic Combat Intel Support	1.328	1.990	1.836	1.992	2.101	2.028	1.916	1.954	Continuing	TBD
3321	Electronic Warfare Ground Test Resources	26.492	24.957	23.334	28.147	28.033	28.152	28.925	29.065	Continuing	TBD
7500	Foreign Materiel Acquisition/Exploitation	7.075	7.266	7.376	7.412	7.623	7.652	7.589	7.647	Continuing	TBD

(U) A. Mission Description and Budget Item Justification

This PE provides funding for the elements necessary to support the Air Force Electronic Warfare (EW) Test Process. This test process provides a scientific methodology to ensure the effective disciplined and efficient testing of EW and avionics systems. Each capability or facility improvement is pursued in concert with the others so as to avoid duplicate capabilities while at the same time producing the proper mix of test resources needed to support the AF EW Test Process and testing of EW systems which can be used in any military action involving the use of electromagnetic and directed energy to control the electromagnetic spectrum or to attack the enemy. This PE provides funding for the management and technical oversight of implementation activities, development and improvement of digital EW models, measurement facilities operation and improvements, hardware in the loop test facilities operation and improvements, installed system test facility improvements, and development and improvement of open air threat simulators for flight testing. This PE also provides funding for planning, budgetary management, and technical support of the Air Force for corporate-level implementation of the EW Test Process, improvement and modernization (I&M) activities and application of the test and evaluation (T&E) infrastructure. Support includes requirements definition and analysis, project planning, programming and budgeting, technical oversight, and application of T&E facility I&M. Products include studies, analyses, and related documentation. This PE provides funding to support the acquisition and exploitation efforts of the Foreign Materiel Program as well as to support EW intelligence efforts.

This PE is in Budget Activity 6, Management Support, because it is a Research and Development (R&D) effort for I&M of T&E capabilities at AF Test Centers.

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

		FY 2004	FY 2005	FY 2006	FY 2007
(U)	Previous President's Budget	36.283	34.517	34.496	38.887
(U)	Current PBR/President's Budget	34.895	34.213	32.546	37.551
(U)	Total Adjustments	-1.388	-0.304		
(U)	Congressional Program Reductions				
	Congressional Rescissions		-0.304		
	Congressional Increases				
	Reprogrammings	-0.925			
	SBIR/STTR Transfer	-0.463			
(U)	Significant Program Changes:				

Exhibit R-2a, RDT&E Project Justification

DATE: February 2005

BUDGET ACTIVITY: 06 RDT&E Management Support

PE NUMBER AND TITLE: 0604256F Threat Simulator Development

PROJECT NUMBER AND TITLE: 2907 Electronic Combat Intel Support

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
2907 Electronic Combat Intel Support	1.328	1.990	1.836	1.992	2.101	2.028	1.916	1.954	Continuing	TBD
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0		

(U) A. Mission Description and Budget Item Justification

This project provides funding to support Foreign Materiel Operational Test and Evaluation (FMOT&E), which ensures the ability of operational commands to test and develop effective Electronic Attack/Electronic Protection (EA/EP) techniques and tactics. Funds are required for: deployment of blue systems to test facilities, travel of personnel to the test sites to evaluate and validate test results; range and laboratory costs; costs for instrumentation of blue systems; and contracted engineering support for the conduct of tests and subsequent reporting. Funding for this program is required to prevent future aircraft losses due to improper and inaccurate aircrew tactics (e.g., lack of evasive action or proper tactics training to avoid missile attack).

Budget Activity Justification: This Program Element is in Budget Activity 6, Management Support, because it is a Research and Development (R&D) effort for Improvement and Modernization of T&E capabilities at Air Force Test Centers.

