

OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

February 2008

APPROPRIATION/ BUDGET ACTIVITY
RDTE, Defense Wide BA 04

PE NUMBER AND TITLE
0603920D8Z - SO/LIC Humanitarian De-mining

| COST (\$ in Millions) | FY 2007 Estimate | FY 2008 Estimate | FY 2009 Estimate | FY 2010 Estimate | FY 2011 Estimate | FY 2012 Estimate | FY 2013 Estimate |
|---|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| P920 SO/LIC Humanitarian De-mining P920 | 14.404 | 13.923 | 14.373 | 14.778 | 14.762 | 14.995 | 15.226 |

A. Mission Description and Budget Item Justification: The Humanitarian Demining Research and Development (HD R&D) program element demonstrates and evaluates prototype demining systems for US forces and for indigenous, DoD supported, host nation conducted demining operations. The HD R&D Program focuses on development of technologies to improve the efficiency and safety of the removal of post conflict landmines and UXO, which are a significant danger to US forces performing peace and stability operations, as well as to civilians. 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 Night Vision Electronic Sensors Directorate (NVESD) Tactical Countermines mission area. Equipment capabilities are assessed by host nation demining partners in actual demining conditions. The program aims to improve existing technologies for: individual mine/UXO and minefield detection; wide area survey; mechanical mine/UXO and vegetation clearance; mine neutralization; individual soldier/deminer protection; detection of explosives in buried mines; verification of the presence of mines; marking and mapping of mines/minefields; post clearance quality assurance (QA); mine awareness training; and individual deminer tools. Areas of emphasis are identified/validated at an annual Requirements Review held by the Office of the Assistant Secretary of Defense for Special Operations and Low Intensity Conflict (OASD SO/LIC). The Requirements Review involves representatives from the combatant commands and from mine affected nations. Under OASD SO/LIC, the HD R&D Program is a strong participant in the International Test and Evaluation Program (ITEP).

| <u>B. Program Change Summary</u> | FY 2007 | FY 2008 | FY 2009 |
|--|---------|---------|---------|
| Previous President's Budget (FY 2008) | 14.406 | 14.013 | 14.396 |
| Current BES/President's Budget (FY 2009) | 14.404 | 13.923 | 14.373 |
| Total Adjustments | -0.002 | -0.090 | -0.023 |
| Congressional Program Reductions | | | |
| Congressional Rescissions | | | |
| Congressional Increases | | | |
| Reprogrammings | | | |
| SBIR/STTR Transfer | | | |
| Other | | | |

Remarks: The FY 2007 program value reflects rounding adjustments at the Department level.

C. Other Program Funding Summary Not applicable for this item.

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D. Acquisition Strategy Following a rapid prototyping strategy, the program emphasizes the use/modification of existing, commercially available items 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 US 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 maximum extent possible, by leveraging ongoing countermine R&D efforts in other US 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).

E. Performance Metrics:

| FY | Strategic Goals Supported | Existing Baseline | Planned Performance Improvement / Requirement Goal | Actual Performance Improvement | Planned Performance Metric / Methods of Measurement | Actual Performance Metric / Methods of Measurement |
|----|---------------------------|-------------------|--|--------------------------------|---|--|
| 08 | see comment below | | | | | |
| 09 | see comment below | | | | | |
| | | | | | | |

Comment: Humanitarian Demining - 0603920D8Z

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 2008 Target:

- 70% of currently funded research projects are completed on time and within budget
- 5% increase in the number of research projects accepted
- Complete scheduled R&D project tasks
- Transition scheduled projects to user communities
- Conduct annual Humanitarian R&D Program Requirements Review

FY 2009 Target:

- 70% of currently funded research projects are completed on time and within budget
- 5% increase in the number of research projects accepted
- Conduct annual Humanitarian R&D Program Requirements Review
- Complete scheduled R&D project tasks

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Transition scheduled projects to user communities

Basis of FY 2008 to Date Performance Rating: Currently the number of funded research projects are on track to be completed per the target.

Verification: The Humanitarian Demining Program performs program reviews and has oversight from OSD.

