

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2)							February 1999			
DIRECTOR TEST AND EVALUATION, DEFENSE (0450) BUDGET ACTIVITY SIX			CENTRAL TEST AND EVALUATION INVESTMENT PROGRAM (CTEIP) PE 0604940D							
\$'s in Thousands	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	COST TO COMPLETE	TOTAL COST
PE 0604940D	118,718	131,669	121,741	121,943	117,234	126,503	129,148	131,818	Cont'g	Cont'g

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION

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 test support. 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. 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 1998 Accomplishments:

JIM Projects:

- Initiated and completed concept development phase of the High Speed Massive Memory Project.
- Initiated concept development phase of Target Modeling and Simulation Project.
- Initiated concept development phase of the Advanced Mobile Object Acquisition System (AMOS) Project.
- Initiated concept development and design of the Electromagnetic Environmental Effects Generating System Project.
- Initiated concept development for the Multi-Service Target Control System (MSTCS). This project builds on the usable design, hardware and software available from the canceled Next Generation Target Control System Project.
- Initiated concept development of conventional upgrade requirements for the Holloman High Speed Sled Track.
- Initiated concept development of the Airborne Icing Project.
- Continued development, fabrication and test of Transportable Range Augmentation Control System Project.
- Continued development of the Joint Installed System Test Facility instrumentation capability including:
 - Continued development of Multi-Spectral Scene Generator;
 - Continued hardware and software design for Communication, Navigation, Identification Simulator;
 - Completed design of prototype Generic Radar Target Generator; and
 - Continued development of Infrared Sensor Stimulator.
- Continued the Plume Measurement Capability Project.
- Continued engineering and manufacturing development of Translated GPS Range System.

- Continued to assess magnetic levitation technology for high speed test track applications.
- Continued concept development for increasing the efficiency and through put of telemetry channels within the Advanced Range Telemetry Project.
- Continued Test Technology Development and Demonstration Project.
- Continued Tri-Service, CTEIP support projects and MRTFB support.
- Consolidated the Joint Regional Range Complex, Virtual Test and Training Range, Common Display Analysis and processing System, and Test and Training Enabling Architecture projects into a single project entitled Foundation Initiatives 2010 (FI 2010). FI 2010 was designed to develop an integrated range architecture for interoperability among ranges.
- Established Airborne Separation Video effort as a stand-alone project. Completed development of the 512x512 pixel digital camera and continued development of color capability and increased resolution focal plane.
- Completed the Target Threat Validation Project by demonstrating a common target to threat validation process.
- Completed the Test Capability Benefit Analysis, initiated concept development and risk reduction effort for the Joint Advanced Missile Instrumentation Project.
- Completed the Weapons Modification and Simulation Capability Project, including the delivery of the Aircraft Stores Interface Manual and development of the F/A-18E/F and AH-64 Computerized Physical Fit Plus models.
- Completed the Bistatic Coherent Measurement System sub-project of Advanced Radar Cross Section Measurement System Project and initiated the Pylon Upgrade sub-project.
- Completed JADS Prototype Virtual Range Project.
- Completed concept development phase of the Tri-Service Target Signature Measurement and Database System Project.
- Completed DoD Software Alpha Test Bed Capability Project.
- Completed concept development phase of the Hardened Subminiature Telemetry and Sensor System Project.
- Terminated the Next Generation Target Control System Project.

Resource Enhancement Projects:

- Initiated Simulation Testing Operations Rehearsal Model sub-project to provide a battlefield environment for brigade and below C4I and tactical internet operational testing.
- Initiated Advanced Missile Instrumentation Package sub-project to accurately track a missile throughout the flight to include high kinematics environment.
- Initiated Ultraviolet Stimulator sub-project for open air testing of aircraft missile warning systems.
- Initiated Integrated Defensive Electronic Countermeasures (IDECM) Test Resources sub-project to develop a semi-active missile simulation capability for ECM testing.
- Initiated Realistic Operational Communications Scenarios (ROCS) sub-project to evaluate the performance of the Tactical Data Network and other Marine Air-to-Ground Task Force C4I systems.
- Initiated Laser Observation Test and Evaluation Capability (LOTEC) sub-project to provide a capability to verify the location of laser target designation data and correlate with fire control information.