(U) B. Accomplishments/Planned Program ($ in Millions)	FY 2004	FY 2005	FY 2006	FY 2007
(U) Accomplishments/Planned Program:				
(U) Funds fighter and bomber testing for foreign materiel operational exploitation. Extensive evaluations and reporting of blue system effectiveness to be accomplished.	1.078	1.230	1.151	1.267
(U) Funds mobility/special operations transport/helicopter testing for foreign materiel operational exploitation. Extensive evaluations and reporting of blue system effectiveness to be accomplished.	0.200	0.685	0.610	0.650
(U) Funds classified operational assessments for foreign materiel operational exploitation. Extensive evaluations and reporting to be accomplished.	0.050	0.075	0.075	0.075
(U) Total Cost	1.328	1.990	1.836	1.992

(U) C. Other Program Funding Summary ($ 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 Cost
(U) Other APPN										
None										

(U) D. Acquisition Strategy

Not applicable.

Exhibit R-2a, RDT&E Project Justification			DATE: February 2005
BUDGET ACTIVITY: 06 RDT&E Management Support	PE NUMBER AND TITLE: 0604256F Threat Simulator Development	PROJECT NUMBER AND TITLE: 3321 Electronic Warfare Ground Test Resources	

	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
3321	Electronic Warfare Ground Test Resources	26.492	24.957	23.334	28.147	28.033	28.152	28.925	29.065	Continuing	TBD
	Quantity of RDT&E Articles	0	0	0	0	0	0	0	0		

(U) A. Mission Description and Budget Item Justification

The AF requires a comprehensive set of test facilities to implement the Air Force Electronic Warfare (EW) Test Process in order to test EW systems. To manage program risk effectively throughout the weapons system acquisition process, and conduct test and evaluation (T&E) effectively and efficiently, a broad multi-spectrum, integrated set of T&E capabilities for modeling and simulation (M&S) through open-air ranges (OAR) is required. The EW Test Process Support task provides for investment management, coordinated technical oversight, and application of EW T&E facilities, including studies, analyses, and related documentation. The EW T&E M&S program leads correlation, verification and validation (V&V) activities of integrated simulations of validated models across the EW test facilities using the Silver Bullet measurement capability. The Electronic Warfare Test Analysis Tools & Methodologies (EWTATM) project new start will leverage advances made by EW T&E M&S to provide tools standardization for data reduction. The National Radar Cross Section (RCS) Test Facility - NRTF (formerly Radar Target Scatter (RATSCAT)) upgrades provide improvements to the NRTF at Holloman AFB, NM, to support RCS measurement requirements of DoD and commercial customers, with either conventional or stealth systems. The Air Force Electronic Warfare Evaluation Simulator (AFEWES) and the Digital Integrated Air Defense System (DIADS) provide the ability to realistically evaluate hardware components and simulated weapon systems against manned hardware threat representations throughout the acquisition process. AFEWES provides simulations of advanced Infrared (IR) & Radio Frequency (RF) semi-automatic Surface-to-Air Missiles (SAMs), Air-to-Air Missiles (AAMs), RF missile warning, IR and Laser countermeasure functions; integration of actual threat hardware and ground clutter into advanced threat RF and IR missile simulations. DIADS provides algorithm based enemy command and control (C2) capabilities plus early warning radar detection, limited ground control intercept features and also allows man-in-the-loop interaction for the enemy C2 positions. The DIADS Upgrades project new start will provide improvements to the existing DIADS system. The Installed Test Integration Program (ITIP) capitalizes on the capabilities developed by Electronic Combat Integrated Test (ECIT) and develops a multi-spectral synthetic battlespace with virtual and constructive modeling and simulation test and evaluation capabilities at Edwards AFB, CA. The Air Warfare Mission Simulator (AWMS) program develops an electronic warfare capability with high fidelity reconfigurable cockpits. This program will also provide the capability to link high fidelity cockpits to the information battlespace via High Level Architecture (HLA).

Budget Activity Justification: This Program Element is in Budget Activity 6, Management Support, because it is a Research and Development (R&D) effort for Improvement and Modernization of T&E capabilities at Air Force Test Centers.

