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ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)								DATE February 1999		
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604808A Landmine Warfare/Barrier - Engineering Development						
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	4040	52680	40916	39187	37801	42920	31205	21443	Continuing	Continuing
D016 Mine Systems Engineering Development	0	25829	18363	12615	9007	22098	19357	9613	Continuing	Continuing
D415 Mine Neutralization/Detection	4040	26851	22553	26572	28794	20822	11848	11830	Continuing	Continuing

A. Mission Description and Budget Item Justification: This program element provides for engineering and manufacturing development of mine and countermine systems. Project D016, Mine Systems Engineering Development, provides for the increased tactical effectiveness and responsiveness of landmines by supporting the development of a minefield command and control (C2) system for the Wide Area Mine (WAM), the Intelligent Combat Outpost (Raptor), the Area Denial Artillery Munition (ADAM)/Remote Anti-Armor Mine (RAAM) Upgrade (which has been renamed the Remote Area Denial Artillery Munition – RADAM), Non-Self-Destructing Anti-Personnel Landmine Alternatives (NSD-A), and an upgrade for the Volcano Dispenser Control Unit. Project D415, Mine Neutralization/Detection Engineering Development, is the engineering and manufacturing development for the Airborne Standoff Minefield Detection System (ASTAMIDS), Explosive Standoff Minefield Clearer (ESMC), and Handheld Stand-off Minefield Detection System (HSTAMIDS). It provides a group of mutually supported mine detection and neutralization devices to counter a variety of threat mines, minefields and obstacles necessary for implementing the Army's Countermines Modernization Plan.

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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)	13818	46905	48389	61163
Appropriated Value	8732	52905		
Adjustments to Appropriated Value				
a. Congressional General Reductions	-414	-225		
b. SBIR / STTR	-209			
c. Omnibus or Other Above Threshold Reductions	-69			
d. Below Threshold Reprogramming	-4000			
Adjustments to Budget Years Since <u>FY 1999</u> PB			-7473	-21976
Current Budget Submit (FY 2000 / 2001 PB)	4040	52680	40916	39187

Change Summary Explanation:

Funding: FY 1998: Funds reprogrammed from project D415 to the M1 Breacher (Grizzly) program in PE 064649A G25 to support a higher Army priority Requirement (-4000).
 FY 2000: Decrease due to termination of ESMC program (project D415).
 FY 2001: Decrease to Raptor /D016 (-5600) based on program restructure and extension of Program Development and Risk Reduction (PDRR) phase through FY02 and decrease to project D415 (-16376) associated with the termination of ESMC program. Congressional notification has been provided.

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ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								DATE February 1999		
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604808A Landmine Warfare/Barrier - Engineering Development				PROJECT D016		
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
D016 Mine Systems Engineering Development	0	25829	18363	12615	9007	22098	19357	9613	Continuing	Continuing
<p>A. Mission Description and Justification: Provides for engineering and manufacturing development of new smart munitions and intelligent/autonomous coordination of their use for increased effectiveness. Also addresses Presidential directive to eliminate reliance on the use of Anti-Personnel Landmines.</p> <p>FY 1998 Accomplishments: Program not funded in FY98.</p> <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> • 8800 Provide test hardware (1540 articles) for prototype assessment test (PAT) for NSD-A program • 3700 Provide NSD-A PAT instrumentation, execution, analysis, downselect for MSI/II. • 3357 Remote Area Denial Artillery Munition (RADAM) hybrid design/development • 400 Design verification testing (RADAM) • 1000 Load, Assemble and Pack (LAP) Plant facilitation for RADAM • 350 Fabricate RADAM process prove-out hardware (200 test items) • 1750 Conduct process prove-out and technical tests for RADAM • 5788 Studies of NSD-A designs/ Mixed System replacement • 684 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs <p>Total 25829</p> <p>FY 2000 Planned Program:</p> <ul style="list-style-type: none"> • 12800 Award NSD-A EMD contract to initiate NSD-A tactical design efforts • 3100 Provide engineering support for NSD-A design producibility/manufacturing development • 2463 Provide general engineering support for NSD-A design efforts <p>Total 18363</p> <p>FY 2001 Planned Program:</p> <ul style="list-style-type: none"> • 2750 Continue NSD-A government design efforts • 8400 Continue NSD-A contractor design and conduct contractor qualification testing • 1465 Provide general engineering support for NSD-A design and testing efforts 										
Project D016			Page 3 of 11 Pages				Exhibit R-2A (PE 0604808A)			

