

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Office of the Secretary Of Defense **Date:** February 2016

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0603920D8Z I <i>Humanitarian De-mining</i>
---	---

COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	37.676	9.930	10.110	10.007	-	10.007	10.992	11.580	11.659	11.886	Continuing	Continuing
920: <i>Humanitarian De-mining</i>	37.676	9.930	10.110	10.007	-	10.007	10.992	11.580	11.659	11.886	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Under the Office of the Assistant Secretary of Defense for Special Operations and Low-Intensity Conflict (OASD SO/LIC), the Humanitarian Demining Research and Development (HD R&D) program element develops, demonstrates and validates new technologies for DoD-supported nations to detect and clear landmines and unexploded ordnance (UXO), and to contribute to US military countermine R&D. The HD R&D Program works closely with the Geographical Combatant Commands (GCC) and the Humanitarian Demining Training Center (HDTTC) to identify, develop and implement mine/UXO detection and clearance technologies; speed improvements to technologies used by U.S. forces in support of USG operations; reduce the threat to host nation population and US forces; reduce insurgent access to explosives (landmines and UXO); enhance mine action capacity of non-governmental organizations and mine action centers in mine-affected countries; and provide engagement opportunities for DoD personnel in mine-affected countries.

Evaluations of HD R&D Program-developed technologies in actual minefields are conducted by host nation demining partners (foreign military, non-governmental organizations and mine action centers) and provide valuable data for US military countermine R&D and next generation HD technology developments while directly contributing to world-wide mine and UXO clearance. Since 1995 the program has fielded technologies for 189 evaluations in 39 countries, including Vietnam, Cambodia, Zimbabwe, Iraq and Afghanistan. The program's technologies have cleared 33.5 million square meters of the world's toughest minefields; found or destroyed 159,000 mines and UXO; and provided 387,000 mine/UXO disposal charges with 50 tons of explosive recovered from stockpiles and abandoned munitions in PACOM.

New technology requirements and areas of emphasis are identified and validated at a biennial Requirements Workshop and a biennial UXO Working Group Meeting held by OASD SO/LIC. The meetings involve representatives from Department of State (DOS), GCCs and mine-affected nations. The program element's work is consistent with the Department of Defense's strategic guidance to address instability and reduce the demand for significant US force commitments to stability operations; with DODI 3000.05 to foster security, economic security and development, and build indigenous capacity; and with § 407 and CJCSI 3207.01C to reduce the social, economic and environmental impact of landmines, unexploded ordnance and small arms ammunition.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Office of the Secretary Of Defense	Date: February 2016
---	----------------------------

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0603920D8Z I <i>Humanitarian De-mining</i>
---	---

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	10.180	10.129	10.451	-	10.451
Current President's Budget	9.930	10.110	10.007	-	10.007
Total Adjustments	-0.250	-0.019	-0.444	-	-0.444
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.246	-			
• Internal Adjustments.	-0.004	-	-0.444	-	-0.444
• FFRDC	-	-0.019	-	-	-

Change Summary Explanation

In FY17 \$0.142M of the \$0.444 is to account for the availability of prior year execution balances.

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
---	----------------	----------------	----------------

Title: 0603920D8Z - SO/LIC Humanitarian De-mining	9.930	10.110	10.007
--	-------	--------	--------

Description: The HD R&D Program adapts commercial-off-the-shelf equipment, integrates mature technologies, and leverages R&D activity within DoD, particularly in the Army's Night Vision and Electronic Sensors Directorate (NVESD) Tactical Countermine mission area. The program aims to improve existing technologies for: mine/unexploded ordnance (UXO) detection, technical survey/area reduction, mechanical mine/UXO clearance, underwater UXO detection and clearance, vegetation clearance, mine neutralization, and post-clearance quality control (QC).