	B. Accomplishments/Planned Program ($ in Millions)	FY 2004	FY 2005	FY 2006	FY 2007
(U)	Accomplishments/Planned Program:				
(U)	Electronic Combat (EC) Test Process Support. Conduct requirements analyses and other studies in support of Air Force investments in EW test infrastructure. Provide systems engineering/technical assistance (SETA) support for Air Force implementation of the EW Test Process, including I&M of the EW test infrastructure.	0.350	1.064	1.084	1.070
(U)	EW T&E M&S. Develop and deploy the V&V process for scalable integration with simulations to	2.818	2.731		

Exhibit R-2a, RDT&E Project Justification			DATE: February 2005
BUDGET ACTIVITY: 06 RDT&E Management Support	PE NUMBER AND TITLE: 0604256F Threat Simulator Development	PROJECT NUMBER AND TITLE: 3321 Electronic Warfare Ground Test Resources	

	support developmental and operational testing and training. Develop simulation based EW T&E tools and methodologies in support of EW test engineer's implementation of the EW Test Process. Integrate and correlate the process between EW T&E and training facilities supported by Silver Bullet.				
(U)	NRTF Upgrades. Enhance efficiency of operations and accuracy of low observable measurements. Assess and develop initial studies and concept design for advanced target suspension systems. Improve secure test program capability.	1.768	1.969	1.578	2.560
(U)	AFEWES. Operation in support of DoD and non-DoD test customers to include upgrades to the IR laboratory, test capability, development of an IR Missile Warning System Pointer-Tracker eval capability, and V&V effort on all threat simulators. Integration and V&V of SAM-G, SAM-E, SAM-E2, and IR SAM-H. Development of SAM-D capability to produce semi-active missile miss distance results and continue SAM-D validation using OAR flight test data. Development and integration of SAM-F and transition IR flyout models to PC-based software. Integration of Joint Research and Assessment Center (JRAAC) semi-active radar simulation with AFEWES semi-active suite. Development of IR background scene environment.	5.140	5.264	6.103	8.157
(U)	DIADS. Providing mission level simulation for evaluating the survivability of aircraft penetrating an enemy air defense system by updating the Integrated Air Defense System scenario and C2 player library with current intelligence data. Continue integrating DIADS with other Avionics Test & Integration Complex (ATIC) components, including Joint Communication Simulator (JCS), Combat Electromagnetic Environment Simulator (CEESIM), Advanced Radar Environment Simulator (ARES), and AWMS. Perform parametric validation comparisons and OAR side-by-side correlation with DIADS C2 player library. Upgrade model to match new & improved air defense functions of potential threat systems and maintain model currency. Maintain external interfaces using high level architecture (HLA) and Distributed Interactive Simulation (DIS) capability to support exercises and current and future users: F/A-22, F-35, Virtual Strike Warfare Environment, Simulation and Analysis Facility (SIMAF), F-117, UCAV/UCAS, and others. Complete initial development of interfaces to Blue C4ISR models such as Distributed Mission Operations Center (DMOC) Rivet Joint, AWACS, and Joint STARS simulations.	3.000	3.268		
(U)	ITIP. Integration of ATIC RF and IR stimulators to replicate an EW battlespace to support testing of advanced weapons systems such as the F/A-22, F-35, and Compass Call. Includes upgrade of existing stimulators: Generic Radar Target Generator (GRTG), ARES, IR Sensor Stimulator (IRSS), RF Threat Simulators, and Communication, Navigation, Intelligence (CNI) simulator and integration of those upgrades into the electronic battlespace. Newly integrated capabilities are ARES free space and direct injection radar target generation, EW simulator direct injection, IR/UV missle warning stimulators, and improvements to test control, scenario development, data reduction, and analysis functions. Integration with DIADS.	11.421	8.378	7.040	8.300

Exhibit R-2a, RDT&E Project Justification		DATE February 2005
BUDGET ACTIVITY 06 RDT&E Management Support	PE NUMBER AND TITLE 0604256F Threat Simulator Development	PROJECT NUMBER AND TITLE 3321 Electronic Warfare Ground Test Resources

