Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Office of the Secretary Of Defense	Date: May 2017
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 Program Element (Number/Name)** PE 0603920D8Z / *Humanitarian De-mining*

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	47.606	9.858	10.007	10.837	-	10.837	11.424	10.901	11.113	11.356	Continuing	Continuing
920: *Humanitarian De-mining*	47.606	9.858	10.007	10.837	-	10.837	11.424	10.901	11.113	11.356	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 cost-effective technologies for use in humanitarian demining via operational field evaluations in support of Geographical Combatant Commands (GCC) Humanitarian Mine Action (HMA) goals and objectives.

The HD R&D Program works closely with the GCCs and the Humanitarian Demining Training Center (HDTC) to craft a research and development plan that supports GCC HMA program plans and strategic objectives and enhances mil-to-mil partnerships in key regional states and provides access to live mines/UXO around the world for operational test data collection unavailable to any other DoD organization. The HD R&D Program accomplishes the GCC support by utilizing host nation demining partners to evaluate technology in actual minefields to simultaneously achieve HMA objectives and identify performance parameters; data is delivered to the US military countermine R&D programs to inform future investment decisions. In addition to the improvements made to technologies used by U.S. forces and to the reduction of landmine and UXO threat to US forces and host nation population, the Program's technology trainings and evaluations build mine action capacity and capability within mine-affected countries and improve safety, stability and economic development.

Since 1995 the program has fielded technologies for 199 evaluations in 39 countries, including Afghanistan, Iraq, Vietnam, Cambodia, Angola and Zimbabwe. The program's technologies have cleared 42 million square meters of the world's toughest minefields; and found or destroyed 177,000 mines and UXO.

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), GCC Humanitarian Mine Action offices, mine action organizations and mine-affected nations. The program element's work fulfills 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 and unexploded ordnance.

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B. Program Change Summary ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	10.110	10.007	10.837	-	10.837
Current President's Budget	9.858	10.007	10.837	-	10.837
Total Adjustments	-0.252	0.000	0.000	-	0.000
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Internal Adjustments	-0.252	-	-	-	-

Change Summary Explanation

Reductions were in support of Departmental efficiencies and economic assumptions.

C. Accomplishments/Planned Programs ($ in Millions)	FY 2016	FY 2017	FY 2018
Title: 0603920D8Z - SO/LIC Humanitarian De-mining	9.858	10.007	10.837

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, mechanical mine neutralization, and post-clearance quality control (QC).

FY 2016 Accomplishments:

Deployed new technology, including Medium MineWolf in Thailand; Rambo, Mini MineWolf, Underwater Detection System, and Scorpion II in Cambodia; HSTAMIDS in Kosovo, Rex I in Sri Lanka; Quadcopter and Rex II in Angola; and Storm and Six-Tine Rotary Mine Comb in Afghanistan

- Continued to support ongoing FY2015 operational field evaluations with less down time due to technology fault
- Supported the combatant commands and Embassy staffs by conducting site surveys and country assessments in Thailand, Colombia, and Vietnam; and continuing mil-to-mil engagements in Cambodia, Chile, and Thailand
- Developed, tested and evaluated 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, mechanical mine neutralization, and post-clearance quality assurance (QA)

FY 2017 Plans:

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Office of the Secretary Of Defense	Date: May 2017
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 Program Element (Number/Name)** PE 0603920D8Z / *Humanitarian De-mining*

C. Accomplishments/Planned Programs ($ in Millions)	FY 2016	FY 2017	FY 2018
Deploy new technology, including Wet Soil Buckets, Armored Operator Station, and Sparrow to Cambodia; Rambo to Laos; HSTAMIDS and Bearcat to Colombia; Remote Monitoring Station to Thailand; and Quadcopter to Bosnia, Cambodia, Iraq, Laos, Lebanon, Sri Lanka, Ukraine, and West Bank • Develop new technology for mine clearance in Iraq and Colombia • 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 in Vietnam, Colombia, Ukraine and Northern Iraq • Develop, test and evaluate new prototype technologies based on feedback from the field, including nine technology development tasks in individual mine/UXO and minefield detection and six technology development tasks in mechanical mine/UXO and vegetation clearance			
FY 2018 Plans: Deploy new technology to Colombia, Iraq and other countries • Complete ongoing equipment developments/modifications • Continue successful operational evaluations from FY2017 • 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, mechanical mine neutralization, and post-clearance QA			
Accomplishments/Planned Programs Subtotals	9.858	10.007	10.837

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).

