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Exhibit R-2, RDT&E Budget Item Justification							May 2009	
Appropriation/Budget Activity RDT&E, Defense Wide, BA 6			R-1 Item Nomenclature Central Test and Evaluation Investment Program (CTEIP), PE 0604940D8Z					
Cost (\$ in millions)	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015
Total PE Cost	144.039	152.013	145.052					

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

Since its inception in FY 1990, this program element has been 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, Defense, and other government agencies 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 ongoing operational test programs (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. 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.

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<p>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 Director, Operational Test & Evaluation (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.</p> <p>This Research Category 6.4 PE includes special studies, analyses, and strategic planning related to test capabilities and infrastructure, and supports the development and application of proven technologies to provide major test and evaluation capabilities required to meet DoD component weapon system test requirements.</p> <p><u>Program Accomplishments and Plans:</u></p> <p><u>FY 2008 Accomplishments:</u></p> <p><u>JIM Projects:</u></p> <ul style="list-style-type: none">- Completed 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.- Completed the Enhanced Flight Termination System project to develop an ultra high frequency (UHF) digital flight termination system for DoD unmanned flight vehicles.- Completed an upgraded capability to evaluate the vulnerability of aircraft to Man Portable Air Defense System threats at an existing Live Fire Test and Evaluation facility.- Completed concept development and initiated system 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.		

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<ul style="list-style-type: none"> - Completed the Unmanned Systems Testbed project to provide capabilities for using unmanned systems in training, operational exercises, and test and evaluation. - Completed 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. - Completed the Joint Mobile Infrared Countermeasures Test System project to provide infrared spectrum test instrumentation for open air ranges. - Completed 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. - Completed 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. - Completed concept development and initiated system development for the Horizontal Fast Rise Electromagnetic Pulse (EMP) Pulser project to provide the required EMP testing environment for large aircraft under test. - Completed concept development and initiated risk reduction for the Common Range Integrated Instrumentation System project to develop a common range instrumentation system to address next generation range data requirements. Continued the Rapid Prototype Initiative to address near term testing requirements for the Future Combat System. - Continued the Joint Gulf Range Complex Upgrade project to provide upgraded range control capabilities at the Gulf Range. - Continued system development of the Towed Airborne Plume Simulator project to provide a capability to test airborne infrared countermeasure systems in a dynamic threat environment, to include realistic clutter background. - Continued concept development for the Integrated Network Enhanced Telemetry project to develop a network-enhanced telemetry capability for T&E ranges and facilities. - Continued the Infrared Sensor Stimulator product improvement and continued system 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. - Continued the Pacific Range Interoperability Test and Evaluation Capability project to enhance interoperability between test and training assets in the Pacific and other DoD ranges and facilities. 		

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<ul style="list-style-type: none"> - Continued the Range Tactical Data Link and Relay Capability project to provide cross-range interoperability and establish a joint tactical data link test and training capability at selected ranges. - Continued systems development of the Directed Energy Test and Evaluation Capability project to provide improved test and evaluation capabilities for directed energy weapons. - Continued systems development of the Joint Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (JC4ISR) project to develop a capability to test increasingly complex multi-discipline data fusion concepts. - Continued 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 projectile and missile weapons within an 800m by 800m impact area. - Continued system development of the Joint Advanced Missile Instrumentation project to develop and demonstrate time-space-position information, flight termination / safe and arm, and telemetry functions on advanced missile platforms. - Continued systems development for the Next Generation Range Support Aircraft project to provide an improved airborne telemetry capability to support test and evaluation of future weapons systems requiring greater standoff distances and increased telemetry transmission ranges. - Continued the Test and Training Enabling Architecture Software Development Activity to promote integrated testing and simulation-based acquisition through the use of a logical range consisting of distributed live, virtual, and constructive elements tied together by a common architecture. - Continued systems development for the Hypersonic Propulsion Test Capability project to provide a variable Mach number aerodynamic propulsion test capability at the Arnold Engineering Development Center. - Continued validation of flight test procedures and unmanned aerial vehicle (UAV) operations in the U.S. National Airspace alongside manned aircraft, under the UAV Systems Operations and Validation Program. - Continued the Tri-Service Initiatives and CTEIP support projects. - Continued threat system simulator development 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. - Continued concept development for the Space Threat Assessment Testbed project to provide a capability to conduct subsystem and system level combined natural and man-made space environmental effects testing of critical space assets. 		

