

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

February 2005

BUDGET ACTIVITY

5 - System Development and Demonstration

PE NUMBER AND TITLE

0604□46A - Automatic Test Equipment Development

COST (In Thousands)	FY 2004 Actual	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	11777	8748	54	7912	4909	11605	11824	11963	Continuing	Continuing
L59 DIAGNOST/EXPERT SYS DE	10765	7661	54	5268	1449	8054	8217	8282	Continuing	Continuing
L65 TEST EQUIPMENT DEVELOPMENT	1012	1087	0	2644	3460	3551	3607	3681	Continuing	Continuing

A. Mission Description and Budget Item Justification: This program element (PE) provides for development and testing of general-purpose test equipment; advanced technology test and measurement techniques, standards, and systems; and state-of-the-art diagnostics and prognostics technology, software, and systems to support the increasingly complex electronic components of the Army's new and upgraded weapon systems. It focuses on implementation of commercial test and diagnostic technologies across multiple weapon platforms to minimize the cost of troubleshooting and maintenance of Army equipment in the field.

This PE funds development and evolution of general-purpose automatic test and diagnostic equipment and the enhancements required to overcome deficiencies and voids in organic test and diagnostic capabilities and to ensure the operational readiness, accuracy, effectiveness, and safety of Army combat and combat support systems. Modular, reconfigurable automatic and semi-automatic systems are developed under this program to satisfy weapon system test and diagnostics requirements. The Next Generation Automatic Test System (NGATS), also known as the Base Shop Test Facility (BSTF) (V)6, currently under development will provide state-of-the-art test and diagnostic capabilities to support current and future weapon systems. The NGATS will replace several aging automatic test systems which are becoming prohibitively expensive to operate and maintain. This program also provides for continued development and improvement of calibration and measurement equipment with emphasis on incorporation of digital electronics and tailoring of configurations to improve deployability, mobility, and survivability of the support equipment and to reduce the logistics burdens associated with maintaining Army combat systems in wartime and contingency operations. Artificial intelligence and anticipatory maintenance applications are being developed to support the integration of self-diagnostic capabilities in Army weapons and support systems. The goal of these efforts is to reduce logistics burdens and improve readiness by minimizing the need for external testers and improving the troubleshooting abilities of soldiers in the field.

The Army's participation in the Agile Rapid Global Combat Support (ARGCS) Advanced Concept Technology Demonstration (ACTD) is being funded under this PE. The ARGCS ACTD is developing a common automatic test systems architecture that will enhance portability of all Services' test program sets and reduce Defense expenditures for test equipment and personnel.

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	FY 2005	FY 2006	FY 2007
Previous President's Budget (FY 2005)	4713	7514	7893
Current Budget (FY 2006/2007 PB)	8748	54	7912
Total Adjustments	4035	-7460	19
Net of Program/Database Changes			
Congressional Program Reductions	-128		
Congressional Rescissions			
Congressional Increases	4400		
Reprogrammings			
SBIR/STTR Transfer	-237		
Adjustments to Budget Years		-7460	19

FY06 - Funds realigned (\$7.460M) to higher Army priority requirements.

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0604□46A - Automatic Test Equipment Development

PROJECT

L5□

COST (In Thousands)	FY 2004 Actual	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	Cost to Complete	Total Cost
L59 DIAGNOST/EXPERT SYS DE	10765	7661	54	5268	1449	8054	8217	8282	Continuing	Continuing

