

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

February 2002

BUDGET ACTIVITY

PE NUMBER AND TITLE

5 - Engineering and manufacturing development

0604716A - TERRAIN INFORMATION - ENG DEV

COST (In Thousands)	FY 2001 Actual	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	7027	8766	8232	7094	6066	5908	5896	0	57505
579 FIELD ARMY MAP SYS ED	6544	8766	8232	7094	6066	5908	5896	0	57022
598 HIGH VOLUME MAP PRODUCTION EQUIP (HVMPE)	483	0	0	0	0	0	0	0	483

A. Mission Description and Budget Item Justification: The Project Director for Combat Terrain Information Systems (PD CTIS) is responsible for developing topographic support systems for the Army. CTIS systems provide automated terrain analysis, terrain data management and graphics reproduction in support of Intelligence Preparation of the Battlefield (IPB), Command and Control, Terrain Visualization, weapons and sensor systems, and other topographic information customers. CTIS consists of the Digital Topographic Support System - Light (DTSS-L), DTSS-Heavy (DTSS-H), DTSS-Deployable (DTSS-D), DTSS-Base (DTSS-B) and the High Volume Map Production (HVMP) equipment. A Pre-Planned Product Improvement (P3I) program will be conducted to address technology insertion, technology refreshment of Commercial Off-the-Shelf equipment and modernization initiatives for the Topographic Support System (TSS). Experimentation results from the Div XXI Army Warfighter Experiment (AWE) identified technological enhancements necessary to support the First and Second Digital Divisions (FDD) and the Transformation Brigades. CTIS systems support the Legacy to Objective transition path of the Transformation Campaign Plan (CTP).

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<u>B. Program Change Summary</u>	FY 2001	FY 2002	FY 2003
Previous President's Budget (FY2002 PB)	6027	8840	8252
Appropriated Value	6082	8840	0
Adjustments to Appropriated Value	0	0	0
a. Congressional General Reductions	0	-74	0
b. SBIR / STTR	-15	0	0
c. Omnibus or Other Above Threshold Reductions	0	0	0
d. Below Threshold Reprogramming	1015	0	0
e. Rescissions	-55	0	0
Adjustments to Budget Years Since FY2002/003 PB	0	0	-20
Current Budget Submit (FY 2003 PB)	7027	8766	8232

FY01 - Additional funding supports initiation of Research and Development of an automated tactical engineer command and control, mission planning and decision support capability.

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COST (In Thousands)	FY 2001 Actual	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	Cost to Complete	Total Cost
579 FIELD ARMY MAP SYS ED	6544	8766	8232	7094	6066	5908	5896	0	57022

A. Mission Description and Budget Item Justification: This Project funds development of the DTSS-L (HMMWV), DTSS-H (5-ton), DTSS-D (COTS, Transportable), DTSS-B (COTS, Garrison) and HVMP (FY02/03). The current terrain analysis, topographic and reproduction support provided by Army Engineer Terrain Teams is a slow, labor intensive process that does not meet the needs of the Force XXI battlefield on which the commander must have the ability to rapidly obtain terrain information and topographic products. The DTSS will provide digital maps and updates to commanders and weapons platforms in support of mission planning (e.g., imagery exploitation, Cover and Concealment, other IPB), rehearsal (e.g., 3D fly through, simulations) and execution (e.g., Common Tactical Picture, route planning). The DTSS automates terrain analysis and visualization, data base development/update/management/distribution, and graphics reproduction. The Combat Terrain Information Systems (CTIS) Modernization Plan emphasizes the development of a combined, integrated, tactically deployable, fully autonomous terrain analysis and graphics reproduction capability. These capabilities are being provided in 5-ton (DTSS-H) and HMMWV (DTSS-L) configurations. Fielding of the DTSS-H was completed in Dec 99. The DTSS-H systems will eventually be replaced by DTSS-Ls as part of a HQDA approved technology refreshment program. The DTSS-L is highly mobile and capable of supporting a full range of military operations, as well as peacetime stability and support operations. Both the DTSS-L and DTSS-H have been Type Classified-Standard. The DTSS-D provides a Commercial Off the Shelf (COTS) configuration that is capable of operating all of the terrain analysis software. The DTSS-D consists of transportable workstations and peripherals that can be set up to augment the tactical configurations. The DTSS-D does not include tactically deployable shelters and vehicles or tactical communications. The DTSS-D has been Type Classified-Standard. The DTSS-B was procured in response to a USAEUR initiative to develop the capability to generate terrain information over sparsely mapped areas to support training, mission rehearsal and contingency operations. The DTSS-B is designed to augment NIMA capabilities at the EAC level by providing quick response, special purpose mapping, terrain analysis and data base generation. The DTSS-B currently includes a Top Secret - SCI component that is capable of handling national technical means information in a secure environment. The DTSS-B has been Type Classified-Standard. The HVMP will provide a tactical capability to rapidly reproduce large volumes of topographic materiel. HVMP will be capable of reproducing information from a variety of digital and hardcopy sources via direct digital interfaces. CTIS systems will be deployed from Brigade through EAC. Products developed as part of the CTIS RDT&E program (e.g., improved Army Battle Command Systems (ABCS) interoperability, migration to Joint Technical Architecture - Army (JTA-A) and Defense Information Infrastructure Common Operating Environment (DII COE), improved data base management and distribution, automated feature extraction, improved tactical decision aid functionality, rapid terrain visualization, improved graphics reproduction) will be incorporated into all of the DTSS hardware and software architectures. Additionally, the TSS is outdated and must be modernized to keep pace with Army digitization. The modernization initiatives associated with the TSS include updating the Operations, Distribution and Photomechanical Sections with computer workstations, copiers and printers. The Survey section will be downsized to a HMMWV configuration and the Drafting section will be updated to include digital cartographic equipment.