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

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|--|---------------------|---|---------------------|---------------------|---------------------|---------------------|-------------------------------|--|
| APPROPRIATION/ BUDGET ACTIVITY RDTE, Defense Wide BA 04 | | PE NUMBER AND TITLE 0603920D8Z - SO/LIC Humanitarian De-mining | | | | | PROJECT P920 | |
| COST (\$ in Millions) | FY 2007 Estimate | FY 2008 Estimate | FY 2009 Estimate | FY 2010 Estimate | FY 2011 Estimate | FY 2012 Estimate | FY 2013 Estimate | |
| P920 SO/LIC Humanitarian De-mining P920 | 14.404 | 13.923 | 14.373 | 14.778 | 14.762 | 14.995 | 15.226 | |

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B. Accomplishments/Planned Program:

| | | | |
|--|----------------|----------------|----------------|
| <u>Accomplishments/Planned Program Title:</u> | <u>FY 2007</u> | <u>FY 2008</u> | <u>FY 2009</u> |
| 2007 Accomplishments | 14.404 | | |

In FY2007, the HD R&D Program actively engaged in the operational field evaluations of 22 humanitarian demining (HD) technologies in 11 countries. Of those technologies, the program completed three evaluations, including the Handheld Standoff Mine Detection System (HSTAMIDS) in Thailand; the Uni-Disk in Laos; and the Mantis in Nicaragua. The HD R&D Program initiated eight new evaluations, including the Maxx+ in Cambodia; the Multi-Tool Excavator and Air-Spade in Chile; the Rotary Mine Comb in Angola; the Orbit Sifter and Excavator Attachments in Afghanistan; the Improved Backhoe in Yemen; and the Tempest in Ecuador. The HD R&D Program continued ten evaluations, including the Rhino Earth Tiller in Azerbaijan; the Survivable Demining Tractor, Beaver, Tempest and Uni-Disk in Thailand; and the Explosive Harvesting System, HSTAMIDS, Tempest and Sifting Attachments in Cambodia; and Maxx in Guinea Bissau. In addition, the program performed field assessments in Tunisia, Vietnam, Ecuador, and Chile to determine whether HD equipment could be effectively utilized. In support of US military operations in Afghanistan, HD R&D Program provided support and repair parts for seven PM-CCS front loader mine sifting systems in use by US forces. In addition, data from the HD R&D Program's intensive evaluation of HSTAMIDS in the humanitarian demining context provided critical new training and operation techniques to the US Army's Tactical Countermining HSTAMIDS program. In FY2007 prototype development, program engineers completed several prototypes, including the Raptor and Badger mine/vegetation clearing vehicles, which will be tested technically and evaluated in the field in FY2008. In FY2007 the program tested 14 mine detection and clearance systems at Fort AP Hill, Yuma Proving Grounds, and Aberdeen Proving Grounds. Lastly, the HD R&D Program conducted its FY2007 Requirements Review, in which 48 participants from 11 mine action organizations, five non-governmental organizations (NGOs), three international organizations and six US government entities discussed demining equipment needs. Countries represented included Cambodia, Chile, Nicaragua, Guinea-Bissau, Sri Lanka, Thailand, Ecuador, Afghanistan, Iraq, Vietnam, and Angola. Representatives from the Department of State, the Joint Staff and the Combatant Commands (SOUTHCOM and CENTCOM) attended. Several international organizations active in mine action also participated, including representatives from the United Nations Mine Action Service (UNMAS), the Inter-American Defense Board (IADB), and the Organization of American States (OAS).

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PROJECT
P920

Accomplishments/Planned Program Title:

FY 2007

FY 2008

FY 2009

FY 2008 Plans

13.923

As a result of requests made during the annual Requirements Review, OCONUS field assessments, and in-house developments in FY2007, the HD R&D program is deploying many of its systems to humanitarian demining organizations overseas, including locations in Afghanistan and Iraq. These deployments include the STORM and additional HSTAMIDS to Cambodia, the Uni-Disk, PECO to Thailand, Sifting Buckets to Iraq, and MANTIS to Afghanistan. In addition, the HD R&D Program will continue its deployments of the Tempest, Maxx, Maxx+, Survivable Demining Tractor, Explosive Harvesting System, Multi-Tool Excavator, Air-Spade, Improved Backhoe, Beaver, HSTAMIDS, Sifting Attachments, and the Rotary Mine Comb to countries in Africa, South America and Asia. The HD R&D Program will continue final development, test and evaluation of prototype technologies in the following areas: detection discrimination and confirmation; vegetation clearance; mechanical mine excavation and clearance; individual deminer/soldier tools; and aerial survey area reduction. The HD R&D Program will support the combatant commands and Embassy staffs by conducting site surveys, country assessments and technology development and evaluations.