A. Mission Description and Budget Item Justification: This project funds development of and system enhancements for the Next Generation Automatic Test System (NGATS). The NGATS, also known as the Base Shop Test Facility (BSTF) (V)6, is a general-purpose automatic test system that will provide test and diagnostic capabilities required to support current and future weapons and combat support systems and will facilitate retirement of aging and obsolete test equipment that is imposing increasing logistics and operations and support cost burdens. This project provides for continuing efforts to upgrade and improve general-purpose automatic test equipment to satisfy test and diagnostic requirements of the Army's new and upgraded weapon systems; development and adaptation of automatic test equipment required to overcome existing deficiencies and voids in organic test and diagnostic capabilities; development and testing of common procedures utilizing existing test program sets and software applications; and market surveys of commercially available test equipment, methods, and procedures to determine applicability to Army requirements. The test and diagnostic systems and procedures developed under this project are essential for ensuring the operational readiness, accuracy, and effectiveness of the Army's warfighting systems. This project also funds the Army's participation in the Agile Rapid Global Combat Support (ARGCS) Advanced Concept Technology Demonstration (ACTD) which is developing a common automatic test systems architecture that will enhance portability of all Services' test program sets and reduce Defense expenditures for test equipment and personnel.

Accomplishments/Planned Program	FY 2004	FY 2005	FY 2006	FY 2007
Develop and test a rapidly deployable automatic test system	10401	5069	54	3907
Provide technical input and evaluate proposals/specifications for ARGCS ACTD	250	500	0	500
Develop and evaluate new software applications for the IFTE	114	2092	0	861
Totals	10765	7661	54	5268

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PROJECT

L5□

B. Other Program Funding Summary

	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	To Compl	Total Cost
OPA3, MB4000, Integrated Family of Test Equipment (IFTE)	28519	10613	21605	48300	80447	88037	77890	85086	Continuing	Continuing

C. Acquisition Strategy: This developmental project consists of cooperative in-house and competitive and sole-source contractual actions. When the necessary expertise and capability are available within the Department of Defense, services required for the individual development projects are ordered from the government source; otherwise commercial contracts are used. Equipment required for developmental projects is obtained by contract from the commercial supplier. Developmental efforts for the Next Generation Automatic Test System are being completed under a sole-source contract awarded to the prime contractor for the Integrated Family of Test Equipment off-platform testers.

ARMY RDT&E COST ANALYSIS(R3)									February 2005			
BUDGET ACTIVITY 5 - System Development and Demonstration					PE NUMBER AND TITLE 0604 46A - Automatic Test Equipment Development					PROJECT L5		
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award Date	FY 2006 Cost	FY 2006 Award Date	FY 2007 Cost	FY 2007 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a . Prototype Development	SS/CPFF	Northrop Grumman, Rolling Meadows, IL	9420	2092	2Q	54	2Q	974	2Q	Continue	Continue	Continue
b . Hardware Development	Various	Various	45954	1046	1-4Q	0		861	2Q	Continue	Continue	Continue
c . Software Development - IFTE	Various	Various	2147	2092	2Q	0		861	2Q	Continue	Continue	Continue
Subtotal:			57521	5230		54		2696		Continue	Continue	Continue
II. Support Cost	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award Date	FY 2006 Cost	FY 2006 Award Date	FY 2007 Cost	FY 2007 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a . Project Management		Various	41250	1810	1-4Q	0		1398	1-4Q	Continue	Continue	Continue
b . Other Direct		Various	888	505	1-4Q	0		446	1-4Q	Continue	Continue	Continue
Subtotal:			42138	2315		0		1844		Continue	Continue	Continue

ARMY RDT&E COST ANALYSIS(R3)									February 2005			
BUDGET ACTIVITY 5 - System Development and Demonstration					PE NUMBER AND TITLE 0604 46A - Automatic Test Equipment Development					PROJECT L5		
III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award Date	FY 2006 Cost	FY 2006 Award Date	FY 2007 Cost	FY 2007 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a . Operational Testing	Various	Various	2814	0		0		200	2Q	Continue	Continue	Continue
b . Developmental Testing	Various	Various	481	116	2Q	0		528	2Q	Continue	Continue	Continue
Subtotal:			3295	116		0		728		Continue	Continue	Continue
IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award Date	FY 2006 Cost	FY 2006 Award Date	FY 2007 Cost	FY 2007 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Subtotal:			0	0		0		0		0	0	0
Project Total Cost:			102954	7661		54		5268		Continue	Continue	Continue