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579**FY 2001 Accomplishments:**

- 5044 Continued P3I development for DTSS - map server architecture, rapid terrain visualization, automated feature extraction, embedded training, exploitation of new data sources, TSS upgrades
- 500 Conducted evaluation of system upgrade alternatives for follow-on DTSS-L production contract
- 1000 Initiate research and development of an automated tactical engineer command and control, mission planning and decision support capability.

Total 6544

FY 2002 Planned Program

- 7166 Continue P3I development for DTSS - map server/data dissemination improvements, improved data base design (Geodata model), Tactical Decision Aid (TDA) enhancements (integrated weather and mobility), automated feature extraction
- 1600 Continue Engineering and Manufacturing Development (EMD) of HVMP (initiated in FY01 under project D598)(Project D598 was combined with D579 in FY02 and designated D579)

Total 8766

FY 2003 Planned Program

- 7842 Continue P3I development for DTSS - TDA enhancements (hydrology), automated feature extraction, data conflation, Product and data quality assessments
- 250 Complete EMD for HVMP
- 140 ABCS Systems Engineering & Integration (SE&I)

Total 8232

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B. Other Program Funding Summary

	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	To Compl	Total Cost
OPA - KA2550 - DTSS	20144	19970	14089	13691	6934	6922	4934	92200	203279

C. Acquisition Strategy: The Acquisition Strategy for the DTSS - Light EMD phase was to utilize Army standard equipment and the Common Hardware/Software (CHS) computer workstations in conjunction with non-development item (NDI) components to develop an integrated baseline hardware configuration. The previous Combat Terrain Information Systems (CTIS) System Engineering and Integration (SE&I) contractor (Lockheed Martin Corp) executed the EMD phase, performing system integration, and provided units for formal test and evaluation. Milestone III for the DTSS-L was successfully completed in Jan 98. Production of the DTSS-L commenced in February 1999. Previously existing DTSS units have been upgraded to a 5-ton ISO 20-foot shelter configuration (DTSS-H). Funding to support technology refreshment of the DTSS-H (DTSS-H will be replaced by DTSS-L in FY02/03 timeframe) and DTSS-L has been programmed on a 5-yr. cycle. Acquisition of the DTSS-D and DTSS-B was completed in FY 1995 and FY 1996, respectively. Based upon CINC, TRADOC and PEO C3S User Evaluation approvals, the DTSS-D was Type Classified - Standard and added to the gaining unit's Table of Organization and Equipment. Funding to support a 5-yr. technology refreshment program for the DTSS-D commenced in FY 2000 and for the DTSS-B commences in FY 2002. The DTSS-B has also been Type Classified-Standard. The acquisition of the DTSS-D and DTSS-B relied upon existing contracts and commercial-off-the-shelf to the fullest extent possible. The Project Office will continue with this strategy for all technology refreshment programs. The Acquisition Strategy for the HVMP is to utilize COTS and NDI components integrated with Army standard hardware (e.g., trucks, shelters, power equipment) to develop an integrated baseline. The pre-planned product improvement program (P3I) will be executed with the current SE&I contractor (Northrup Grumman, Inc.). The contracting strategy for the DTSS-Light program was to execute the EMD phase through the previous SE&I contractor, Lockheed Martin Corporation. A Competitive Cost Plus Fixed Fee (CPFF) contract was awarded for both the previous and existing CTIS SE&I contracts. A competitively awarded, Firm Fixed Price (FFP) contract was awarded to Sechan Electronics, Inc. for the Full Rate Production of the DTSS-Light. Production of the DTSS-H was accomplished through FFP production contracts with Lockheed Martin Corporation and SFA Inc. The contracting strategy for the HVMP is to execute the EMD phase through the current SE&I contractor. A competitively awarded FFP contract is anticipated for the Full Rate Production of the HVMP. The computer workstations for CTIS programs are being procured through the project manager for CHS.