FY 2015 Accomplishments:

- Program's technologies cleared 6 million square meters of the world's toughest minefields and UXO threat areas, removing or destroying over 9,000 mines and 20,000 UXO
- The program developed and tested nineteen prototype technologies, including: Six-tine Rotary Mine Comb, Rotary Mine Comb Lite, Sparrow, Piranha III, Light Soil Sifter, Underwater Detection System, Empact, Pacmag, Scorpion, Improved Minehound, Delta, Mine Burner, Transparent Armor, Mine Action Management System, Monitoring System, Aerial Survey System, Mobile Operator Control Station, Severe Terrain Support Vehicle, and Rambo
- Continued 56 on-going operational field evaluations in 14 countries
- Began new live minefield evaluations of Handheld Standoff Mine Detection System (HSTAMIDS) in Zimbabwe; two each Raptors in Afghanistan; Severe Terrain Support Vehicle in Marshall Islands and Solomon Islands; Target Reacquisition Position

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Office of the Secretary Of Defense	Date: February 2016
---	----------------------------

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0603920D8Z I <i>Humanitarian De-mining</i>
---	---

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
<p>System in West Bank; Aerial Survey System in Cambodia and Chile; Wet Soil Sifting System in Solomon Islands; and the Remote Monitoring Station in Thailand.</p> <ul style="list-style-type: none"> • Supported combatant commands and Embassy staffs by conducting site surveys and country assessments in Kosovo and Zimbabwe <p>FY 2016 Plans:</p> <ul style="list-style-type: none"> • Deploy new technology, including the Medium MineWolf in Thailand; the Rambo, Mini MineWolf and Scorpion and the Sparrow in Cambodia; Rex I in Sri Lanka; Rex II in Angola; and the Storm and Six-Tine Rotary Mine Comb in Afghanistan • Continue to support ongoing FY2015 operational field evaluations • Support the combatant commands and Embassy staffs by conducting site surveys and country assessments, including those planned in Thailand, Colombia, Angola, Bosnia Herzegovina, Kosovo, Georgia, Vietnam, and Laos • Develop, test and evaluate new prototype technologies in the following areas: technical survey, individual mine/UXO and minefield detection, mechanical mine/UXO and vegetation clearance, underwater UXO detection and clearance, mine neutralization, and post-clearance quality assurance (QA) <p>FY 2017 Plans:</p> <ul style="list-style-type: none"> • Complete ongoing equipment developments/modifications • Continue successful operational evaluations from FY2016 • Support the combatant commands and Embassy staffs by conducting new site surveys and country assessments • Develop, test and evaluate new prototype technologies based on feedback from the field in the following areas: technical survey, individual mine/UXO and minefield detection, mechanical mine/UXO and vegetation clearance, underwater UXO detection and clearance, mine neutralization, and post-clearance QA 			
Accomplishments/Planned Programs Subtotals	9.930	10.110	10.007

D. Other Program Funding Summary (\$ in Millions)

N/A

Remarks

E. Acquisition Strategy

Following a rapid prototyping strategy, the program emphasizes the use/modification of existing, commercially-available equipment and components to build functional prototype equipment suited for humanitarian demining operations. This approach is required due to the immediate need for new demining technologies in the face of ongoing U.S. forces and host nation citizen casualties in mine-affected countries. The program evaluates prototype equipment by acquiring it off-the-shelf from industry using competition to the extent possible, by leveraging ongoing countermine R&D efforts in other U.S. and foreign R&D activities, and by taking advantage of extensive in-house fabrication capabilities at the Army's Night Vision and Electronic Sensors Division (NVESD).

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Office of the Secretary Of Defense Date: February 2016

Appropriation/Budget Activity
0400: *Research, Development, Test & Evaluation, Defense-Wide I BA 4: Advanced Component Development & Prototypes (ACD&P)*

R-1 Program Element (Number/Name)
PE 0603920D8Z / *Humanitarian De-mining*

F. Performance Metrics

Long Term Strategies: Obtain adequate funding to support critical shortfalls; prioritize proposals that are deemed acceptable and allocate funding accordingly; and establish outreach programs to leverage institutional knowledge and expertise.

Performance Indicator and Rating:

FY 2015 Target:

- 90% of currently funded research technologies are completed on time and within budget
- Complete scheduled R&D project tasks
- Transition field-ready technologies to host nation demining partners

FY 2016 Target:

- 90% of currently funded research technologies are completed on time and within budget
- Complete scheduled R&D project tasks
- Transition field-ready technologies to host nation demining partners
- Conduct biennial Humanitarian R&D Program Requirements Workshop

FY 2015 Performance Rating: Currently the number of funded research technologies is on track to be completed per the target.

