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ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 1999
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BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604649A Engineer Mobility Equipment Development
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COST (In Thousands)	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	52388	70590	58321	37741	18499	0	0	0	0	353385
DG15 DG15	387	1482	0	0	0	0	0	0	0	3088
DG25 M1 Breacher	40730	58027	58158	37741	18499	0	0	0	0	251392
DG26 Heavy Assault Bridge	11271	11081	163	0	0	0	0	0	0	98905

A. Mission Description and Budget Item Justification: This Program Element (PE) supports the development of new, advanced combat engineer systems that will have mobility characteristics comparable to the maneuver forces supported. The programs included in this PE are the Grizzly (M1 Breacher) and the Wolverine (Heavy Assault Bridge). The Grizzly base vehicle is an M1 Abrams Tank chassis whereas the Wolverine base vehicle is the M1A2 SEP Abrams Tank chassis. The Grizzly will integrate a versatile/survivable full-width mine clearing blade with automatic depth control, a power driven arm, and an armored commander's control station on the chassis. The Wolverine will integrate a bridge capable of supporting Military Load Class (MLC) 70 loads crossing a 24 meter gap (26 meter bridge) and a software controlled launching mechanism.

B. Program Change Summary	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>
Previous President's Budget (FY 1999 PB)	50585	63069	58914	39210
Appropriated Value	52196	71069		
Adjustments to Appropriated Value				
a. Congressional General Reductions	-1611	-479		
b. SBIR / STTR	-1270			
c. Omnibus or Other Above Threshold Reductions	-421			
d. Below Threshold Reprogramming	3494			
e. Rescissions				
Adjustments to Budget Years Since FY 1999 PB			-593	-1469
Current Budget Submit (FY 2000 / 2001 PB)	52388	70590	58321	37741

