RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2)			February 2000						
OPERATIONAL TEST AND EVALUATION, DEFENSE (0460) BUDGET ACTIVITY SIX			CENTRAL TEST AND EVALUATION INVESTMENT PROGRAM (CTEIP) PE 0604940D8Z						
$'s in Millions	FY 1999*	FY 2000*	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	COST TO COMPLETE	TOTAL COST
PE 0604940D	131.669	132.866	121.401	116.642	125.719	128.243	130.733	Continuing	Continuing

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION

***FY 1999 and FY 2000 funding for CTEIP was budgeted in the Director Test and Evaluation, Defense appropriation (TI 0450).**

On June 7, 1999, Secretary Cohen approved the disestablishment of the office of the Director, Test, Systems Engineering and Evaluation. In order to strengthen the role of the Director, Operational Test and Evaluation (D,OT&E) and consequently test and evaluation in OSD, the CTEIP mission will be consolidated under the D,OT&E.

As a result, CTEIP funding is now budgeted in the DOT&E appropriation (0460) beginning in FY 2001.

Since 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 eliminate 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 projects fund critically needed test and evaluation 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 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; advanced electronic combat systems; low-observable technologies and signature measurements; targets and target control; time-space-position-indication; 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 modeling and simulation as practical test methods; 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. These efforts directly support the Department's initiative to improve the effectiveness of the Simulation, Test and Evaluation Process (STEP). Test Capabilities Benefit Analyses 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 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. The requirements for these solutions and test assets are generally not known more than two years in advance of a critical test requirement, and as such, are not programmable within the normal planning and budgeting process. These unanticipated OT capability requirements arise from several sources such as a new threat system identified during OT planning, unexpectedly acquiring foreign military assets critical in determining weapon system operational effectiveness, short timelines between system design maturity and scheduled OT, and emerging test requirements resulting from operational concept changes 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 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.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

FY 1999 Accomplishments:

JIM Projects:

- Initiated engineering and manufacturing development phase of the Hardened Sub-miniature Telemetry and Sensor System Project.
- Initiated engineering and manufacturing development phase of the High Speed Massive Memory Project.
- Initiated concept development and preparation of the Test Capabilities Benefit Analysis for the Land and Sea Vulnerability Test Capability Project to provide an instrumented land-sea interface test location at the Aberdeen Test Center.

- Initiated concept development and preparation of the Test Capabilities Benefit Analysis for the BIG CROW EW Enhancement Project to upgrade and modernize high power amplifiers, antennas, communications and data systems for the BIG CROW high power stand off jamming capability.
- Initiated and completed the design for a heavy-duty roadway simulator.
- Initiated the concept development phase for the Electromagnetic Transient (EMT) Test and Evaluation Facility (EMTTEF) Project to provide a capability to assess aircraft hardness to EMT environments to meet MILSTD 464 requirements.
- Initiated the engineering and manufacturing development phase of the Tri-Service Target Signature Measurement and Database System Project.
- Initiated concept development and risk reduction efforts for the Joint Modeling and Simulation System Project to provide interoperability among the Services' model and simulations.
- Continued development, fabrication and test of Transportable Range Augmentation Control System Project.
- Continued to develop an integrated range architecture for range interoperability and preparation for a demonstration using High Level Architecture computer language within the Foundation Initiatives 2010 Project.
- Continued the concept development phase of the Advanced Mobile Object Acquisition System (AMOAS) Project to provide the next generation multi-target acquisition system.
- Continued development of the Joint Installed System Test Facility instrumentation capability including:
  - Continued development of the Multi-Spectral Scene Generator;
  - Completed the Joint Data Link Simulator and continued hardware and software design for Joint Communications Simulator within the Communication, Navigation, Identification Simulator;
  - Continued fabrication and test of prototype Generic Radar Target Generator; and
  - Continued development of the Infrared Sensor Stimulator.
- Continued the concept development phase of the Multi-Service Target Control System (MSTCS) Project.
- Continued concept development of commercial upgrade of the Holloman High Speed Sled Track.
- Continued concept development of the Airborne Icing Project.
- Continued Test Technology Development and Demonstration Project.
- Continued Tri-Service and CTEIP support projects.
- Continued the Advanced Radar Cross Section Measurement System Project.
- Achieved FOC for the Plume Measurement Capability Project.
- Achieved IOC of the Translated GPS Range System capability.
- Transferred the responsibility for threat system simulator development efforts from the Developmental Test and Evaluation program element into the Threat System Simulator Development Project within the CTEIP program element to reduce potential duplication in threat and target modeling and validation efforts.
- Completed concept development of the Target Modeling and Simulation Project.
- Completed the development of high resolution, color capable camera and the low rate initial production for the starter kit camera sets within the Airborne Separation Video Project.
- Completed the concept development phase for the Electromagnetic Environmental Effects Generating System Project.