D. Schedule Profile

	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007
Award DTSS-L Production Contract/Options	1Q	2Q	1Q				
DTSS-L Production	1-4Q	1-4Q	1-4Q				
Continue DTSS P3I Program	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q
Field DTSS-L	1-4Q	1-4Q	1-4Q	1-4Q			
Technology Refreshment and Fielding of DTSS-D	1-3Q						
Field DTSS Build 7.0 Software	3Q						
DTSS-L IOC	3Q						

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D. Schedule Profile (continued)	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>
Technology Refreshment and Fielding of DTSS-B		1-3Q					
Continue EMD for HVMP (initiated in FY01)	4Q	1-4Q					
Milestone III for HVMP			1Q				
Production of HVMP			2-4Q	1-4Q			
Field DTSS Build 8.0 Software			1Q				
Field DTSS Build X.X Software				2Q	2Q	2Q	2Q
Technology Refreshment of DTSS-L				2-4Q	1-4Q	1-4Q	1-4Q
Conduct Technology Refreshment of Institutional Training Classroom		1-2Q					
Technology Refreshment and Fielding of DTSS-D					3-4Q	1-2Q	
Technology Refreshment and Fielding of DTSS-B							3-4Q

ARMY RDT&E COST ANALYSIS(R-3)

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I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2001 Cost	FY 2001 Award Date	FY 2002 Cost	FY 2002 Award Date	FY 2003 Cost	FY 2003 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a . Primary Hardware Development	C/CPFF C/CPFF	Loral Corp, OH Lockheed Martin, PA	23280	0		0		0		0	23280	23280
b . Primary Hardware Development	C/CPFF	Northrup Grumman, Chantilly, VA	850	535	1Q	1910	1Q	1500	1Q	Continue	Continue	Continue
c . ABCS SE&I	MIPR	PEO C3S, Ft. Monmouth, NJ	150	0		0		140	1Q	0	290	290
Subtotal:			24280	535		1910		1640		Continue	Continue	Continue

II. Support Cost	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2001 Cost	FY 2001 Award Date	FY 2002 Cost	FY 2002 Award Date	FY 2003 Cost	FY 2003 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a . Software Development	C/CPFF	Loral Corp, OH Lockheed Martin, PA	34919	0		0		0		0	34919	34919
b . Software Development	C/CPFF	Northrup Grumman, Chantilly, VA	5005	4781	1Q	5271	1Q	5067	1Q	Continue	Continue	Continue
Subtotal:			39924	4781		5271		5067		Continue	Continue	Continue

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III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2001 Cost	FY 2001 Award Date	FY 2002 Cost	FY 2002 Award Date	FY 2003 Cost	FY 2003 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a . Acceptance Testing	MIPR	TECOM	705	0		50	2Q	50	2Q	Continue	Continue	Continue
Subtotal:			705	0		50		50		Continue	Continue	Continue

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2001 Cost	FY 2001 Award Date	FY 2002 Cost	FY 2002 Award Date	FY 2003 Cost	FY 2003 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a . Contractor Eng Support	MIPR	MITRE, McLean, VA	4817	200	1Q	200	1Q	200	1Q	Continue	Continue	Continue
b . Government Eng Support	MIPR	Various	16068	200	1Q	460	1Q	400	1Q	Continue	Continue	Continue
c . Program Mgmt Support*	Delivery Orders	Various	2530	150	1Q	175	1Q	175	1Q	Continue	Continue	Continue
d . Program Mgmt Personnel	MIPR	TEC, Ft. Belvoir, VA	10402	678	1Q	700	1Q	700	1Q	Continue	Continue	Continue
Subtotal:			33817	1228		1535		1475		Continue	Continue	Continue

Remarks: *This category primarily covers Office Automation

Project Total Cost:			98726	6544		8766		8232		Continue	Continue	Continue
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