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<ul style="list-style-type: none"> - Initiated concept development for the Objective Helicopter Icing Spray System project to provide an enhanced capability to perform in-flight icing and rain testing for low-speed air vehicles. - Initiated the Advanced SAM Hardware Simulator Development – Integrated Technical Evaluation Assessing Multiple Sources (ITEAMS) project to develop a detailed design of a threat radar system using available scientific and technical intelligence data. - Initiated the Joint Gulf Range Complex Test and Training Interdependency Initiative project to explore opportunities for common infrastructure development for test and training participants at the Joint Gulf Range Complex. - Initiated risk reduction for a warhead compatible, universal, subminiature low-cost flight termination system. <p><u>Resource Enhancement Project:</u></p> <ul style="list-style-type: none"> - Completed the fabrication, range integration, and validation on the AGM-88E Anti-Radiation Missile Air Defense Array Test Tool subproject. - Completed the site surveys and installation of the Air and Missile Defense Operational Test Suite. - Completed the system integration, test, and validation on the Chemical Agent Plume Tracking Capability subproject. - Completed the development and acceptance testing on the Consolidated Enterprise Network Test and Evaluation Range subproject. - Completed system acceptance testing on the Infrared Man-Portable Air Defense System Real Time Casualty Assessment Simulator subproject. - Completed test and validation on the Portable Underwater Tracking System subproject. - Completed system integration and test on the Radio Monitoring and Data Analysis System subproject. - Continued the prototype design and development efforts on the Infantry Automatic Rifle Test Resource Unit Fire Hit Discriminator subproject. - Continued development on the Net-Ready Operational Test and Evaluation Support subproject. - Continued the development and completed component and system testing for the Volumetric Influence Processor subproject. - Initiated the development of the Enhanced Communications and Analysis Test System to provide the capability to conduct Operational Test and Evaluation on the MILSATCOM and Defensive Counter Space Systems. 		

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<ul style="list-style-type: none"> - Initiated the development of the Air and Ground Network Waveform Test Capability subproject to provide the 605TH Test and Evaluation Squadron the capability to assess the interoperability of the Tactical Air Control Party Close Air Support System. - Initiated the development of the Digital Remote Interface Vector Equipment System to provide the operational test directors the ability to accurately simulate surface warfare environments to support the Operational Test of the Littoral Combat Ship. - Initiated design efforts on the Submarine Launched Countermeasure Emulator subproject to support the Common Broadband Acoustic Sonar System Spiral IV Torpedo System end-to-end Operational Evaluation. - Initiated system design efforts for the Tactical End-to-End Closed Loop Simulation subproject to support the Operational Assessment of the Assault Directed Infrared Countermeasures Program. <p><u>FY 2009 Plans:</u></p> <p><u>JIM Projects:</u></p> <ul style="list-style-type: none"> - Complete the Directed Energy Test and Evaluation Capability project to provide improved test and evaluation capabilities for directed energy weapons. - Complete concept development and initiate systems development for the Objective Helicopter Icing Spray System project to provide an enhanced capability to perform in-flight icing and rain testing for low-speed air vehicles. - Complete concept development and initiate system development for the Space Threat Assessment Testbed project to provide a capability to conduct subsystem and system level combined natural and man-made space environmental effects testing of critical space assets. - Complete the Infrared Sensor Stimulator product improvement and continue 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. - 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 the Joint Gulf Range Complex Test and Training Interdependency Initiative project to explore opportunities for common infrastructure development for test and training participants at the Joint Gulf Range Complex. - Complete risk reduction for a warhead compatible, universal, subminiature low-cost flight termination system. 		