- Completed the concept development phase effort for the Joint Advanced Missile Instrumentation Project.
- Completed concept development/initiated engineering and manufacturing development phase for the Advanced Range Telemetry Project.

Resource Enhancement Projects:

- Initiated the Dismounted Troop Instrumentation (DMT) subproject which reduces the size and weight of instrumentation required for Land Warrior testing.
- Initiated the Weapons Analysis Facility Enhancement (WAFER) subproject to develop threat submarine, surface combatant and surface launch torpedo models, complete model interfaces with new high speed computing hardware and Verify and Validate upgraded environmental, CM and threat target models.
- Initiated the Radio Frequency Phase Distribution Upgrade (RF PDU) subproject which procures Advanced Tactical Electronic Warfare Environment Simulator (ATEWES) Microwave Phase Distribution (MDS) hardware and develops software subsystems to meet EA-6B Improved Capability (ICAP) III LR-700 receiver upgrade and planned follow-on interferometer receiver systems test.
- Initiated the Missile Warning Test Capability (MWTC) subproject to support F-16 Common Missile Warning System testing.
- Initiated the QF-4 IR Characterization (IR CHAR) subproject to provide predictive codes and models of the infrared (IR) and ultraviolet (UV) characteristics of the QF-4 (DoD Full-Scale Aerial Target) to support AIM-9X testing.
- Initiated the Joint OT&E Simulation Environment Facility (JOSEF) subproject which provides a representative warfare/contingency operations environment for OT&E of network centric C4I systems such as the Defense Message System and the Global Command and Control System.
- Initiated the Reconfigurable Electro-Optical and Magnetic Expendable Target (REMET) subproject which will provide an expendable, electro-optical and magnetic signature replicate of the T-80 tank for use in Predator testing.
- Continued the Test Resource, Analysis, and Planning task to identify near-term OT shortfalls and validate the requirement for test capability.
- Continued to identify candidate subprojects based on critical OT&E test capability shortfalls.
- Completed the Suite of Integrated Infrared Counter Measures/Common Missile Warning System (SIIRCM/CMWS) Test Instrumentation Project to support MH-60K and EH-60K Suite of Integrated Infrared Counter Measures testing.
- Completed the Simulation Testing Operations Rehearsal Model sub-project, which provides a battlefield environment for brigade and below C4I and tactical internet operational testing in support of Force XXI Battle Command Brigade and Below system testing.
- Completed the Advanced Missile Instrumentation Package sub-project which provides a capability to accurately track a missile throughout the flight including the high kinematics environment portion of the flight envelope to support Suite of Integrated Infrared Counter Measures and Common Missile Warning System testing.
- Completed the XM-43A sub-project to instrument a threat weapon system to support Suite of Integrated Radio Frequency Countermeasures testing.
- Completed the Ultraviolet Stimulator sub-project, which provides an open-air test capability for aircraft missile-warning systems in support of AV-8B (Common Missile Warning System Integration) and F/A-18 E/F Common Missile Warning System / Integrated Defensive Electronic Countermeasures integration testing.
- Completed the Integrated Defensive Electronic Countermeasures (IDECM) Test Resources sub-project to develop a semi-active missile simulation capability for ECM testing of the IDECM integration into the F/A-18 E/F.
- Completed the Realistic Operational Communications Scenarios (ROCS) sub-project to provide the capability to evaluate the performance of the Tactical Data Network and other Marine Air-to-Ground Task Force C4I systems.

