

**UNCLASSIFIED**

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Army										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 2040: Research, Development, Test & Evaluation, Army BA 4: Advanced Component Development & Prototypes (ACD&P)					R-1 ITEM NOMENCLATURE PE 0603619A: Landmine Warfare and Barrier - Adv Dev							
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 <sup>#</sup>	FY 2014 Base	FY 2014 OCO <sup>##</sup>	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
Total Program Element	-	16.399	5.054	10.625	-	10.625	20.225	7.150	2.500	2.500	Continuing	Continuing
606: CNTRMN/BARRIER ADV DEV	-	16.399	5.054	10.625	-	10.625	20.225	7.150	2.500	2.500	Continuing	Continuing
<sup>#</sup> FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012 <sup>##</sup> The FY 2014 OCO Request will be submitted at a later date												
A. Mission Description and Budget Item Justification												
This project enables component development of new counter explosive hazard systems that focus on detecting, marking, and neutralizing mines and improvised explosive devices (IED). These capabilities will enhance the effectiveness of the Route Clearance Platoon within the Engineer Company, the Brigade Combat Team as well as other related Army missions.												
Autonomous Mine Detection System (AMDS) provides mine and explosive hazards stand-off detection, marking and neutralization capability for the dismounted soldier. AMDS consists of payload modules to be mounted on man-portable unmanned ground vehicles. The payloads are for surface laid and buried threats to include mines and explosive hazards. AMDS will transition from Technical Development to Engineering and Manufacturing Development (EMD) in FY 2013.												
The Forward Reconnaissance and Explosive Hazard Detection (FREHD) system will provide a suite of vehicle-mounted capabilities that enable route clearance patrols to achieve higher rates of advance by accurately detecting and adjudicating potential explosive hazards with reduced hazard interrogation time. The system will automatically nominate potential hazards on the move and at standoff distance, and then let route clearance teams decide whether to perform more detailed examinations and identification of those hazards using additional tools within the FREHD suite. FREHD will also provide threat visualization and control capabilities that enable route clearance and allow Explosive Ordnance Disposal (EOD) and related mission personnel to remotely view video feeds of the hazard and remotely control the apparatus. The increased rate of advance will improve route clearance time, while the increased standoff improves force protection. FREHD will begin transition of Advanced Technology Objective efforts from the Science and Technology community, and conduct program initiation activities via a Materiel Development Decision in FY 2013. Subject to timely program initiation and confirmation of technology maturity, FREHD technology development efforts will continue in FY 2014.												

**UNCLASSIFIED**

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Army				DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY		R-1 ITEM NOMENCLATURE			
2040: Research, Development, Test & Evaluation, Army		PE 0603619A: Landmine Warfare and Barrier - Adv Dev			
BA 4: Advanced Component Development & Prototypes (ACD&P)					
B. Program Change Summary (\$ in Millions)	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total
Previous President's Budget	19.596	5.054	5.597	-	5.597
Current President's Budget	16.399	5.054	10.625	-	10.625
Total Adjustments	-3.197	0.000	5.028	-	5.028
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-3.197	-	5.028	-	5.028

**UNCLASSIFIED**

Exhibit R-2A, RDT&E Project Justification: PB 2014 Army									DATE: April 2013			
APPROPRIATION/BUDGET ACTIVITY 2040: Research, Development, Test & Evaluation, Army BA 4: Advanced Component Development & Prototypes (ACD&P)					R-1 ITEM NOMENCLATURE PE 0603619A: Landmine Warfare and Barrier - Adv Dev				PROJECT 606: CNTRMN/BARRIER ADV DEV			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 <sup>#</sup>	FY 2014 Base	FY 2014 OCO <sup>##</sup>	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
606: CNTRMN/BARRIER ADV DEV	-	16.399	5.054	10.625	-	10.625	20.225	7.150	2.500	2.500	Continuing	Continuing
Quantity of RDT&E Articles												
# FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012												
## The FY 2014 OCO Request will be submitted at a later date												
A. Mission Description and Budget Item Justification												
This project enables component development of new counter explosive hazard systems that focus on detecting, marking, and neutralizing mines and improvised explosive devices (IED). These capabilities will enhance the effectiveness of the Route Clearance Platoon within the Engineer Company, the Brigade Combat Team as well as other related Army missions.												
Autonomous Mine Detection System (AMDS) provides mine and explosive hazards stand-off detection, marking and neutralization capability for the dismounted soldier. AMDS consists of payload modules to be mounted on man-portable unmanned ground vehicles. The payloads are for surface laid and buried threats to include mines and explosive hazards. AMDS will transition from Technical Development to Engineering and Manufacturing Development (EMD) in FY 2013.												
The Forward Reconnaissance and Explosive Hazard Detection (FREHD) system will provide a suite of vehicle-mounted capabilities that enable route clearance patrols to achieve higher rates of advance by accurately detecting and adjudicating potential explosive hazards with reduced hazard interrogation time. The system will automatically nominate potential hazards on the move and at standoff distance, and then let route clearance teams decide whether to perform more detailed examinations and identification of those hazards using additional tools within the FREHD suite. FREHD will also provide threat visualization and control capabilities that enable route clearance and allow Explosive Ordnance Disposal (EOD) and related mission personnel to remotely view video feeds of the hazard and remotely control the apparatus. The increased rate of advance will improve route clearance time, while the increased standoff improves force protection. FREHD will begin transition of Advanced Technology Objective efforts from the Science and Technology community, and conduct program initiation activities via a Materiel Development Decision in FY 2013. Subject to timely program initiation and confirmation of technology maturity, FREHD technology development efforts will continue in FY 2014.												
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)									FY 2012	FY 2013	FY 2014	
Title: AMDS Mission Package Development System									9.448	0.000	0.000	
									Articles: 0			
Description: AMDS Mission Package Development System												
FY 2012 Accomplishments:												

## UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Army		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 2040: Research, Development, Test & Evaluation, Army BA 4: Advanced Component Development & Prototypes (ACD&P)	R-1 ITEM NOMENCLATURE PE 0603619A: Landmine Warfare and Barrier - Adv Dev	PROJECT 606: CNTRMN/BARRIER ADV DEV		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2012	FY 2013	FY 2014
AMDS - Build AMDS Detection Systems				
Title: AMDS Platform Integration  Description: AMDS Platform Integration  FY 2012 Accomplishments: AMDS Platform Integration		Articles: 3.829 0	0.000	0.000
Title: AMDS Tech Demo, Operational Assessment and Test Report  Description: AMDS Tech Demo, Operational Assessment/Early User Evaluation and Test Report  FY 2012 Accomplishments: AMDS - Tech Development, Operational Assessment and Test Report		Articles: 2.622 0	0.000	0.000
Title: AMDS Milestone B Review Preparation  Description: AMDS Milestone B Review Preparation  FY 2012 Accomplishments: AMDS Milestone B Review Preparation		Articles: 0.500 0	0.000	0.000
Title: Forward Reconnaissance and Explosive Hazard Detection (FREHD)  Description: FREHD  FY 2013 Plans: Prepare for Materiel Development Decision (MDD); Materiel Solution Analysis and Technology Assessment; Milestone A Preparation  FY 2014 Plans: Transition to Advanced Development		Articles: 0.000	5.054 0	10.625
Accomplishments/Planned Programs Subtotals		16.399	5.054	10.625

# UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Army										DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 2040: Research, Development, Test & Evaluation, Army BA 4: Advanced Component Development & Prototypes (ACD&P)				R-1 ITEM NOMENCLATURE PE 0603619A: Landmine Warfare and Barrier - Adv Dev				PROJECT 606: CNTRMN/BARRIER ADV DEV			
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
• Mine Neutralization and Detection: Mine Neutralization and Detection	65.228	90.861	65.085		65.085	33.218	12.000	4.000	4.000	Continuing	Continuing
Remarks											
654808/D415 Mine Neutralization and Detection is the engineering development follow on to this funding line. The above profile represents the total line, not only the follow on tasks within this program.											
D. Acquisition Strategy											
The Autonomous Mine Detection System (AMDS) is currently a Technology Development effort and will transition to Engineering and Manufacturing Development in FY 2013.											
The Acquisition Strategy for the Forward Reconnaissance and Explosive Hazard Detection (FREHD) System will be developed in conjunction with program initiation.											
E. Performance Metrics											
Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.											

**UNCLASSIFIED**

<b>Exhibit R-3, RDT&amp;E Project Cost Analysis: PB 2014 Army</b>												<b>DATE:</b> April 2013			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>						<b>R-1 ITEM NOMENCLATURE</b> PE 0603619A: <i>Landmine Warfare and Barrier - Adv Dev</i>						<b>PROJECT</b> 606: <i>CNTRMN/BARRIER ADV DEV</i>			
<b>Management Services (\$ in Millions)</b>				<b>FY 2012</b>		<b>FY 2013</b>		<b>FY 2014 Base</b>		<b>FY 2014 OCO</b>		<b>FY 2014 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>All Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Program Management	Various	PM Close Combat Systems:Picatinny, NJ/ Ft Belvoir, VA	8.843	2.643	Sep 2012	1.554		0.691	Dec 2013	-		0.691	Continuing	Continuing	Continuing
Program Management Contractor Support	MIPR	FALCON:Fairfax, VA	1.670	0.193	Jun 2012	-		-		-		-	Continuing	Continuing	Continuing
FREDH Program Management Contractor Support	TBD	TBD:TBD	0.000	-		-		0.250		-		0.250	0.000	0.250	0.000
<b>Subtotal</b>			10.513	2.836		1.554		0.941		0.000		0.941			
<b>Product Development (\$ in Millions)</b>				<b>FY 2012</b>		<b>FY 2013</b>		<b>FY 2014 Base</b>		<b>FY 2014 OCO</b>		<b>FY 2014 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>All Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
AMDS	C/CPFF	NIITEK:Sterling, VA	0.000	2.269	May 2012	-		-		-		-	0.000	2.269	0.000
AMDS	C/CPFF	CRL:Pittsburg, PA	0.000	1.335	Apr 2012	-		-		-		-	0.000	1.335	0.000
AMDS Tech Dev	C/CPFF	Robotics Technology Consortium:Ann Arbor, MI	33.264	-		-		-		-		-	Continuing	Continuing	Continuing
AMDS Other Component Development	IA	Various:Various	4.472	2.863	Apr 2012	-		-		-		-	Continuing	Continuing	Continuing
AMDS Early User Evaluation	TBD	TBD:TBD	0.000	1.278		-		-		-		-	0.000	1.278	0.000
FREHD Tech Development	TBD	TBD:TBD	0.000	-		1.000		7.224		-		7.224	Continuing	Continuing	0.000
<b>Subtotal</b>			37.736	7.745		1.000		7.224		0.000		7.224			