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Office of the Secretary Of Defense	Date: May 2017
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 *I Humanitarian De-mining*

F. Performance Metrics

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 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

FY 2017 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 2016 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, HDTC, 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.

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Office of the Secretary Of Defense			Date: May 2017
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)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Primary Hardware Development	Various	RDECOM-NVESD : Ft Belvoir, VA	28.832	5.267		5.337		5.797		-		5.797	-	-	-
		Subtotal	28.832	5.267		5.337		5.797		-		5.797	-	-	-

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 Countermine mission area.

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Humanitarian Demining Research and Development Program	Various	RDECOM-NVESD : Ft Belvoir, VA	17.296	4.338		4.405		4.770		-		4.770	-	-	-
		Subtotal	17.296	4.338		4.405		4.770		-		4.770	-	-	-

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 countermine R&D and next generation HD technology developments while directly contributing to world-wide mine and UXO clearance.

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Humanitarian Demining Program Management Support	Various	RDECOM-NVESD : Ft Belvoir, VA	1.478	0.253		0.265		0.270		-		0.270	-	-	-
		Subtotal	1.478	0.253		0.265		0.270		-		0.270	-	-	-

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 Countermine mission area. Areas of emphasis are identified and validated at a

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Office of the Secretary Of Defense			Date: May 2017
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Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
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 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	47.606	9.858		10.007		10.837		-		10.837	-	-	-

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 countermine 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.

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Office of the Secretary Of Defense		Date: May 2017
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603920D8Z / *Humanitarian De-mining*	**Project (Number/Name)** 920 / *Humanitarian De-mining*

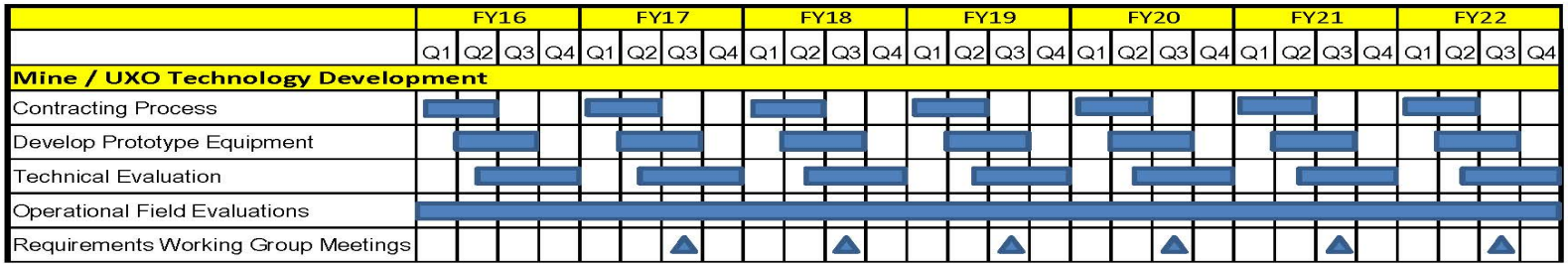

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Office of the Secretary Of Defense		Date: May 2017
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603920D8Z / *Humanitarian De-mining*	**Project (Number/Name)** 920 / *Humanitarian De-mining*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
Mechanical Mine/UXO Clearance Systems	1	2016	4	2022
Mine/UXO Detection Systems	1	2016	4	2022