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<ul style="list-style-type: none"> - Complete the Range Tactical Data Link and Relay Capability project to provide cross-range interoperability and establish a joint tactical data link test and training capability at selected ranges. - 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 Operations and Validation Program. - Continue the Advanced SAM Hardware Simulator Development – Integrated Technical Evaluation Assessing Multiple Sources (ITEAMS) project to develop a detailed design of a threat radar system using available scientific and technical intelligence data. - Continue the Pacific Range Interoperability Test and Evaluation Capability project to enhance interoperability between test and training assets in the Pacific and other DoD ranges and facilities. - Continue the Joint Gulf Range Complex Upgrade project to provide upgraded range control capabilities at the Gulf Range. - Continue systems development of the Joint C4ISR project to develop a capability to test increasingly complex multi-discipline data fusion concepts. - Continue the Joint Advanced Missile Instrumentation project to develop and demonstrate time-space-position information, flight termination / safe and arm, and telemetry functions on advanced missile platforms. - 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 projectile and missile weapons within an 800m by 800m impact area. - Continue systems development for the Horizontal Fast Rise Electromagnetic Pulse (EMP) Pulser project to provide the required EMP testing environment for large aircraft under test. - Continue system 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 risk reduction for the Common Range Integrated Instrumentation System project to develop a common range instrumentation system to address next generation range data requirements. Complete the Rapid Prototype Initiative to address near term testing requirements for the Future Combat System. 		

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<ul style="list-style-type: none"> - Continue the Test and Training Enabling Architecture Software Development Activity to promote integrated testing and simulation-based acquisition through the use of a logical range consisting of distributed live, virtual, and constructive elements tied together by a common architecture. - Continue systems development for the Hypersonic Propulsion Test Capability project to provide a variable Mach number aerodynamic propulsion test capability at the Arnold Engineering Development Center. - Continue the Tri-Service and CTEIP support projects. - Continue threat system simulator development efforts 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 systems development for the Next Generation Range Support Aircraft provide to provide an improved airborne telemetry capability to support test and evaluation of future weapons systems requiring greater standoff distances and increased telemetry transmission ranges. - Continue system development of the Towed Airborne Plume Simulator project to provide a capability to test airborne infrared countermeasure systems in a dynamic threat environment, to include realistic clutter background. - Initiate the Range Element - Network Enterprise Technology project to provide the Combat Readiness Training Center and the 46th TW with multi-mission critical data link capabilities to support testing of net-centric aircraft and weapons. - Initiate the Gulf Range Mobile Instrumentation Capability project to provide new distributed testing capabilities. <p><u>Resource Enhancement Project:</u></p> <ul style="list-style-type: none"> - Complete the shipboard installation and at-sea verification efforts of the Digital Remote Interface Vector Equipment System. - Complete system integration and testing for the Net-Ready Operational Test and Evaluation Support subproject. - Complete the development and demonstration efforts and prototype validation testing on the Infantry Automatic Rifle Test Resource Unit Fire Hit Discriminator subproject. - Complete verification, validation and accreditation efforts for the Volumetric Influence Processor subproject. - Continue manufacturing efforts and subsystem level testing on the Submarine Launched Countermeasure Emulator subproject. - Continue the development on the Tactical End-to-End Closed Loop Simulation subproject. - Continue the development of the Enhanced Communications and Analysis Test System to provide the capability to conduct Operational Test and Evaluation on the MILSATCOM and Defensive Counter Space Systems. 		

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<ul style="list-style-type: none"> - Initiate the development of the Precision Target Signatures subproject to support Future Combat System of Systems force-on-force operational test events. - Initiate the development of the Net-Centric Test Agent Capability subproject to provide the capability to support the Operational Test and Evaluation of the Net-Centric Enterprise Service. - Initiate the development of the Threat Model Analysis subproject to support the Initial Operational Test and Evaluation for the F-22 program. - Initiate the development of the Geometric Automated Location System Night Vision Capability subproject to provide the capability for the Joint Cargo Aircraft to demonstrate aerial delivery of multiple cargo and personnel. <p><u>FY 2010 Plans:</u></p> <p><u>JIM Projects:</u></p> <ul style="list-style-type: none"> - Complete systems development of the Joint C4ISR project to develop a capability to test increasingly complex multi-discipline data fusion concepts. - 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 projectile and missile weapons within an 800m by 800m impact area. - Complete systems development for the Horizontal Fast Rise Electromagnetic Pulse (EMP) Pulser project to provide the required EMP testing environment for large aircraft under test. - Complete system 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. - Complete system development of the Towed Airborne Plume Simulator project to provide a capability to test airborne infrared countermeasure systems in a dynamic threat environment, to include realistic clutter background. - Complete risk reduction and initiate systems development for the Common Range Integrated Instrumentation System project to develop a common range instrumentation system to address next generation range data requirements. 		