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BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604808A Landmine Warfare/Barrier - Engineering Development	PROJECT D016
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Total 12615

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
RDTE, BA4, PE 0603619A, Proj D005	685	3920	4099	12840	11466	9000	30121	37572	Cont	Cont
Remote Area Denial Artillery Munition E67505			48250	48170	48598	48568				
Non-Self Destruct Anti-Pers Landmine E91700					91293	122883	122799	127580		

C. Acquisition Strategy: Raptor; decision to go sole source or competitive will be based on evaluation of sole source PDRR contractor results. NSD-A, 12 solicitation respondents will be requested to submit proposals for their alternative concept. Cost Plus Incentive Fee (CPIF) contracts for two of the best concepts will be awarded for the Early User Experiment (EUE) phase. At the conclusion of the EUE one contractor will be selected to continue into the EMD and Production phases. ADAM/RAAM Armament Research, Development and Engineering Center (ARDEC) (In-house) will lead the design and development effort. A government owned Load, Assemble, and Pack (LAP) facility will develop processes and tooling for the download of ADAM and RAAM and the creation of the hybrid projectile.

D. Schedule Profile	<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>FY 2006</u>	<u>FY 2007</u>
Complete NSD-A PAT			2Q							
NSD-A MS I/II			2Q							
NSD-A MS III					4Q					
RADAM MS III			3Q							
RADAM Material release			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 0604808A Landmine Warfare/Barrier - Engineering Development					PROJECT D016		
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
NSD-A test Hardware	CPIF	TBD	0	8800	Jan 99						8800	
NSD-A EMD	CPIF	TBD	0	0		12800	Oct 99	8400	Oct 00	0	21200	
RADAM EMD	N/A	ARDEC	0	3957	Oct 98	0	0	0		0	3957	
RADAM test hardware/facilitation	CP	LAP Facility	0	1350	Dec 98	0	0	0		0	1350	
NSD-A Design/mixed System replacement		Various (TBD)		5788							5788	
Subtotal Product Development:				19895		12800		8400			41095	
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. Eng. support NSD-A		ARDEC	0	1900	Oct 98	2900	Oct 99	2515	Oct 00	0	7315	
b. Eng. Support NSD-A		OGA Misc.	0	0		2463	various	1500	various	0	3963	
Subtotal Support Costs:				1900		5363		4015			11278	
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. PAT support NSD-A		Government (TBD)	0	2184	Jan 99	0		0		0	2184	
b. Process Prove-out test RADAM		TECOM	0	1450	May 99	0		0			1450	
Subtotal Test and Evaluation:				3634							3634	

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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 0604808A Landmine Warfare/Barrier - Engineering Development					PROJECT D016		
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
NSD-A and RADAM Program Management		PM-MCD	0	400	Oct 98	200	Oct 99	200	Oct 00	0	800	
Subtotal Management Services:				400		200		200			800	
Project Total Cost:				25829		18363		12615			56807	

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ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								DATE February 1999		
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604808A Landmine Warfare/Barrier - Engineering Development				PROJECT D415		
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
D415 Mine Neutralization/Detection	4040	26851	22553	26572	28794	20822	11848	11830	Continuing	Continuing
<p>A. <u>Mission Description and Justification:</u> This project provides engineering and manufacturing development for the Airborne Standoff Minefield Detection System (ASTAMIDS), Explosive Standoff Minefield Clearer (ESMC), Handheld Stand-off Mine Detection System (HSTAMIDS), and Ground Standoff Mine Detection System (GSTAMIDS). It provides a group of mutually supported mine detection and neutralization devices to counter a variety of threat mines, minefields and obstacles necessary for implementing the Army's Countermine Modernization Plan.</p> <p>FY 1998 Accomplishments:</p> <ul style="list-style-type: none"> • 800 Prepared for and conducted ESMC MSII • 700 Developed ESMC manufacturing process • 700 Developed insensitive munition compliant rocket for ESMC • 1840 Prepared ESMC EMD contract solicitation and initiated contract EMD design effort. <p>Total 4040</p> <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> • 2500 Complete preliminary ESMC EMD design • 6946 Fabricate ESMC test hardware (11 reloads, 2 trailers) • 2000 Conduct ESMC Government/contractor testing • 3384 Validate ESMC manufacturing processes and insensitive munition rocket • 805 Conduct source selection for GSTAMIDS EMD • 3095 Initiate development of a GSTAMIDS Block I prototype • 8121 Initiate HSTAMIDS EMD design efforts <p>Total 26851</p> <p>FY 2000 Planned Program:</p> <ul style="list-style-type: none"> • 1251 Conduct GSTAMIDS block I testing • 4897 Continue GSTAMIDS EMD design effort • 6000 Fabricate two GSTAMIDS test units 										
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BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604808A Landmine Warfare/Barrier - Engineering Development	PROJECT D415
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- 304 Fabricate 10 HSTAMIDS test units
- FY 2000 Planned Program: (continued)**
- 7412 Complete HSTAMIDS EMD design
 - 1833 Conduct HSTAMIDS PQT/IOTE
 - 856 Prepare milestone III documentation and production contract solicitation
- Total 22553
- FY 2001 Planned Program:**
- 7625 Complete GSTAMIDS EMD design
 - 2630 Conduct combined DT/OT for GSTAMIDS
 - 615 Prepare GSTAMIDS MSIII documentation
 - 15702 Initiate ASTAMIDS EMD phase design efforts
- Total 26572