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BUDGET ACTIVITY 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604649A Engineer Mobility Equipment Development				PROJECT DG25		
COST (In Thousands)	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
DG25 M1 Breacher	40730	58027	58158	37741	18499	0	0	0	0	251392
<p>A. <u>Mission Description and Justification:</u> The Grizzly (M1 Breacher) will provide the Combat Engineer with significantly improved mission effectiveness and crew/vehicle survivability while clearing minefields and removing complex natural and man-made obstacles at the forward edge of the battlefield. The Grizzly will be capable of moving with, and be as survivable as, the force it is supporting. The system provides a critical resource for executing in stride breaches, supporting the Force XXI maneuver commander's goals of information and maneuver dominance on the battlefield. The current method of breaching obstacles is to coordinate the employment of line charges, bridges, plows, rollers and even soldiers on the ground in a very dangerous and complex mission. The Grizzly replaces all of this with a single, survivable breach platform that gives the Combat Engineer a capability that does not currently exist in today's complex obstacle breaching operations, and will facilitate successful execution of ground combat mission requirements by maneuver forces. Funding in this phase supports vehicle system technical evolution to meet operational requirements prior to production, production planning, and government testing prior to a Milestone III decision. Additionally, funding supports the development of Training Aids, Devices, Simulators, and Simulations (TADSS). The Grizzly TADSS are the tools for life-cycle training of Grizzly operators, maintainers, and leaders. The Grizzly TADSS will support individual, collective and combined arms training at the institutional level and unit level. The computer-based TADSS will optimize training effectiveness at reduced institutional and unit OPTEMPO costs.</p> <p>FY 1998 Accomplishments:</p> <ul style="list-style-type: none"> • 32491 Completed EMD Vehicle Design, Conduct Critical Design Review (CDR), and Begin Rebuild of Two Prototype Vehicles • 5413 Performed Component Testing and Simulation and Accomplish Program Logistics Requirements • 2826 Provided Program Management to include Contract Administration, Sub-Contracts Administration, Program Analysis, and Earned Value Management (EVMS) <p>Total 40730</p> <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> • 32901 Continue Refinement of Design to Support Vehicle Production Configuration and Complete Prototype Vehicles Rebuild • 662 Procure System Support Package • 17352 Perform Component Testing and Simulation, Production Planning, and Accomplish Program Logistics Requirements • 3169 Provide Program Management • 2454 Perform Design of TADSS • 1489 Small Business Innovative Research/Small Business Technology Transfer (SBIR/STTR) Programs 										
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BUDGET ACTIVITY 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604649A Engineer Mobility Equipment Development				PROJECT DG25		
Total 58027										
FY 2000 Planned Program:										
<ul style="list-style-type: none"> • 6395 Complete Production Qualification Test I and Limited User Test in Support of a Low Rate Initial Production (LRIP) Contract Decision • 23586 Perform Design Refinement, Production Planning, and Accomplish Program Logistics Requirements • 260 Procure System Support Package • 22288 Begin Build of 7 LRIP Vehicles to be Used for Test: 1 Live Fire, 4 Production Verification Test (PVT), and 2 Operational Test (OT) LRIP Vehicles • 3991 Provide Program Management • 1638 Continue Design of TADSS 										
Total 58158										
FY 2001 Planned Program:										
<ul style="list-style-type: none"> • 6000 Production Qualification Test II • 23657 Continue Build of 7 LRIP Vehicles, Production Planning, Component Testing and Simulation, and Accomplishment of Program Logistics Requirements • 4400 Perform Live Fire Test and Evaluation (LFTE) • 1186 Provide Program Management • 2498 Complete Design of TADSS 										
Total 37741										
B. <u>Other Program Funding Summary</u>										
	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>To Compl</u>	<u>Total Cost</u>
PA, WTCV, GZ3200, Breacher MOD	0	0	19680	79395	81593	117475	148949	199361	Cont'd	Cont'd
PA, WTCV, G84000, Breacher Trng Dev	0	0	0	375	14770	1425	0	0	0	16570
PA, WTCV, GEO175, Breacher Spares	0	0	0	0	0	2488	4099	5213	Cont'd	Cont'd
C. <u>Acquisition Strategy:</u> Research and development efforts have leveraged the accomplishments of the Combat Mobility Vehicle Advanced Technology Transition Demonstrator (CMV-ATTD) contract. Design modifications were written into the Advanced Development contract for the powertrain and other chassis components/systems necessary to insure that the Grizzly meets the mission profile required by the Operational Requirements Document. Modeling and Simulation is an essential aspect of the program and is being used to avoid costs in all areas of the design and testing of this system. Through the production buy the vehicle will be sole										
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BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604649A Engineer Mobility Equipment Development	PROJECT DG25
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sourced to United Defense Limited Partnership (UDLP), Ground Systems Division, York, PA. The contracts for training devices development and production will be awarded by STRICOM with maximum use of existing commercial off-the-shelf hardware and software.

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008
Complete Prototype Rebuild	4Q									
Award Contract for TADSS	4Q									
Begin Production Qualification Testing (PQT I)		4Q								
Complete PQT I		4Q								
Low Rate Initial Production (LRIP), Milestone IIIa Decision		4Q								
LRIP Contract Award: 7 LRIP Vehicles for Test		4Q								
Begin PQT II			4Q							
LRIP Contract Award			4Q							
Conduct Logistics Demonstration/Verification			4Q							
Complete PQT II			4Q							
Begin Live Fire Test & Evaluation (LFTE)			4Q							
LRIP Contract Award				4Q						
Perform Production Verification Test (PVT)				4Q						
Perform Operational Testing (OT)				4Q						
Complete LFTE				4Q						
Milestone III, Production Decision					4Q					
Production Contract Award					4Q					
First Unit Equipped (FUE)						4Q				

