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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2)						February 2006	
RDT&E, DEFENSE-WIDE (0400) BUDGET ACTIVITY SIX			CENTRAL TEST AND EVALUATION INVESTMENT PROGRAM (CTEIP) PROGRAM ELEMENT (PE) 0604940D8Z				
\$ in Millions	FY 2005*	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
PE 0604940D8Z	0.000	138.918	130.290	138.236	137.771	140.316	143.372

*Language in the National Defense Authorization Act of 2003 directed the establishment of the Test Resource Management Center (TRMC). The Act also requires the TRMC to administer the Central Test and Evaluation Investment Program (CTEIP) effective Fiscal Year 2006.

Beginning with FY 2006, program element 0604940D8Z (CTEIP) is transferred from the Operational Test and Evaluation, Defense (OT&E, D) appropriation (0460) to the Defense-wide RDT&E (0400) appropriation. FY 2005 accomplishments are noted in the OT&E appropriation.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION

Since its inception in FY 1990, this program element has been, and continues to be, used to fund the development of critically needed, high priority Test and Evaluation (T&E) capabilities for joint/multi-Service requirements. The Central Test and Evaluation Investment Program (CTEIP) uses a corporate investment approach to combine Service and Defense Agency T&E needs, maximize opportunities for joint efforts, and avoid unwarranted duplication of test capabilities. CTEIP focuses investments on projects that will have high productivity returns on investment. Projects under the CTEIP Program Element (PE) support two basic tasks: investments to improve the test capabilities base (Joint Improvement and Modernization (JIM) projects) and development of near-term solutions to test capability shortfalls in support of an ongoing operational test program (Resource Enhancement Project (REP)).

The JIM funds critically needed T&E investments in the major functional areas of test mission command, control, communications and instrumentation; electronic warfare systems; threat and computational simulation test and evaluation; space systems T&E; weapons effects test capabilities; targets; and physical and environmental test capabilities. The investments include both the demonstrations of advanced technologies needed to test increasingly complex and sophisticated weapon systems and the

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transition of these technologies into test capabilities. Examples of project subject matter include: automated data collection, processing, display, and archiving; smart munitions testing; modeling and simulation (M&S); advanced electronic combat systems; low-observable technologies and signature measurements; targets and target control; time-space-position-information; end-game measurement; testing of advanced materials application; test design; and advanced sensors and space systems. CTEIP continues as the focal point for fostering common architectures throughout the test and training communities to enhance the sharing of resources and links between test and training ranges. CTEIP has provided special focus to institutionalize the use of M&S as a practical test tool; to link ranges through internetting to enhance inter-range and inter-Service cooperation and resource sharing; and, to ensure development and acquisition of common instrumentation necessary for a more efficient test infrastructure. Analyses of alternative solutions are conducted for each investment project to validate T&E requirements, to define integrated support systems, and to determine overall cost effectiveness of the proposed test investments. The use of Department of Defense (DoD)-wide criteria for requirement validation, prioritization, and risk assessment ensures an effective test resource investment program.

The REP funds development of near-term solutions for critical ongoing operational tests supporting decisions on major, high priority defense acquisition programs. These unanticipated operational test (OT) capability requirements arise from several sources such as a new threat system identified during OT planning, acquisition of foreign military assets that are critical in determining weapon system operational effectiveness, short timelines between system design maturity and scheduled OT, and emerging technologies and test requirements resulting from operational concept changes mandated by Congress or DOT&E, or system-of-systems testing. Funding these activities under the CTEIP provides the opportunity to coordinate and integrate these near-term test requirements with the total DoD test and evaluation investment planning, and ensures their availability and legacy for other programs that may have similar testing requirements. This PE also provides funds to perform travel to carry out oversight of the CTEIP program.

This Research Category 6.4 PE supports the development and application of proven technologies to provide major test and evaluation capabilities required to meet DoD component weapon system test requirements.

Program Accomplishments and Plans:

FY 2005 Accomplishments: See OT&E,D (0460) appropriation.