Schedule Profile (R4 Exhibit)																				February 2005												
BUDGET ACTIVITY 5 - System Development and Demonstration										PE NUMBER AND TITLE 0604 46A - Automatic Test Equipment Development												PROJECT L5										
Event Name	FY 04				FY 05				FY 06				FY 07				FY 08				FY 09				FY 10				FY 11			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4				
BSTF (V) 6 PROTOTYPE DEVELOPMENT																																
BSTF (V) 6 SYSTEM DEVELOPMENT AND DEMONSTRATION (SDD), CONTINUED IN FY07																																
BSTF (V) 6 TESTING																																
BSTF (V) 6 TPS COMPATIBILITY TESTING, CONTINUED IN FY07																																

Schedule Detail (R4a Exhibit)							February 2005	
BUDGET ACTIVITY 5 - System Development and Demonstration				PE NUMBER AND TITLE 0604 46A - Automatic Test Equipment Development				PROJECT L5
<u>Schedule Detail</u>	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
BSTF (V)6 PROTOTYPE DEVELOPMENT	1-4Q	1-4Q	1-4Q	1-4Q				
BSTF (V)6 SYSTEM DEV AND DEMO (SDD)	1-4Q	1-4Q		1-4Q	1-4Q	1-4Q	1-4Q	1-4Q
BSTF (V)6 TESTING					4Q	1-4Q		
BSTF (V)6 TPS COMPATIBILITY TESTING	1-4Q	1-4Q		1-4Q	1-4Q	1-4Q	1-4Q	1-4Q

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0604 46A - Automatic Test Equipment Development

PROJECT

L65

COST (In Thousands)	FY 2004 Actual	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	Cost to Complete	Total Cost
L65 TEST EQUIPMENT DEVELOPMENT	1012	1087	0	2644	3460	3551	3607	3681	Continuing	Continuing

A. Mission Description and Budget Item Justification: This project supports development and demonstration of state-of-the-art general-purpose test, measurement, and diagnostic equipment (TMDE), and it provides for feasibility studies, market research, inventory analyses, bid sample testing, and prototyping to support TMDE acquisitions. Primary efforts under this project include improvement of test and measurement equipment performance envelopes via preplanned product improvements (P3I), development and validation of test procedures, evaluation of commercial and nondevelopmental TMDE with potential to meet weapon system maintenance requirements, and development and evaluation of advanced technology and higher reliability electronic test equipment. Preplanned product improvements are underway to current test and measurement systems to overcome deficiencies and voids in existing organic capabilities and to ensure the operational readiness, accuracy, effectiveness, and safety of Army weapons and combat support systems. These improvements will employ reconfigurable open electronics architecture and computer-based instrumentation wherever feasible and will be focused on reducing test equipment footprints to improve deployability and mobility in the area of operations.

Accomplishments/Planned Program	FY 2004	FY 2005	FY 2006	FY 2007
Develop hardware via preplanned product improvements to enhance TMDE systems' performance capabilities.	270	236	0	541
Test and integrate hardware developed for preplanned product improvements.	130	320	0	733
Develop, evaluate, and integrate test and measurement equipment.	462	361	0	980
Develop and evaluate test and calibration procedures.	50	70	0	160
Perform market research and evaluation of commercial equipment and develop performance specifications for acquisitions.	100	100	0	230
Totals	1012	1087	0	2644

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0604□46A - Automatic Test Equipment Development

PROJECT

L65

B. Other Program Funding Summary

	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	To Compl	Total Cost
OPA3, N10000, Calibration Sets Equipment	17525	0	0	2048	0	0	0	0	0	19573
OPA3, N11000, Test Equipment Modernization	14091	5194	471	12314	20903	21632	22764	21492	Continuing	Continuing

C. Acquisition Strategy: Projects are focused on use of commercial and nondevelopmental item technologies. When programmatic and engineering expertise and capability are available within the Department of Defense, services required for the individual development projects are acquired from the government source; otherwise, commercial services contracts are used to provide these capabilities. Equipment required for development projects is obtained from the commercial supplier. Candidate commercial equipment and nondevelopmental items are identified and evaluated through market research and government testing and evaluation.