- Completed the Laser Observation Test and Evaluation Capability (LOTEC) subproject to provide a capability to verify the location of laser target designation data and correlate with fire control information during testing of the Lightweight Laser Designator Rangefinder and the Marine Corps' Tactical Laser Designator Handoff System.
- Completed the Utah Test and Training Range Precision Guided Munitions sub-project to provide the extension to the TS-4 Target Complex to support Joint Direct Attack Munitions, Joint Stand-off Weapon and B-1B Conventional Munitions Upgrade Program testing.
- Completed the Advanced Threat Instrumentation sub-project to instrument threat aircraft to provide real-time flight data into the range data and control infrastructure to support tests of the Joint Helmet Mounted Cueing System.

FY 2000 Accomplishments:

JIM Projects:

- Initiate the engineering and manufacturing development phase for the Electromagnetic Environmental Effects Generating System Project.
- Initiate the engineering and manufacturing development phase for the Joint Advanced Missile Instrumentation Project.
- Initiate the engineering and manufacturing development phase of the Multi-Service Target Control System (MSTCS).
- Initiate the DECADE Radiation Test facility Enhancement Project to develop and field an upgraded, above ground ionizing radiation test capability to meet existing and emerging nuclear weapons effects test requirements.
- Initiate concept development phase of GPS Signal Validation Project.
- Initiate concept development phase of AEDC Instrumentation Project.
- Complete design of the Roadway Simulator.
- Identify requirements and develop program planning for Magdalena Ridge Observatory.
- Continue to develop an integrated range architecture for range interoperability within the Foundation Initiatives 2010 Project.
- Continue engineering and manufacturing development phase of the Hardened Sub-miniature Telemetry and Sensor System Project.
- Continue the conventional Holloman High Speed Sled Track upgrade.
- Continue engineering and manufacturing development for the Advanced Range Telemetry Project.
- Continue threat system simulator development efforts under the Threat System Simulator Development Project to improve integration and reduce potential duplication in threat and target modeling and validation efforts.
- Continue Test Technology Development and Demonstration Project.
- Continue Tri-Service and CTEIP support projects.
- Achieve IOC for the Transportable Range Augmentation Control System Project capability.
- Achieve FOC for the High Speed Massive Memory capability.
- Achieve FOC and completion of the Translated GPS Range System Project.
- Complete development of Long-Term Test Capability (LTTC) camera and Multi-System Controller (MSC) for Airborne Separation Video project.

- Complete the concept development phase of the Advanced Mobile Object Acquisition System (AMOAS) Project to include an automatic radar mode management and power allocation control capability to provide the next generation multi-target acquisition system.
- Complete the concept development and the Test Capabilities Benefit Analysis for the Land and Sea Vulnerability Test Capability Project.
- Complete the concept development and the Test Capabilities Benefit Analysis for the BIG CROW EW Enhancement Project.
- Complete the Multi-Spectral Scene Generator and the Infrared Sensor Stimulator instrumentation and continue efforts on the Communication, Navigation, Identification Simulator and the Generic Radar Target Generator instrumentation within the Joint Installed System Test Facility Project.
- Continue the concept development phase for the Electromagnetic Transient (EMT) Test and Evaluation Facility (EMTTEF) Project to provide a capability to assess aircraft hardness to EMT environments to meet MILSTD 464 requirements.
- Complete the Air-to-Air Signature Measurement System (AASMS), continue development of the Acoustic Signature Measurement and Unaugmented Tracking System (ASMUTS), and initiate the Air-to-Ground and Ground Signature Measurement Systems (AGSMS and GSMS) within the Tri-Service Target Signature Measurement and Database System Project.
- Initiate engineering and manufacturing development of the Airborne Icing Project.
- Achieve FOC for the Advanced Static RCS Measurement Project.
- Complete concept development and initiate engineering and manufacturing development for the Joint Modeling and Simulation System Project to provide interoperability among the Services' model and simulations.