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FY 2006 Plans:

JIM Projects:

- Complete the Land and Sea Vulnerability Test Capability project to provide an instrumented land-sea interface test capability at the Aberdeen Test Center.
- Complete the development and demonstration of time-space-position information (TSP), flight termination/safe and arm (FTSA), and telemetry functions on advanced missile platforms under the Joint Advanced Missile Instrumentation project.
- Complete systems development for the Joint Mobile Infrared Countermasures Test Suite project to provide infrared spectrum test instrumentation for open air ranges.
- Complete concept development and initiate systems development for the Integrated Network Enhanced Telemetry project to develop a network-enhanced telemetry capability for T&E ranges and facilities.
- Complete concept development and initiate systems development for the Joint Information Assurance Test Suite/ Web-Enabled Test project to provide a dynamic Information Assurance test tool suite with the ability to conduct extensive testing of web-based systems.
- Complete concept development and initiate systems development for the Interactive Electronic Attack project to provide an interactive electronic attack radio frequency capability to test electronic warfare, communications, and avionics systems against reactive air defenses in a secure, protected ground-based environment.
- Complete concept development and initiate systems development for the Advanced Communications Environment—Faithful Timeslot Messaging project to adapt the current Joint Communications Simulator antenna pattern and propagation effects that will provide timeslot dependent attenuation of Link-16 terminal output.
- Complete concept development and initiate systems development for the Test Capability Workstation / Data Collection Automation Tool project to develop a software suite and tools that focus on Capabilities-Based Test methodology to support operational test planning and the automation of test data collection, analysis, and reporting.
- Complete concept development and initiate systems development of a warhead compatible, universal, subminiature, low-cost flight termination system.
- Complete the Unmanned Systems Tested project, to provide capabilities for using unmanned systems in training, operational exercises, and test and evaluation.
- Complete the Joint Gulf Range Complex Upgrade project to provide upgraded range control capabilities at the Gulf Range.
- Complete the Digital Video Laboratory project to provide digital video data analysis and reporting capability.
- Complete the Electromagnetic Effects Generating System project to provide a multi-Service test facility capable of

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- assessing actual performance of a full-scale, fixed, or rotary-winged aircraft completely immersed in a user-specified radio frequency environment.
- Complete the Communications, Navigation, and Identification follow-on effort under the Joint Installed Systems Test Facility Product Improvements project to provide improved installed systems capabilities needed to support next generation aircraft testing.
 - Complete concept development and initiate systems development for the Hypersonic Propulsion Test Capability project to provide a variable Mach number test capability at the Arnold Engineering Development Center.
 - Continue validation of flight test procedures and unmanned aerial vehicle (UAV) operations in the U.S. National Airspace alongside manned aircraft, under the UAV Systems and Operations Validation Facility Program.
 - Continue the Infrared Sensor Stimulator product improvement and continued development of the Advanced Radar Environment Stimulator, under the Joint Installed Systems Test Facility Product Improvements project, to provide improved installed systems capabilities needed to support next generation aircraft testing.
 - Continue systems development of the Contamination Avoidance Detector Test Suite project to provide test methodology, instrumentation, and test fixtures required to test and evaluate current and developmental chemical/biological (CB) detector systems over the entire range of expected use conditions.
 - Continue systems development of the Directed Energy Test and Evaluation Capability project to provide improved test and evaluation capabilities for directed energy weapons.
 - Continue systems development of the Joint Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance (C4ISR) project to develop a capability to test increasingly complex multi-discipline data fusion concepts.
 - Continue systems development of the Soft Impact Location Capability project to provide the necessary instrumentation, signal processing, communication, and data processing capabilities to detect and locate the point and angle of impact of projectile and missile weapons within an 800m by 800m impact area.
 - Continue systems development of the Enhanced Flight Termination System project to develop a UHF digital flight termination system for DoD unmanned flight vehicles.
 - Continue systems development of the Advanced Instrumentation Data & Control System project to develop state-of-the-art instrumentation and control systems to meet DoD T&E requirements for propulsion systems, aerodynamic systems and space systems.
 - Continue systems development of the Enhanced Range Applications Project to provide a state-of-the-art Airborne Range Data System that supports next generation data collection requirements.
 - Continue threat system simulator development efforts under the Threat Systems project to improve integration, reduce potential duplication in threat and target development, and ensure that accurate, cost-effective representations of threat

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- systems are available to support testing.
- Continue the Tri-Service and CTEIP support projects.
 - Continue proof-of-concept effort for a capability to test airborne infrared countermeasure systems in a dynamic threat environment, to include realistic clutter background.
 - Initiate and complete concept development and initiated systems development of an improved airborne telemetry capability to support test and evaluation of future weapons systems requiring greater standoff distances and increased telemetry transmission ranges.
 - Initiate and complete the Range Tactical Data Link and Relay Capability project to provide cross-range interoperability and establish a joint tactical data link training capability at selected ranges.
 - Initiate and complete the Re-Locatable Command, Control, and Communications (C3) for Gulf Range Support project to provide re-locatable long-haul and inter/intra-communications to support interoperability and expanded operations at selected Gulf ranges.