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ARMY RDT&E COST ANALYSIS (R-3)										DATE February 1999		
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development					PE NUMBER AND TITLE 0604649A Engineer Mobility Equipment Development					PROJECT DG25		
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. EMD	SS-CPIF	United Defense, LP (UDLP) York, PA	65164	47992	Oct 98	22693	Oct 99	4286	Oct 00		140135	140135
b. LRIP Vehicles for Test (7 Qty)	SS-CPFF	United Defense, LP (UDLP) York, PA				22288	Jun 00	14368	Oct 00	5994	42650	42650
c. Armor	SS-CPFF	General Dynamics Land Systems (GDLS), Warren, MI	3051					1310	Oct 00		4361	4361
d. Chassis Refurbishment	MIPR	Anniston Army Depot (ANAD), Anniston, AL	250					1909	Oct 00		2159	2159
e. Training Device Dev	MIPR	STRICOM, Orlando, FL		2454	May 99	1638	Oct 99	2498	Oct 00		6590	6590
f. Other Contracts	Various	Various	302	275	Dec 98	149	Various	159	Various	189	1074	1074
g. Chassis GFM	Requisition		1463	700							2163	2163
Subtotal Product Development:			70230	51421		46768		24530		6183	199132	199132
II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Other Gov't Agencies	MIPR	TACOM, Warren, MI Various	4288	3069	Oct 98	3227	Oct 99	1877	Oct 00	1489	13950	13950
SIBR/STTR				1489							1489	1489
Subtotal Support Costs:			4288	4558		3227		1877		1489	15439	15439

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ARMY RDT&E COST ANALYSIS (R-3)										DATE February 1999		
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604649A Engineer Mobility Equipment Development						PROJECT DG25		
III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Soil Properties/Mine Blast	MIPR	Waterways Exp Station (WES), MS	396	146	Nov 99						542	542
b. PQT	MIPR	TECOM, APG, MD	471			6095	Dec 99				6566	6566
c. LUT	MIPR	Ft. Hood, Texas				300	Dec 99				300	300
d. Modeling & Simulation	MIPR	TARDEC, Warren, MI				244	Oct 99	570	Oct 00	199	1013	1013
e. System Support Package	Requisition	TECOM, APG, MD		662	Jan 99	260	Oct 99				922	922
e. PQT II	MIPR	TECOM, APG, MD						6000	Oct 00		6000	6000
f. Live Fire Test & Evaluation (LFT&E)	MIPR	TECOM, APG, MD						4400	Dec 00	4000	8400	8400
g. Production Verification Testing										6550	6550	6550
Subtotal Test and Evaluation:			867	808		6899		10970		10749	30293	30293
IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. PMO Support	NA	TACOM, Warren, MI	2699	1140	Oct 98	1164	Oct 99	264	Oct 00	270	5537	5537
b. Contractor PM Support	CPIR	Camber, Sterling Hgts, MI	591	100	Oct 98	100	Oct 99	100	Oct 00	100	991	991
Subtotal Management Services:			3290	1240		1264		364		370	6528	6528
Project Total Cost:			78675	58027		58158		37741		18791	251392	251392