Accomplishments/Planned Program Title:

FY 2007

FY 2008

FY 2009

FY 2009 Plans

14.373

The HD R&D Program will complete ongoing equipment developments/modifications and operational evaluations from FY2008. The HD R&D Program will support the combatant commands and Embassy staffs by conducting site surveys, country assessments and technology development and evaluation. The program will continue development, test and evaluation of prototype technologies in the following areas: detection discrimination and confirmation; vegetation clearance; mechanical mine excavation and clearance; and individual deminer/soldier tools.

C. Other Program Funding Summary Not applicable for this item.

D. Acquisition Strategy Following a rapid prototyping strategy, the program emphasizes the use/modification of existing, commercially available items 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 US 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 maximum extent possible, by leveraging ongoing countermining R&D efforts in other US and foreign R&D activities, and by taking advantage of extensive in-house fabrication capabilities at the US Army's Night Vision and Electronic Sensors Directorate.

E. Major Performers

| Category | Name | Location | Type of Work and Description | Award Date |
|---------------------------|-----------------|----------|--|------------|
| <u>Contractors</u> | | | | |
| | Major Performer | Fibertek | Engineering; Operational test and evaluation support | |

OSD RDT&E COST ANALYSIS (R3)

February 2008

| BUDGET ACTIVITY | | | PE NUMBER AND TITLE | | | | | | | PROJECT | | |
|--|------------------------|--------------------------------|--|--------------|--------------------|--------------|--------------------|--------------|--------------------|------------------|------------|--------------------------|
| 4 - Advanced Component Development and Prototypes (ACDP) | | | 0603920D8Z - SO/LIC Humanitarian De-mining | | | | | | | P920 | | |
| I. Product Development | Contract Method & Type | Performing Activity & Location | Total PYs Cost | FY 2007 Cost | FY 2007 Award Date | FY 2008 Cost | FY 2008 Award Date | FY 2009 Cost | FY 2009 Award Date | Cost To Complete | Total Cost | Target Value of Contract |
| Primary Hardware Development | Note 1 | Note 2 | 104408 | 6181 | | 5975 | | 6168 | | 25645 | 148377 | |
| Ancillary Hardware Development | | | | | | | | | | | | |
| Systems Engineering | | | | | | | | | | | | |
| Licenses | | | | | | | | | | | | |
| Tooling | | | | | | | | | | | | |
| GFE | | | | | | | | | | | | |
| Award Fees | | | | | | | | | | | | |
| Subtotal: | | | 104408 | 6181 | | 5975 | | 6168 | | 25645 | 148377 | |

Remarks: 1: The Humanitarian Demining R&D Program manages many individual contracts for the development of mine/UXO and minefield detection, mine/UXO and vegetation clearance, individual deminer tools and personal protection equipment, and mine neutralization technologies optimized for humanitarian demining. As such, one entry cannot be made for any category in this document. Competitive contracting is used to the maximum extent possible. Due to the nature of this program, which acquires very limited quantities (normally 1 or 2 each) of hand built or modified prototype items, most contract types are cost based.

2. Since so many performing organizations, both U.S. and foreign, are involved, one entry cannot be made for any cost category in this document (but can be provided upon request).

3. The HD Program goal is to award all individual efforts to ensure DoD performance goals are met or exceeded.

4. Because individual contracts / task efforts seldom exceed a 12 month period of performance resulting in delivery of one or two prototypes, the total value of each individual contract is usually the same as the award amount for all cost categories in this document.

| II. Support Costs | Contract Method & Type | Performing Activity & Location | Total PYs Cost | FY 2007 Cost | FY 2007 Award Date | FY 2008 Cost | FY 2008 Award Date | FY 2009 Cost | FY 2009 Award Date | Cost To Complete | Total Cost | Target Value of Contract |
|------------------------------|------------------------|--------------------------------|----------------|--------------|--------------------|--------------|--------------------|--------------|--------------------|------------------|------------|--------------------------|
| Software Development | Note 1 | Note 2 | 5219 | 2014 | | 1946 | | 2009 | | 8355 | 19543 | |
| Training Development | | | | | | | | | | | | |
| Integrated Logistics Support | | | | | | | | | | | | |
| Configuration Management | | | | | | | | | | | | |
| Technical Data | | | | | | | | | | | | |
| GFE | | | | | | | | | | | | |
| Subtotal: | | | 5219 | 2014 | | 1946 | | 2009 | | 8355 | 19543 | |

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BUDGET ACTIVITY

4 - Advanced Component Development and Prototypes (ACDP)

PE NUMBER AND TITLE

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PROJECT

P920

Remarks: See Notes 1, 2, 3 and 4 in the Product Development Section Remarks.