Verification: The Humanitarian Demining Program performs program reviews with other USG agencies (DOS PM WRA, DSCA, HDTTC, CENTCOM, PACOM, SOUTHCOM, AFRICOM, EUCOM) and has oversight from OSD SO/LIC.

Validation: Completed R&D products increase the capabilities of the DoD to effectively perform demining missions.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Office of the Secretary Of Defense **Date:** February 2016

Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603920D8Z / Humanitarian De-mining	Project (Number/Name) 920 / Humanitarian De-mining
--	--	--

Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Primary Hardware Development	Various	RDECOM-NVESD : Ft Belvoir, VA	21.912	6.670		6.875		5.055		-		5.055	-	-	-
Subtotal			21.912	6.670		6.875		5.055		-		5.055	-	-	-

Remarks
The HD R&D Program adapts commercial-off-the-shelf equipment, integrates mature technologies, and leverages R&D activity within DoD, particularly in the Army's Night Vision and Electronic Sensors Directorate (NVESD) Tactical Countermining mission area.

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Humanitarian Demining Research and Development Program	Various	RDECOM-NVESD : Ft Belvoir, VA	14.438	2.858		2.834		4.697		-		4.697	-	-	-
Subtotal			14.438	2.858		2.834		4.697		-		4.697	-	-	-

Remarks
Evaluations of HD R&D Program-developed technologies in actual minefields are conducted by host nation demining partners (foreign military, non-governmental organizations and mine action centers) and provide valuable data for US military countermining R&D and next generation HD technology developments while directly contributing to world-wide mine and UXO clearance.

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Humanitarian Demining Program Management Support	Various	RDECOM-NVESD : Ft Belvoir, VA	1.326	0.402		0.401		0.255		-		0.255	-	-	-
Subtotal			1.326	0.402		0.401		0.255		-		0.255	-	-	-

Remarks
The HD R&D Program managers oversee adaptation of commercial-off-the-shelf equipment, integration of mature technologies, and leverage of R&D activity within DoD, particularly in the Army's Night Vision and Electronic Sensors Directorate (NVESD) Tactical Countermining mission area. Areas of emphasis are identified and validated at a

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Office of the Secretary Of Defense **Date:** February 2016

Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603920D8Z / <i>Humanitarian De-mining</i>	Project (Number/Name) 920 / <i>Humanitarian De-mining</i>
--	---	---

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total				
---	--	--	--	----------------	--	----------------	--	---------------------	--	--------------------	--	----------------------	--	--	--	--

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
				Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			

biennial Requirements Workshop held by OASD SO/LIC. The Requirements Workshop involves representatives from Department of State (DoS), U.S. combatant commands (COCOMS) and mine-affected nations.

	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	37.676	9.930	10.110	10.007	-	10.007	-	-	-

Remarks

The Humanitarian Demining Research and Development (HD R&D) program element rapidly develops, demonstrates and validates new technologies for DoD-supported nations to detect and clear landmines and unexploded ordnance (UXO), and to contribute to US military countermining R&D. The HD R&D Program focuses on development of new technologies to improve the efficiency and safety of indigenous nation-conducted, post-conflict clearance of residual mines and UXO, which pose a serious threat to US forces conducting stability operations, and to the host nation's population and economy.

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2017 Office of the Secretary Of Defense **Date:** February 2016

Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603920D8Z / Humanitarian De-mining	Project (Number/Name) 920 / Humanitarian De-mining
--	--	--

	FY15				FY16				FY17				FY18				FY19				FY20				FY21			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Mine / UXO Technology Development																												
Contracting Process	■				■				■				■				■				■				■			
Develop Prototype Equipment	■				■				■				■				■				■				■			
Technical Evaluation	■				■				■				■				■				■				■			
Operational Field Evaluations	■																											
Requirements Working Group Meetings							▲				▲				▲				▲				▲				▲	

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Office of the Secretary Of Defense **Date:** February 2016

Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603920D8Z / <i>Humanitarian De-mining</i>	Project (Number/Name) 920 / <i>Humanitarian De-mining</i>
--	---	---

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Mechanical Mine/UXO Clearance Systems	1	2015	4	2021
Mine/UXO Detection Systems	1	2015	4	2021