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BUDGET ACTIVITY 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604649A Engineer Mobility Equipment Development					PROJECT DG26	
<i>COST (In Thousands)</i>	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
DG26 Heavy Assault Bridge	11271	11081	163	0	0	0	0	0	0	98905
<p>A. <u>Mission Description and Justification:</u> The Wolverine will provide Military Load Class (MLC) 70 vehicles the capability to cross 24-meter gaps (26-meter bridge). The Wolverine will have mobility characteristics comparable to the maneuver forces it will support. The basis for the Wolverine is an M1A2 SEP Abrams Tank chassis. The launch time for the bridge will be five minutes or less; the retrieval time will be a total of ten minutes or less which includes five minutes to engage plus five minutes to place the vehicle in a travel mode. The Wolverine Training Aids, Devices, Simulators, and Simulations (TADSS) are the tools for life-cycle training of Wolverine operators, maintainers, and leaders. The Wolverine TADSS will support individual, collective, and combined arms training at the institution and unit level. The computer-based TADSS will optimize training effectiveness at reduced institutional and unit OPTEMPO costs.</p> <p>FY 1998 Accomplishments:</p> <ul style="list-style-type: none"> • 1262 Provided Contractor Support For Test • 4456 Continued Developmental Contract • 483 Program Management • 3728 Started Live Fire Test and Purchase System Support Package for Live Fire, combined DT/OT and IOT&E • 1342 Began TADSS Development Effort <p>Total 11271</p> <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> • 1431 Contractor Support of Test • 2592 Developmental Contract and Refurbishment of Test Vehicles • 528 Program Management • 5365 Conclude Live Fire Test, Conduct Production Verification Test, and Support IOT&E • 884 Continue TADSS Development Effort • 281 Small Business Innovative Research/Small Business Technology Transfer (SBIR/STTR) Programs <p>Total 11081</p> <p>FY 2000 Planned Program:</p> <ul style="list-style-type: none"> • 163 Complete TADSS Effort 										
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BUDGET ACTIVITY 5 - Engineering and Manufacturing Development					PE NUMBER AND TITLE 0604649A Engineer Mobility Equipment Development			PROJECT DG26		
Total 163										
B. Other Program Funding Summary										
	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	To Compl	Total Cost
PA, WTCV, GZ3250, HAB MOD	40372	50271	67312	84893	104494	114123	192788	200136	Cont'd	Cont'd
PA, WTCV, GE0177, HAB Spares	893	858	1343	1392	1752	2044	3547	3545	Cont'd	Cont'd
PA, WTCV, G84600 HAB Training Devices	0	385	14910	1239	1033	0	0	0	0	17537
<p>C. Acquisition Strategy: Side-by-side Comparison Testing was completed in FY 1993 on three different prototype bridges and launchers for Phase I of Engineering and Manufacturing Development (EMD). As a result of the testing and submission of proposals, one contractor, General Dynamics Land Systems Division (GDLS), was selected to complete Phase II of EMD with a Cost-Plus-Award-Fee contract. A contract was awarded in FY 1996 for two Wolverine systems, with an option for four additional systems exercised in December 1996 that will complete combined developmental and operational testing. A Fixed Price contract was awarded in April 98 for LRIP and initial fielding requirements. STRICOM is the executive agent for TADSS and will award contracts in for the development and production of TADSS hardware.</p>										
D. Schedule Profile										
	<u>FY 1999</u>	<u>FY 2000</u>	<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>	<u>FY 2008</u>
Begin Combined DT/OT	4Q									
Complete Live Fire/Vulnerability Test	4Q									
Complete Combined DT/OT		4Q								
Production Readiness Review		4Q								
TADSS Development		4Q								
Milestone III		4Q								
FUE		4Q								
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ARMY RDT&E COST ANALYSIS (R-3)										DATE February 1999		
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604649A Engineer Mobility Equipment Development						PROJECT DG26		
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. EMD	C-CPAF	Gen Dyn Land Sys Sterling Hgts, MI	32766								32766	32766
b. Contract Engineering	SS-CPFF	Gen Dyn Land Sys Sterling Hgts, MI	18066	2592	NOV 98						20658	20658
c. EMD	SS-FFP	SMS Corp St. Louis, MO	5798								5798	5798
d. Chassis Refurb	MIPR	ANAD, Anniston, AL	396								396	396
e. Training Device Dev	MIPR	STRICOM, Orlando, FL	1909	884	MAY 99	163	OCT 99				2956	2956
f. Other Gov Agency Supt	MIPR	Various	1411								1411	1411
g. Gov Furnished Property	Requisitions	Various	381								381	381
h. SBIR/STTR				281							281	281
Subtotal Product Development:			60727	3757		163					64647	64647
II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Services Contracts	Various	Various	1008								1008	1008
Subtotal Support Costs:			1008								1008	1008
III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Dev & Op Testing	MIPR	TECOM, APG, MD	7192	3016	JAN 99						10208	10208
b. Live Fire & Vul Testing	MIPR	ARL, MD	2230	1990	JAN 99						4220	4220
c. Nuclear Testing	MIPR	WSMR White Sands, NM	384	359	JAN 99						743	743

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III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
d. Test Supt & System Support Package	SS-CPFF	Gen Dyn Land Sys Sterling Hgts, MI	6257	1431	JAN 99						7688	7688
e. System Support Package	MIPR	ACALA, Rock Island, IL	516								516	516
Subtotal Test and Evaluation:			16579	6796							23375	23375
IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
b. PMO Support	NA	TACOM, Warren, MI	7412	528	Oct 98						7940	7940
c. Award Fees		Gen Dyn Land Sys Sterling Hgts, MI	1935								1935	1935
Subtotal Management Services:			9347	528							9875	9875
Project Total Cost:			87661	11081		163					98905	98905