5. For the HD R&D Program, Operational Test and Evaluation is the limited operational field evaluations of prototype equipment. These evaluations are performed by a governmental mine action organization, or a supporting non-governmental demining organization in the host nation under actual conditions. Funds for this category support the preparation and shipment of the equipment, and logistics support packages (training, manuals, spare parts, etc.) to support the field evaluation. Although foreign governments are responsible for performing their own evaluation, the performing organization for the purpose of this document is RDECOM NVESD.

| III. Test And Evaluation | Contract Method & Type | Performing Activity & Location | Total PYs Cost | FY 2007 Cost | FY 2007 Award Date | FY 2008 Cost | FY 2008 Award Date | FY 2009 Cost | FY 2009 Award Date | Cost To Complete | Total Cost | Target Value of Contract |
|-------------------------------|------------------------|--------------------------------|----------------|--------------|--------------------|--------------|--------------------|--------------|--------------------|------------------|------------|--------------------------|
| Development Test & Evaluation | | | | | | | | | | | | |
| Operational Test & Evaluation | N/A | RDECOM-NVESD Fort Belvoir, VA | 5032 | 1165 | | 1126 | | 1162 | | 4833 | 13318 | |
| Tooling | | | | | | | | | | | | |
| GFE | | | | | | | | | | | | |
| Subtotal: | | | 5032 | 1165 | | 1126 | | 1162 | | 4833 | 13318 | |

Remarks: See Notes 1, 2, 3 and 4 in the Product Development Section Remarks.

| IV. Management Services | Contract Method & Type | Performing Activity & Location | Total PYs Cost | FY 2007 Cost | FY 2007 Award Date | FY 2008 Cost | FY 2008 Award Date | FY 2009 Cost | FY 2009 Award Date | Cost To Complete | Total Cost | Target Value of Contract |
|--------------------------------|------------------------|--------------------------------|----------------|--------------|--------------------|--------------|--------------------|--------------|--------------------|------------------|------------|--------------------------|
| Contractor Engineering Support | Note 1 | Note 2 | 7469 | 994 | | 961 | | 993 | | 4123 | 14540 | |
| Government Engineering Support | N/A | RDECOM-NVESD Ft Belvoir, VA | 7587 | 1101 | | 1064 | | 1098 | | 4567 | 15417 | |
| Program Management Support | Note 1 | Note 2 | 10063 | 764 | | 738 | | 762 | | 3169 | 15496 | |
| Program Management Personnel | N/A | RDECOM-NVESD Ft Belvoir, VA | 1210 | 156 | | 152 | | 157 | | 651 | 2326 | |
| Travel | N/A | N/A | 2500 | 349 | | 338 | | 348 | | 1449 | 4984 | |
| Labor (Research Personnel) | N/A | RDECOM-NVESD Ft Belvoir, VA | 12410 | 1680 | | 1623 | | 1676 | | 6969 | 24358 | |
| Overhead | | | | | | | | | | | | |
| Subtotal: | | | 41239 | 5044 | | 4876 | | 5034 | | 20928 | 77121 | |

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| BUDGET ACTIVITY 4 - Advanced Component Development and Prototypes (ACDP) | PE NUMBER AND TITLE 0603920D8Z - SO/LIC Humanitarian De-mining | PROJECT P920 |
|--|--|------------------------|

Remarks: See Notes 1, 2, 3 and 4 in the Product Development Section Remarks.

| | | | | | | | | | |
|----------------------------|--------|-------|--|-------|--|-------|--|-------|--------|
| Project Total Cost: | 155898 | 14404 | | 13923 | | 14373 | | 59761 | 258359 |
|----------------------------|--------|-------|--|-------|--|-------|--|-------|--------|