Resource Enhancement Project:

- Complete the Advanced System Endgame Methodology for Actual Threat Systems subproject to develop and integrate emerging technology for high fidelity, real-time endgame assessment for threat system engagements in support of rotary wing aircraft operational testing.
- Complete the Probability of Raid Annihilation (PRA) Testbed Common Threat and Environment Capability subproject to develop a common set of threat and natural environment representations for consistent assessment of ship self defense systems across ship classes.
- Complete the Torpedo Proximity Scoring System subproject to develop a reliable and flexible prototype instrumentation system to support torpedo defensive system testing and evaluation requirements.
- Complete the Information Assurance (IA) Susceptibility Testing for Global Air Traffic Management Avionics (GATM) subproject to expand an existing capability to support Beyond Line of Sight GATM and ground system information assurance testing.
- Complete the Distributed Operational Test Command Center subproject to provide a distributed test control capability that integrates communications, data processing and test monitoring, and visual display systems into a single integrated capability.
- Complete the Test Control Communications Capability subproject to provide an integrated communications suite of hardware, software, and firmware protocols to provide realistic command, control, and communications testing.
- Complete the Magnetic Silencing Facility subproject to provide improved magnetic component calibration and adequate operational testing of the Advanced Degaussing System on new ship classes.
- Continue the Shootable Remote Threat Ground Targets subproject to provide six low cost ground targets operating in a

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- tactical formation and an integrated portable autopilot and remote control system.
- Continue the Advanced Capability Mobile Flight Simulator subproject to provide more realistic Tactical Ballistic Missile (TBM) threat scenario simulations.
- Continue and complete the Portable Oceanographic environmental Sensors Instrumentation Suite subproject to provide an instrumentation suite for remote monitoring of environmental conditions during operational testing of amphibious weapon systems.
- Continue and complete the Decontamination Ground Truth Instrumentation subproject to provide instrumentation capable of measuring the effectiveness of decontamination materials and processes for chemical and biological warfare simulants and interferents.
- Continue the Air and Missile Defense Operational Test Suite subproject to provide data collection, transfer, and analyses capabilities required to conduct Combatant Commanders' Integrated Command and Control System and Ground-Based Midcourse Defense operational and interoperability testing.
- Initiate the Infrared (IR) Man-Portable Air Defense System (MANPADS) Real Time Casualty Assessment Simulator subproject to provide added realism to assess tactics, techniques and procedures to test the survivability of the Armed Reconnaissance Helicopter against MANPADS.
- Initiate the Portable Underwater Tracking System subproject to provide real-time time/space/position information (TSPI) during operational testing of Systems Under Test operating in a shallow water minefield with various in-volume and bottom mines or in littoral regions.
- Initiate the Integrated Broadcast Operational Test Suite subproject to provide a semi-automated test capability in static, flyaway, and distributed network configurations critical to operational testing of the Integrated Broadcast Service.
- Initiate the Radio Frequency Monitoring and Data Analysis System project to provide a modular, high-performance receiving system for monitoring all RF signals on an EW range, in order to satisfy the need for definitive ground truth of target signals and interfering signals during operational tests.

FY 2007 Plans:

JIM Projects:

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- Complete systems development of the Contamination Avoidance Detector Test Suite project to provide test methodology, instrumentation, and test fixtures required to test and evaluate current and developmental CB detector systems over the entire range of expected use conditions.
- Complete development of the Infrared Sensor Stimulator product improvement and the Advanced Radar Environment Stimulator, under the Joint Installed Systems Test Facility Product Improvements project, to provide improved installed systems capabilities needed to support next generation aircraft testing.
- Complete systems development of the Soft Impact Location Capability project to provide the necessary instrumentation, signal processing, communication, and data processing capabilities to detect and locate the point and angle of impact of projectile and missile weapons within an 800m by 800m impact area.
- Complete systems development of the Enhanced Flight Termination System project to develop a UHF digital flight termination system for DoD unmanned flight vehicles.
- Complete systems development of the Advanced Instrumentation Data & Control System project to develop state-of-the-art instrumentation and control systems to meet DoD T&E requirements for propulsion systems, aerodynamic systems and space systems.
- Complete the Test Capability Workstation / Data Collection Automation Tool project to develop a software suite and tools that focus on Capabilities-Based Test methodology to support operational test planning and the automation of test data collection, analysis, and reporting.
- Complete proof-of-concept effort for a capability to test airborne infrared countermeasure systems in a dynamic threat environment, to include realistic clutter background.
- Complete validation of flight test procedures and unmanned aerial vehicle (UAV) operations in the U.S. National Airspace alongside manned aircraft, under the UAV Systems and Operations Validation Facility Program.
- Continue systems development of the Enhanced Range Applications Project to provide a state-of-the-art Airborne Range Data System that supports next generation data collection requirements.
- Continue systems development for the Interactive Electronic Attack project to provide an interactive electronic attack radio frequency capability to test electronic warfare and avionics systems against reactive air defenses in a secure, protected ground-based environment.
- Continue systems development for the Advanced Communications Environment –Faithful Timeslot Messaging project to adapt the current Joint Communications Simulator antenna pattern and propagation effects to provide timeslot dependent attenuation of Link-16 terminal output.