ARMY RDT&E COST ANALYSIS(R3)									February 2005			
BUDGET ACTIVITY 5 - System Development and Demonstration					PE NUMBER AND TITLE 0604□46A - Automatic Test Equipment Development					PROJECT L65		
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award Date	FY 2006 Cost	FY 2006 Award Date	FY 2007 Cost	FY 2007 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a . Systems Engineering	Various	Various	5573	375	1-2Q	0		1012	1-2Q	Continue	Continue	Continue
b . Procedures Development and Evaluation	Various	Various	1848	70	1-3Q	0		160	1-3Q	Continue	Continue	Continue
c . Government Engineering		Various	1196	145	1-4Q	0		332	1-4Q	Continue	Continue	Continue
Subtotal:			8617	590		0		1504		Continue	Continue	Continue
II. Support Cost	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award Date	FY 2006 Cost	FY 2006 Award Date	FY 2007 Cost	FY 2007 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a . Technical Support Services	Various	Various	638	100	2Q	0		229	2Q	Continue	Continue	Continue
Subtotal:			638	100		0		229		Continue	Continue	Continue

ARMY RDT&E COST ANALYSIS(R3)									February 2005			
BUDGET ACTIVITY 5 - System Development and Demonstration					PE NUMBER AND TITLE 0604□46A - Automatic Test Equipment Development					PROJECT L65		
III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award Date	FY 2006 Cost	FY 2006 Award Date	FY 2007 Cost	FY 2007 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a . Testing	Various	Various	802	250	1-2Q	0		573	1-2Q	Continue	Continue	Continue
Subtotal:			802	250		0		573		Continue	Continue	Continue
IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award Date	FY 2006 Cost	FY 2006 Award Date	FY 2007 Cost	FY 2007 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a . Program Management Personnel		Various	397	147	1-4Q	0		338	1-4Q	Continue	Continue	Continue
Subtotal:			397	147		0		338		Continue	Continue	Continue
Project Total Cost:			10454	1087		0		2644		Continue	Continue	Continue

Schedule Profile (R4 Exhibit)																				February 2005												
BUDGET ACTIVITY 5 - System Development and Demonstration										PE NUMBER AND TITLE 0604□46A - Automatic Test Equipment Development																PROJECT L65						
Event Name	FY 04				FY 05				FY 06				FY 0□				FY 0□				FY 0□				FY 10				FY 11			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4				
P3I - TMDE DEVELOPMENT																																
P3I - TESTING																																
P3I - INTEGRATION																																
TEST & MEASUREMENT EQUIPMENT - DEVELOPMENT, CONTINUED IN FY07																																
TEST & MEASUREMENT EQUIPMENT - TESTING, CONTINUED IN FY07																																
MARKET RESEARCH & EVAL OF COMMERCIAL EQUIPMENT; DEVELOPMENT OF PERF SPECS, CONTINUED IN FY07																																

Schedule Detail (R4a Exhibit)

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PROJECT

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<u>Schedule Detail</u>	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
CALSET 2000 Initial Operational Capability								
P3I - TMDE Development	1-3Q							
P3I - TESTING	1-4Q							
P3I - INTEGRATION	1-4Q							
Test and Measurement Equipment - Development		1-4Q		1-4Q	1-4Q	1-4Q	1-4Q	1-4Q
Test and Measurement Equipment - Testing		1-4Q		1-4Q	1-4Q	1-4Q	1-4Q	1-4Q
Market research and evaluation of commercial equipment; development of performance specifications	1-4Q	1-4Q		1-4Q	1-4Q	1-4Q	1-4Q	1-4Q

This is a continuing program of developmental activities to provide a means for satisfying test and diagnostic support requirements of Army weapons and support systems. It consists of a number of similar and related efforts, many of which do not entail distinct major milestones.