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<ul style="list-style-type: none"> - Continue the Joint Advanced Missile Instrumentation project to develop and demonstrate time-space-position information, flight termination / safe and arm, and telemetry functions on advanced missile platforms. - Continue systems development for the Objective Helicopter Icing Spray System project to provide an enhanced capability to perform in-flight icing and rain testing for low-speed air vehicles. - Continue system development for the Space Threat Assessment Testbed project to provide a capability to conduct subsystem and system level combined natural and man-made space environmental effects testing of critical space assets. - Continue 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 for the Integrated Network Enhanced Telemetry project to develop a network-enhanced telemetry capability for T&E ranges and facilities. - Continue the Test and Training Enabling Architecture Software Development Activity to promote integrated testing and simulation-based acquisition through the use of a logical range consisting of distributed live, virtual, and constructive elements tied together by a common architecture. - Continue systems development for the Hypersonic Propulsion Test Capability project to provide a variable Mach number aerodynamic propulsion test capability at the Arnold Engineering Development Center. - Continue the Tri-Service and CTEIP support projects. - Continue threat system simulator development efforts 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 systems development for the Next Generation Range Support Aircraft provide to provide an improved airborne telemetry capability to support test and evaluation of future weapons systems requiring greater standoff distances and increased telemetry transmission ranges. - Initiate system development for a warhead compatible, universal, subminiature low-cost flight termination system. - Initiate development of a Joint Urban Test Capability to provide capabilities for testing in a realistic urban environment. - Initiate the Multi-Level Secure (MLS) Joint/Coalition Network Environment project to develop a standardized, DoD multi-level secure and cross-domain data management T&E network architecture. 		

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<ul style="list-style-type: none"> - Initiate the Joint Unmanned Aerial Systems (UAS) Mission Environment project to develop a capability for testing UAS in realistic system of systems environments. - Initiate the Mid-Pressure Arc Heated Facility project to provided expanded capabilities in arc-heated facilities to allow longer run times and increased enthalpy range testing. - Initiate the Joint Distributed Infrared Countermeasures (IRCM) Ground Test System project to provide an end-to-end ground test system enabling complete testing of IRCM systems. - Initiate the Next Generation Electronic Warfare Environment Generator project to provide electronic warfare simulation capabilities for testing future Electronic Attack and Electronic Support Measures systems. <p><u>Resource Enhancement Project:</u></p> <ul style="list-style-type: none"> - Complete integration testing for the Enhanced Communications and Analysis Test System subproject. - Complete validation testing for the Precision Target Signatures subproject. - Complete project demonstration for the Net-Centric Test Agent Capability subproject. - Complete verification and validation efforts for the Submarine Launched Countermeasure Emulator subproject. - Complete development of the Threat Model Assessment Program subproject. - Complete the end-to-end closed loop verification, validation and accreditation for the Tactical End-to-End Closed Loop Simulation subproject. - Initiate development of instrumented facilities to evaluate our next generation of sensors, weapons, platforms, and C4ISR systems in a realistic urban environment. - Initiate development of hardware simulators to test missile warning systems of new generation electronic warfare (EW) suites in a dynamic environment. - Initiate the development of non-intrusive instrumentation to address near term OT capability shortfalls to evaluate advanced sensor system performance in harsh environments. 		

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B. (U) <u>PROGRAM CHANGE SUMMARY</u>			
	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Previous President's Budget:	146.888	133.852	136.168
Current President's Budget:	144.039	152.013	145.052
Total Adjustments:	-2.849	18.161	8.884
Congressional Program Adjustments:		-0.839	
Congressional Rescissions:			
Congressional Increases:		19.000	
Program Adjustments:			10.000
Other Program Adjustments:	-2.849		-1.116
C. (U) <u>OTHER PROGRAM FUNDING</u> NA			
D. (U) <u>ACQUISITION STRATEGY</u> NA			
E. (U) <u>PERFORMANCE METRICS</u>			
Percentage of CTEIP projects that were developed and delivered to the DoD test community over the past five years.			