Resource Enhancement Projects:

- Initiate Geometric Automated Video Enhanced Location System subproject to locate events / detonations needed to answer accuracy critical operational issues (COIs) for Army field artillery systems, Army airborne systems, and Marine non-lethal weapon systems.
- Initiate TAMD Interoperability Assessment Capability subproject to support PAC 3 and TAMD Family of Systems operational testing.
- Initiate Shallow Water ASW Target subproject to modify an existing, manned diesel-electric research submarine for use as an Anti-Submarine Warfare (ASW) target to support MK-54 and MK-48 ADCAP torpedo testing.
- Initiate Real-Time SAM Models for OT&E subproject to develop real-time surface-to-air (RTSAM) models to be used in virtual simulations being developed for the F-22 and JSF Test and Evaluation programs.
- Initiate Geometric Pairing subproject to design and develop a geometric pairing (pointing) device to be used with Air Defense weapons against aircraft during Comanche operational test.
- Initiate Instrumentation of the IBIS Hammer System for use in IDECM RFCM and IDECM Integration testing.
- Initiate the Electronic Order of Battle – Environment Generator System subproject to develop computer-driven simulations replicating selectable threat and friendly electronic environments for operational testing of the Team Portable Collection System (TPCS), the Mobile Electronic Warfare Support System (MEWSS), and the Technical Control and Analysis Center (TCAC).
- Continue Test Resource, Analysis, and Planning task to identify near-term OT shortfalls and validate the requirement for test capability.
- Continue to identify candidate subprojects based on critical OT&E test capability shortfalls.

- Continue the Weapons Analysis Facility Enhancement Resource (WAFER) subproject to develop threat submarine, surface combatant and surface launch torpedo models, complete model interfaces with new high speed computing hardware and Verify and Validate upgraded environmental, CM and threat target models.
- Continue the Radio Frequency Phase Distribution Upgrade (RF PDU) subproject which procures Advanced Tactical Electronic Warfare Environment Simulator (ATEWES) Microwave Phase Distribution (MDS) hardware and develops software subsystems to meet EA-6B Improved Capability (ICAP) III LR-700 receiver upgrade and planned follow-on interferometer receiver systems test.
- Continue the Joint OT&E Simulation Environment Facility (JOSEF) subproject.
- Complete the Reconfigurable Electro-Optical and Magnetic Expendable Target (REMET) subproject which will provide an expendable, electro-optical and magnetic signature replicate of the T-80 tank for use in Predator testing.
- Complete the QF-4 IR Characterization (IR CHAR) subproject to provide predictive codes and models of the infrared (IR) and ultraviolet (UV) characteristics of the QF-4 (DoD Full-Scale Aerial Target) to support AIM-9X testing.
- Complete the Missile Warning Test Capability (MWTC) subproject and support F-16 Common Missile Warning System testing.
- Complete the Dismounted Troop Instrumentation (DMT) subproject which reduces the size and weight of instrumentation required for Land Warrior testing.

FY 2001 Plans:

JIM Projects:

- Initiate the engineering and manufacturing development phase of the Advanced Mobile Object Acquisition System (AMOS) Project to provide the next generation multi-target acquisition system.
- Initiate the engineering and manufacturing development phase for the Land and Sea Vulnerability Test capability Project to provide an instrumented land-sea interface test location at the Aberdeen Test Center.
- Initiate the engineering and manufacturing development phase for the BIG CROW EW Enhancement Project to upgrade and modernize high power amplifiers, antennas, communications and data systems for the BIG CROW high power stand off jamming capability.
- Initiate the engineering and manufacturing development phase for the Electromagnetic Transient (EMT) Test and Evaluation Facility (EMTTEF) Project to provide a capability to assess aircraft hardness to EMT environments to meet MILSTD 464 requirements.
- Initiate the Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance (C4ISR) System Project to develop a capability to test increasingly complex multi-discipline fusion concepts.
- Continue to develop an integrated range architecture for range interoperability within the Foundation Initiatives 2010 Project.
- Continue engineering and manufacturing development phase of the Hardened Sub-miniature Telemetry and Sensor System Project.
- Continue the Electromagnetic Environmental Effects Generating System Project.
- Continue the Joint Advanced Missile Instrumentation Project.
- Continue development of the Multi-Service Target Control System (MSTCS) Project. This project builds on the usable design, hardware and software available from the canceled Next Generation Target Control System Project.