- Continue systems development for Directed Energy Test and Evaluation Capability project to provide improved test and evaluation capabilities for directed energy weapons.
- Continue systems development of the Joint C4ISR project to develop a capability to test increasingly complex multi-

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- discipline data fusion concepts.
- Continue systems development for the Integrated Network Enhanced Telemetry project to develop a network-enhanced telemetry capability for T&E ranges and facilities.
 - Continue threat system simulator development efforts under the Threat Systems project to improve integration, reduce potential duplication in threat and target development, and ensure that accurate, cost-effective representations of threat systems are available to support testing.
 - Continue the Tri-Service and CTEIP support projects.
 - Continue systems development for the Hypersonic Propulsion Test Capability project to provide a variable Mach number test capability at the Arnold Engineering Development Center.
 - Continue systems development for the Joint Information Assurance Test Suite / Web-Enabled Test project to provide a dynamic Information Assurance test tool suite with the ability to conduct extensive testing of web-based systems.
 - Continue systems development of an improved airborne telemetry capability to support test and evaluation of future weapons systems requiring greater standoff distances and increased telemetry transmission ranges.
 - Continue systems development of a warhead compatible, universal, subminiature, low-cost flight termination system.

Resource Enhancement Project:

- Complete the Advanced Capability Mobile Flight Simulator subproject to provide more realistic Tactical Ballistic Missile (TBM) threat scenario simulations.
- Complete the Infrared (IR) Man-Portable Air Defense System (MANPADS) Real Time Casualty Assessment Simulator subproject to provide added realism to assess tactics, techniques and procedures to test the survivability of the Armed Reconnaissance Helicopter against MANPADS.
- Complete the Portable Underwater Tracking System subproject to provide real-time time/space/position information (TSPI) during operational testing of Systems Under Test operating in a shallow water minefield with various in-volume and bottom mines or in littoral regions.
- Complete the Integrated Broadcast Operational Test Suite subproject to provide a semi-automated test capability in static, flyaway, and distributed network configurations critical to operational testing of the Integrated Broadcast Service.
- Complete the Radio Frequency Monitoring and Data Analysis System project to provide a modular, high-performance receiving system for monitoring all RF signals on an EW range, in order to satisfy the need for definitive ground truth of target signals and interfering signals during operational tests.
- Complete the Air and Missile Defense Operational Test Suite subproject to provide data collection, transfer, and analyses capabilities required to conduct Combatant Commanders' Integrated Command and Control System and Ground-Based Midcourse Defense operational and interoperability testing.

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- Complete the Shootable Remote Threat Ground Targets subproject to provide six low cost ground targets operating in a tactical formation and an integrated portable autopilot and remote control system.
- Initiate developments to address near term OT capability shortfalls in range interoperability and knowledge management.
- Initiate developments to address near term OT capability shortfalls in realistic test environments, to include open air test environments, tunnels, and chambers.
- Initiate developments to address near term OT capability shortfalls in the realistic representation of enemy threats and targets.
- Initiate developments to address near term OT capability shortfalls in installed systems and hardware-in-the-loop T&E facilities.

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B. (U) PROGRAM CHANGE SUMMARY

	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>
Previous President's Budget:	0.000	128.759	130.230
Current President's Budget:	0.000	138.918	130.290
Total Adjustments:		10.159	0.060
Congressional Program Adjustments:		(0.845)	
Congressional Rescissions:		(1.396)	
Congressional Increases:		12.400	
Other Program Adjustments:			0.060

C. (U) OTHER PROGRAM FUNDING NA

D. (U) ACQUISITION STRATEGY NA

E. (U) PERFORMANCE METRICS

Percentage of CTEIP projects that were developed and delivered to the DoD test community over the past five years.