ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)

June 2001

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
6 - MANAGEMENT SUPPORT	**0605605A - DOD High Energy Laser Sys Test Fac (HELSTF)**	**E97**

COST (In Thousands)	FY 2000 Actual	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	Cost to Complete	Total Cost
E97 DOD HELSTF	29994	37177	14570	0	0	0	0	0	0	0

A. Mission Description and Budget Item Justification:

PLEASE NOTE: This administration has not addressed FY2003-2007 requirements. All FY 2003-2007 budget estimates included in this book are notional only and subject to change.

The High Energy Laser Systems Test Facility (HELSTF) provides a one-of-a-kind, broad based high energy laser (HEL) RDTE capability located at White Sands Missile Range (WSMR), New Mexico, in support of Tri-Service DoD HEL research and development, and damage, vulnerability, propagation, and lethality laser testing. The HELSTF's laser development support capabilities include a certified laser test range, a fully integrated laser support facility, an extensive array of fully instrumented test sites, the Sea Lite Beam Director (SLBD), the Mid-Infrared Advanced Chemical Laser (MIRACL), the Laser Device Demonstration (LDD), and the Low Power Chemical Laser (LPCL), and support for the Pulsed Laser Vulnerability Test System and the Tactical High Energy Laser (THEL) Advanced Concept Technology Demonstration. This multiple use facility supports testing of laser effects for targets ranging from scaled laboratory up through full scale flying target. In FY 2001, the HELSTF will also add a 10KW Solid State Heat Capacity Laser (SSHCL) testbed. In support of the SMDC Directed Energy Center of Excellence (DE CoE), a comprehensive lethality/propagation (L&P) test plan has been initiated to compare chemical vice solid state lasers for potential weapon developments to support the Army Transformation. This testing will produce a physics-level lethality database for further development of a military utility analysis to add HELs to force-on-force models and simulations. Army Transformation forces will require highly mobile HELs that can complement current Air Defense (AD) weapons and can provide protection from rockets, mortars, artillery, and tactical unmanned aerial vehicles. No current AD system can defeat these significant and growing threats. HELs and low power lasers also provide potential space control capabilities, which must be tested and will support Army deployed forces. HELSTF's transformation supports the S&T thrust of the Army Transformation Campaign Plan (TCP). This modernization will create a more efficient and versatile HEL T&E facility, which will support development and fielding of new materiel solutions for the Interim and Objective Force. This activity supports the objective transition path of the TCP.

FY 2000 Accomplishments

- 13679 Performed operation, maintenance and base operations support functions in support of the Army, Department of Defense and other agencies conducting high energy laser systems concept development studies and test and evaluation on candidate high energy laser weapons systems (Tactical High Energy Laser, Air Force Airborne and Space-Based Laser, and other laser programs, tracking for Ballistic Missile Defense Organization, and live-fire test programs). Upgraded HELSTF infrastructure to improve safety devices and the control system for the SLBD

FY 2000 Accomplishments (Continued)

- 9633 Stoodup the Directed Energy (DE) Center of Excellence; to include, the development of a solid state laser (SSL) pulse shaper, initiated a comprehensive lethality/propagation test program, continued development of the 10KW SSHCL device at Lawrence Livermore, prepared for integration of the SSHCL testbed at HELSTF, conducted a force-on-force modeling and simulation review, participated in wargames and experiments to analyze military utility of potential future laser weapons, developed HELSTF transformation plan, and initiated a detailed analysis of Electro-Chemical chemical Oxygen Iodine Laser (COIL) technology.
- 6682 Continued Solid State Laser (SSL) Program - Tested a flash-pumped three disk module SSL with full characterization. Initiated integration of laser diodes on single subscale disk to form diode pumped disk testbed.

Total 29994

FY 2001 Planned Program

- 16875 Perform operation, maintenance and base operations support functions in support of the Army, DoD and other agencies conducting high energy laser systems concept development studies and test and evaluation on candidate high energy laser weapons systems (THEL, its follow-on, mobile THEL, other laser programs, tracking, and live-fire test programs). Conduct small scale lethality testing as well as propagation experiments using the 10KW flash lamp pumped SSHCL to support the L&P test program. Continue military utility analysis, fully integrate the SSHCL 10KW testbed, continue safety control system upgrades to integrate other HEL technologies, and initiate development of a mobile diagnostic capability to support HEL testing on other parts of WSMR or at other DoD test facilities.
- 19227 Continue Solid State Laser (SSL) Program - Test laser diode pumped single subscale disk. Integrate laser diodes onto two full-scale disks. Diodes will be lensed at 45 degrees in compact architecture. This limited gain system will be fully characterized. Laser diodes will be produced at volume and will be lensed. Additional technology supporting mobilized prototype will be advanced including large scale crystal development, compact pulsed power, and thermal control. $5M will be used to produce the laser diodes. $3M will be used by the Electro Optics Center to test and lense the laser diodes.
- 1075 Small Business Innovative Research/Small Business Technology Transfer Programs

Total 37177

FY 2002 Planned Program

- 14570 Perform operation, maintenance and base operations support functions in support of the Army, DoD and other agencies conducting high energy laser systems concept development studies and test and evaluation on candidate high energy laser weapons systems (THEL, mobile THEL, Airborne Tactical Laser (ATL), ZEUS, Air Force Airborne and Space-Based laser, and other Laser programs, tracking, and live-fire test programs). Continue lethality testing as well as propagation experiments using the 10KW flash lamp pumped SSL in accordance with the L&P test program. Continue military utility analysis (to include participation in JFCOM Millennium Challenge 02), continue safety and control system upgrades to integrate other HEL technologies, and development of a mobile diagnostic capability.

Total 14570

B. Program Change Summary	FY 2000	FY 2001	FY 2002	FY 2003
Previous President's Budget (FY2001 PB)	30803	14521	14306	0
Appropriated Value	31230	37521	0	0
Adjustments to Appropriated Value	0	0	0	0
a. Congressional General Reductions	0	0	0	0
b. SBIR / STTR	-809	0	0	0
c. Omnibus or Other Above Threshold Reduction	-125	0	0	0
d. Below Threshold Reprogramming	0	0	0	0
e. Rescissions	-302	-344	0	0
Adjustments to Budget Years Since FY2001 PB	0	0	264	0
Current Budget Submit (FY 2002/2003 PB)	29994	37177	14570	0