**UNCLASSIFIED**

<b>Exhibit R-3, RDT&amp;E Project Cost Analysis: PB 2014 Army</b>												<b>DATE:</b> April 2013			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: Research, Development, Test & Evaluation, Army BA 4: Advanced Component Development & Prototypes (ACD&P)						<b>R-1 ITEM NOMENCLATURE</b> PE 0603619A: Landmine Warfare and Barrier - Adv Dev						<b>PROJECT</b> 606: CNTRMN/BARRIER ADV DEV			
<b>Support (\$ in Millions)</b>				<b>FY 2012</b>		<b>FY 2013</b>		<b>FY 2014 Base</b>		<b>FY 2014 OCO</b>		<b>FY 2014 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>All Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
AMDS	MIPR	Various:Various	15.805	1.345	Sep 2012	-		-		-		-	Continuing	Continuing	Continuing
AMDS	MIPR	CECOM NVESD:Ft. Belvoir, VA	1.836	2.530	May 2012	-		-		-		-	0.000	4.366	0.000
AMDS	MIPR	Picatinny Arsenal:NJ	1.128	1.406	Apr 2012	-		-		-		-	0.000	2.534	0.000
FREHD	MIPR	Various:TBD	0.000	-		2.500		1.710	Mar 2014	-		1.710	0.000	4.210	0.000
<b>Subtotal</b>			18.769	5.281		2.500		1.710		0.000		1.710			
<b>Test and Evaluation (\$ in Millions)</b>				<b>FY 2012</b>		<b>FY 2013</b>		<b>FY 2014 Base</b>		<b>FY 2014 OCO</b>		<b>FY 2014 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>All Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
AMDS	MIPR	Various:Various	0.520	0.537	Apr 2012	-		-		-		-	Continuing	Continuing	Continuing
FREHD	TBD	TBD:TBD	0.000	-		-		0.750	Dec 2013	-		0.750	0.000	0.750	0.000
<b>Subtotal</b>			0.520	0.537		0.000		0.750		0.000		0.750			
<b>Project Cost Totals</b>			67.538	16.399		5.054		10.625		0.000		10.625			
<b>Remarks</b>															

**UNCLASSIFIED**

Exhibit R-4, RDT&E Schedule Profile: PB 2014 Army												DATE: April 2013			
APPROPRIATION/BUDGET ACTIVITY 2040: Research, Development, Test & Evaluation, Army BA 4: Advanced Component Development & Prototypes (ACD&P)								R-1 ITEM NOMENCLATURE PE 0603619A: Landmine Warfare and Barrier - Adv Dev				PROJECT 606: CNTRMN/BARRIER ADV DEV			

	FY 2012				FY 2013				FY 2014				FY 2015				FY 2016				FY 2017				FY 2018			
	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
AMDS Milestone B																												
AMDS Preliminary Design Review (PDR)																												
AMDS Critical Design Review (CDR)																												
AMDS Milestone C																												
FREHD Materiel Development Decision (MDD)																												
FREHD Milestone A																												
FREHD Milestone B																												



**UNCLASSIFIED**

<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2014 Army			<b>DATE:</b> April 2013
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603619A: <i>Landmine Warfare and Barrier - Adv Dev</i>	<b>PROJECT</b> 606: <i>CNTRMN/BARRIER ADV DEV</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
AMDS Milestone B	4	2013	4	2013
AMDS Preliminary Design Review (PDR)	3	2014	3	2014
AMDS Critical Design Review (CDR)	1	2015	1	2015
AMDS Milestone C	3	2016	3	2016
FREHD Materiel Development Decision (MDD)	4	2013	4	2013
FREHD Milestone A	2	2014	2	2014
FREHD Milestone B	3	2016	3	2016