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>	To <u>Compl</u>	Total <u>Cost</u>
PE 0603619A, Project D606, Countermine/Barrier Advanced Development	14160	2787	0	6992	8246	9443	5777	6671	Cont	Cont
E72800, APOBS	0	0	5668	6580	0	0	0	0	0	12248
R68200, HSTAMIDS	0	0	0	9992	13000	13125	6883	6930	Cont	Cont
R68100, GSTAMIDS	0	0	0	0	10285	16099	16663	19720	Cont	Cont
M80100, IVMMD	12113	3765	0	0	0	0	0	0	0	15878
S11500, ASTAMIDS	0	0	0	0	0	6100	0	0	Cont	Cont

C. Acquisition Strategy: ASTAMIDS, and HSTAMIDS - contractors (two for each project) competitively selected for PDRR phase competition which will lead to a down select for the EMD phase. GSTAMIDS will leverage the Vehicle Mounted Mine Detector ATD effort with two competitively selected contractors for a total of five competing contractors in PDRR. One contractor will continue into EMD. Successful EMD contractors will be awarded initial production contract (sole source) with multiple option year buys. ESMC competitively selected PDRR phase contractor will be awarded a sole source EMD contract upon completion of PDRR phase and MDA approval. Sole source Production contract with multiple options is anticipated for successful EMD contractor.

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D. Schedule Profile	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007
MS II review for ESMC	2Q*									
MS II for GSTAMIDS		1Q*								
GSTAMIDS Block I MSIII				4Q						
GSTAMIDS Block II MS III						4Q				
MS II for HSTAMIDS				1Q						
MS III for HSTAMIDS						4Q				

*Denotes completed milestone

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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
0604808A Landmine Warfare/Barrier - Engineering Development

PROJECT
D415

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
ESMC EMD	CPIF	TRACOR Aerospace	1323	11930	Oct 98	0		0		0	13253	
GSTAMIDS EMD.	CPIF	TBD	0	2757	Apr 99	9625	Oct 99	7308	Oct 00	Cont	19690	
HSTAMIDS EMD	CPIF	TBD	0	6324	Dec 99	6686	Oct 99	0		0	13010	
ASTAMIDS EMD	CPIF	TBD	0	0		0		13902	Dec 00	Cont	13902	
Subtotal Product Development:			1323	21011		16311		21210			59855	

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
Engineering support ESCM		NVESD/ CECOM	2147	2100	Oct 98	0		0		0	4247	
Eng. support GSTAMIDS		NVESD/ CECOM	0	500	Dec 98	840	Oct 99	500	Oct 00	Cont	1840	
Eng. support HSTAMIDS		NVESD/ CECOM	0	1408	Dec 98	1479	Oct 99	0		0	2887	
Eng Support ASTAMIDS		NVESD/CECOM	0	0		0		1400	Dec 00	Cont	1400	
Subtotal Support Costs:			2147	4008		2319		1900			10374	

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
Test support ESCM		TECOM	175	500	Jun 99	0		0		0	675	
Test support GSTAMIDS		TECOM	0	210	Jan 99	1251	Dec 99	2630	Apr 01	Cont	4091	
Test support GSTAMIDS		TECOM	0	0		1833	May 00	0		Cont	1833	
Subtotal Test and Evaluation:			175	710		3084		2630			6599	

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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
Program management		PM-MCD	395	1122	Oct 98	839	Oct 99	832	Oct 00	Cont	3188	
Subtotal Management Services:			395	1122		839		832			3188	

Project Total Cost:			4040	26851		22553		26572			80016	
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