(U)	AWMS. Integrating EW capabilities into flight simulator modernization reconfigurable cockpits 1 and 2. Requirements study and site preparation of phase 2 of site preparation for high fidelity simulators 3 and 4. Construction and integration of second helmet mounted display. Design aircraft specific cockpit console set.	1.995	2.283	2.015	1.770
(U)	DIADS UPGRADES improve fidelity of the DIADS model by maintaining currency with the MATLAB architecture for models and upgrading individual elements such as the radar model. DIADS will also be improved by incorporating changes in the threat as evidenced by updates to intelligence databases and with the addition of Blue (e.g. friendly) C4ISR models to complete the synthetic battlespace for the Integrated Air Defense System (IADS). An architecture update will be incorporated to move from large proprietary computers to a non-proprietary personal computer based system as well as other technical refresh updates to the system.			3.916	4.750
(U)	EWTATM provides tools to standardize data reduction across the Combined Test Facilities. These tools will be interfaced with the Measure of Performance Analysis Tool (MOPAT) developed under an earlier program. EWTATM will also expand the MOPAT with the addition of new MOPs. As these tools are developed, the results will be incorporated in the Test Methodology Reference.			1.598	1.540
(U)	Total Cost	26.492	24.957	23.334	28.147

(U) C. Other Program Funding Summary ($ 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 Cost
(U) Other APPN										
(U) Related RDT&E										

PE 0604759F, Major T&E Investment; PE 0604940D, Central T&E Investment Program; PE 0603941D, Test and Evaluation Science and Technology; PE 0605807F, T&E Support; PE 0605978F, Facilities Sustainment - T&E Support; PE 0605976F, Facility Restoration and Modernization; PE 0605804D, Development Test and Evaluation.

(U) D. Acquisition Strategy

Contracts funded from this program are predominately awarded on the basis of full and open competition.

Exhibit R-2a, RDT&E Project Justification

DATE: February 2005

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT NUMBER AND TITLE
06 RDT&E Management Support	0604256F Threat Simulator Development	7500 Foreign Materiel Acquisition/Exploitation

	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
7500	Foreign Materiel Acquisition/Exploitation	7.075	7.266	7.376	7.412	7.623	7.652	7.589	7.647	Continuing	TBD
	Quantity of RDT&E Articles	0	0	0	0	0	0	0	0		

(U) A. Mission Description and Budget Item Justification

This project's specific purpose is to support USAF Foreign Materiel Program requirements through the acquisition and exploitation of foreign materiel. Items considered for these Foreign Materiel Acquisition and Exploitation (FMA&E) funds are included in the prioritized Air Force FMA list established each year. Each MAJCOM prepares and approves a Foreign Materiel - Mission Need Statement for each requirement. Annually, the MAJCOM commanders establish a list of their top 20 requirements. The MAJCOM's requirements lists are then integrated into an Air Force requirement list. Each MAJCOM then approves the AF list and requirements, and final validation comes from the Air Force Vice Chief of Staff. Exploitations are based on and driven by acquisitions. The list is classified secret. The USAF is tasked by OSD to be the DoD Executive Agent for all threat aircraft, air-to-air missiles, air-to-ground bomb/missiles, satellites, early warning radars, and Intercontinental Ballistic Missiles. As the Executive Agent, the AF is tasked to acquire, exploit and provide data to all DoD components.

Budget Activity Justification: This Program Element is in Budget Activity 6, Management Support, because it is a Research and Development (R&D) effort for Improvement and Modernization of T&E capabilities at Air Force Test Centers.

	B. Accomplishments/Planned Program ($ in Millions)	FY 2004	FY 2005	FY 2006	FY 2007
(U)	Accomplishments/Planned Program:				
(U)	Funds the acquisition of Foreign Materiel IAW the prioritized Air Force Foreign Materiel Acquisition list; subject to assets availability.	3.139	3.400	3.490	3.479
(U)	Funds the exploitation of acquired Foreign Materiel IAW prioritized lists and specific exploitation plans.	2.936	3.066	3.086	3.133
(U)	Funds the operations and maintenance of the specialized Foreign Materiel assets.	1.000	0.800	0.800	0.800
(U)	Total Cost	7.075	7.266	7.376	7.412

(U) C. Other Program Funding Summary ($ 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 Cost
(U) Other APPN										

None.

(U) D. Acquisition Strategy

Not applicable.