- Initiated Realistic Operational Communications Scenarios (ROCS) sub-project to evaluate the performance of the Tactical Data Network and other Marine Air-to-Ground Task Force C4I systems.
- Initiated Laser Observation Test and Evaluation Capability (LOTEC) sub-project to provide a capability to verify the location of laser target designation data and correlate with fire control information.
- Initiated the Utah Test and Training Range Precision Guided Munitions sub-project to develop an extension to the TS-4 Target Complex.
- Initiated the Advanced Threat Instrumentation sub-project to instrument threat aircraft to provide real-time flight data into the range data and control infrastructure.
- Continued the Enhanced Threat System Replica (XM-43S) sub-project to instrument a threat weapon system.
- Continued Test Resource, Analysis and Planning task.
- Completed the GPS Jamming sub-project.
- Completed the Aerial Target Launch Ship to provide a self-propelled, maneuverable platform for launch of aerial targets.
- Completed modification of a second Big Crow aircraft to support EW testing.
- Completed the Missile on a Mountain sub-project to test aircraft systems against active and semi-active threat anti-aircraft missile systems.
- Completed Vulnerability Assessment sub-project.

FY 1999 Plans:

JIM Projects:

- Initiate full-scale development phase of the Hardened Sub-miniature Telemetry and Sensor System Project.
- Initiate full-scale development phase of the High Speed Massive Memory Project.
- Initiate concept development and development 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.
- Initiate concept development and development 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.
- Initiate and complete the design for a heavy-duty roadway simulator.
- Initiate 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.
- Initiate the full-scale development phase of the Tri-Service Target Signature Measurement and Database System Project.
- Initiate concept development and risk reduction efforts for the Joint Modeling and Simulation System Project to provide interoperability among the Services' model and simulations.
- Continue development, fabrication and test of Transportable Range Augmentation Control System Project.
- Continue 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.
- Continue the concept development phase of the Advanced Mobile Object Acquisition System (AMOS) Project to provide the next generation

multi-target acquisition system.

- Continue development of the Joint Installed System Test Facility instrumentation capability including:
 - Achieve IOC for Multi-Spectral Scene Generator;
 - Complete the Joint Data Link Simulator and continue hardware and software design for Joint Communications Simulator within the Communication, Navigation, Identification Simulator;
 - Continue fabrication and test of prototype Generic Radar Target Generator; and
 - Achieve IOC for Infrared Sensor Stimulator.
- Continue the concept development phase of the Multi-Service Target Control System (MSTCS) Project.
- Continue concept development of commercial upgrade of the Holloman High Speed Sled Track.
- Continue concept development of the Airborne Icing Project.
- Continue Test Technology Development and Demonstration Project.
- Continue Tri-Service and CTEIP support projects.
- Achieve FOC for the Plume Measurement Capability Project.
- Achieve IOC of the Translated GPS Range System capability.
- Transfer the responsibility for threat system simulator development efforts into the Threat System Simulator Development Project to improve integration and reduce potential duplication in threat and target modeling and validation efforts.
- Complete concept development and initiate full-scale development phase of the Target Modeling and Simulation Project.
- Complete the high resolution, color capable development and the low rate initial production for the starter kit camera sets within the Airborne Separation Video Project.
- Complete the concept development phase for the Electromagnetic Environmental Effects Generating System Project.
- Complete the concept development phase effort for the Joint Advanced Missile Instrumentation Project.
- Complete the Advanced Radar Cross Section Measurement System Project.
- Complete concept development and initiate the full-scale development phase for the Advanced Range Telemetry Project.

Resource Enhancement Projects:

- Initiate the Suite of Integrated Infrared Counter Measures/Common Missile Warning System (SIIRCM/CMWS) Test Instrumentation Project.
- Initiate the Dismounted Troop Instrumentation (DMTI) Project.
- Initiate the Weapons Analysis Facility Enhancement (WAFER) Project.
- Initiate the Radio Frequency Phase Distribution Upgrade (RF PDU) Project.
- Initiate the Missile Warning Test Capability (MWTC) Project.
- Initiate the QF-4 IR Characterization (IR CHAR) Project.
- Initiate the Joint OT&E Simulation Environment Facility (JOSEF) Project.
- Initiate the Reconfigurable Electro-Optical and Magnetic Expendable Target (REMET) Project.
- Continue Test Resource, Analysis and Planning task.