- Continue the Holloman High Speed Sled Track conventional upgrade.
- Continue development of the Advanced Range Telemetry Project.
- Continue development of the Joint Modeling and Simulation System Project to provide interoperability among the Services' model and simulations.
- Continue development of the Airborne Icing Project.
- Continue threat system simulator development efforts under the Threat System Simulator Development Project to improve integration and reduce potential duplication in threat and target modeling and validation efforts.
- Continue Test Technology Development and Demonstration Project.
- Continue Tri-Service and CTEIP support projects.
- Achieve FOC for the Transportable Range Augmentation Control System Project capability.
- Complete the Communication, Navigation, Identification Simulator and the Generic Radar Target Generator instrumentation projects within the Joint Installed System Test Facility Project.
- Complete Acoustic Signature Measurement and Unaugmented Tracking System (ASMUTS) and continue the Air-to-Ground and Ground Signature Measurement Systems (AGSMS and GSMS) developments within the Tri-Service Target Signature Measurement and Database System Project.
- Complete the concept development and initiate engineering and manufacturing development for the DECADE Radiation Test facility Enhancement Project to develop and field an upgraded, above ground ionizing radiation test capability to meet existing and emerging nuclear weapons effects test requirements.
- Complete concept development phase of GPS Signal Validation Project.
- Complete concept development phase of AEDC Instrumentation Project.

Resource Enhancement Projects:

- Continue to identify candidate subprojects based on critical OT&E test capability shortfalls.
- Continue Geometric Automated Video Enhanced Location System subproject to locate events / detonations needed to answer accuracy critical operational issues (COIs) for Army field artillery systems, Army airborne systems, and Marine non-lethal weapon systems.
- Complete TAMD Interoperability Assessment Capability subproject to support PAC 3 and TAMD Family of Systems operational testing.
- Continue Shallow Water ASW Target subproject to modify an existing, manned diesel-electric research submarine for use as an Anti Submarine Warfare (ASW) target to support Mk54 and Mk 48 ADCAP torpedo testing.
- Complete Real Time SAM Models for OT&E subproject to develop real-time surface-to-air (RTSAM) models to be used in virtual simulations being developed for the F-22 and JSF Test and Evaluation programs.
- Complete Geometric Pairing subproject to design and develop a geometric pairing (pointing) device to be used with Air Defense weapons against aircraft during Comanche operational test.
- Complete Instrumentation of the IBIS Hammer System for use in IDECM RFCM and IDECM Integration testing.

- Complete the Electronic Order of Battle – Environment Generator System subproject to develop computer-driven simulations replicating selectable threat and friendly electronic environments for operational testing of the Team Portable Collection System (TPCS), the Mobile Electronic Warfare Support System (MEWSS), and the Technical Control and Analysis Center (TCAC).
- Complete Joint OTE Simulation Environment Facility subproject which provides a representative warfare / contingency operations environment for OT&E of network centric C4I systems such as the Defense Message System and Global Command and Control System.
- Complete Weapons Analysis Facility Enhancement subproject to develop threat submarine, surface combatant and surface launched torpedo models, complete model interfaces with new high sped computing hardware and verify and validate upgraded environmental, countermeasure and threat target models.
- Complete the Radio Frequency Phase Distribution Upgrade (RF PDU) subproject which procures Advanced Tactical Electronic Warfare Simulator (ATEWES) Microwave Phase Distribution (MDS) hardware and develops software subsystems to meet EA-6B Improved Capability (ICAP) III LR-700 receiver upgrade and planned follow-on interferometer receiver systems test.

(U) PROGRAM CHANGE SUMMARY

($ in Millions)	FY 1999*	FY 2000*	FY 2001
FY 2000 President's Budget	131.669	121.741	121.943
Resource Enhancement Program (Congressional Reduction)		(5.000)	
Roadway Simulator		10.000	
Airborne Separation Video System		4.000	
Magdalena Ridge Observatory		3.500	
Appropriated Value	131.669	134.241	
Adjustments to Appropriated Value			
Government-wide Rescission		(1.375)	
Nonpay Purchase Inflation Adjustment			(542)
Current Budget Submit	131.699	132.866	121.401

C. (U) OTHER PROGRAM FUNDING NA