- Complete the Simulation Testing Operations Rehearsal Model sub-project, which provides a battlefield environment for brigade and below C4I and tactical internet operational testing.
- Complete 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.
- Complete the Enhanced Threat System Replica (XM-43S) sub-project to instrument a threat weapon system.
- Complete the Ultraviolet Stimulator sub-project, which provides an open-air test capability for aircraft missile-warning systems.
- Complete the Integrated Defensive Electronic Countermeasures (IDECM) Test Resources sub-project to develop a semi-active missile simulation capability for ECM testing.
- Complete 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.
- Complete the Laser Observation Test and Evaluation Capability (LOTEC) sub-project to provide a capability to verify the location of laser target designation data and correlate with fire control information.
- Complete the Utah Test and Training Range Precision Guided Munitions sub-project to provide the extension to the TS-4 Target Complex.
- Complete the Advanced Threat Instrumentation sub-project to instrument threat aircraft to provide real-time flight data into the range data and control infrastructure.

FY 2000 Plans:

JIM Projects:

- Initiate the full-scale development phase for the Electromagnetic Environmental Effects Generating System Project.
- Initiate the full-scale development phase for the Joint Advanced Missile Instrumentation Project.
- Initiate the full-scale development phase of the Multi-Service Target Control System (MSTCS).
- Initiate the Single Sensor Scoring Project to develop small volume, on-board instrumentation to provide accurate scalar and/or vector scoring of intercepts with closing velocities up to 20K feet per second.
- 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.
- Continue to develop an integrated range architecture for range interoperability within the Foundation Initiatives 2010 Project.
- Continue full-scale development phase of the Hardened Sub-miniature Telemetry and Sensor System Project.
- Continue the conventional Holloman High Speed Sled Track upgrade.
- Continue full-scale 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 the Aerial and Ground Generic Target Models within the Target Modeling and Simulation Project.
- Complete the concept development phase of the Advanced Mobile Object Acquisition System (AMOS) Project 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.
- Complete 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.
- Complete concept development and initiate full-scale development of the Airborne Icing Project.
- Complete concept development and initiate full-scale development for the Joint Modeling and Simulation System Project to provide interoperability among the Services' model and simulations.
- Complete the concept development and initiate full scale development for the Programmable Resource Control Project to provide an automatic radar mode management and power allocation control capability for the Multi-Object Tracking Radar.

Resource Enhancement Projects:

- Continue Test Resource, Analysis and Planning task.
- Continue near-term tasks based on critical OT&E test capability shortfalls.
- Complete the Dismounted Troop Instrumentation (DMT) Project.
- Complete the Weapons Analysis Facility Enhancement (WAFER) Project.
- Complete the Radio Frequency Phase Distribution Upgrade (RF PDU) Project.
- Complete the Reconfigurable Electro-Optical and Magnetic Expendable Target (REMET) Project.
- Complete the QF-4 IR Characterization (IR CHAR) Project.
- Complete the Joint OT&E Simulation Environment Facility (JOSEF) Project.

FY 2001 Plans:

JIM Projects:

- Initiate the full-scale development phase of the Advanced Mobile Object Acquisition System (AMOS) Project to provide the next generation multi-target acquisition system.
- Initiate the full-scale 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 full-scale 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 full-scale 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.
- Initiate the upgrade for the High Frequency Test Facility at Ft. Huachuca, AZ to provide an improved capability for testing in a controlled high RF frequency environment.
- Continue to develop an integrated range architecture for range interoperability within the Foundation Initiatives 2010 Project.
- Continue full-scale 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 development of the Programmable Resource Control Project to provide an automatic radar mode management and power allocation control capability for the Multi-Object Tracking Radar.
- 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 Sea Generic Target Model and complete the Target Modeling and Simulation Project.
- Complete the Communication, Navigation, Identification Simulator and the Generic Radar Target Generator instrumentation projects within the Joint Installed System Test Facility Project.
- Complete concept development for the Single Sensor Scoring Project to develop small volume, on-board instrumentation to provide accurate scalar and/or vector scoring of intercepts with closing velocities up to 20K feet per second.

- 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 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.

Resource Enhancement Projects:

- Continue Test Resource, Analysis and Planning task.
- Continue near term tasks based on critical OT&E test capability shortfalls.

(U) PROGRAM CHANGE SUMMARY

	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>
FY 1999 President's Budget	118,718	122,169	128,418	128,774
Appropriated Amount		131,669		
Adjustments				
FY 2000 OSD POM Adj			(4,276)	(4,282)
Purchase Inflation Adj			(2,401)	(2,549)
Current Budget Submit	118,718	131,669	121,741	121,943

C. (U) OTHER PROGRAM FUNDING NA

D. (U) SCHEDULE PROFILE NA