| **Exhibit R-2**, PB 2010 Defense Advanced Research Projects Agency **RDT&E Budget Item Justification** | **DATE:** May 2009 |
|---|---|
| **APPROPRIATION/BUDGET ACTIVITY**<br>0400 - Research, Development, Test & Evaluation, Defense-Wide/BA 3 - Advanced Technology Development (ATD) | **R-1 ITEM NOMENCLATURE**<br>PE 0603764E LAND WARFARE TECHNOLOGY |

| COST ($ in Millions) | FY 2008 Actual | FY 2009 Estimate | FY 2010 Estimate | FY 2011 Estimate | FY 2012 Estimate | FY 2013 Estimate | FY 2014 Estimate | FY 2015 Estimate | Cost To Complete | Total Cost |
|---|---|---|---|---|---|---|---|---|---|---|
| Total Program Element | 19.104 | 0.000 | 0.000 | | | | | | Continuing | Continuing |
| LNW-01: LAND WARFARE TECHNOLOGY | 19.104 | 0.000 | 0.000 | | | | | | Continuing | Continuing |

**A. Mission Description and Budget Item Justification**

(U) The Land Warfare Technology program element is budgeted in the Advanced Technology Development Budget Activity because it is developing and demonstrating the concepts and technologies that will address the mission requirements of the 21st Century land warrior. This program completed with FY 2008 funding and on-going efforts will continue in other program elements that fund technologies to support urban area operations.

(U) The emerging U.S. vision of future land warfare places strong emphasis on technology supporting early entry of light, efficient land forces, particularly in urban areas where both combatants and civilians are present. The Rapid Strike Force Technology project developed technologies that serve as force multipliers, enabling safe and effective operations in hostile environments.

**B. Program Change Summary ($ in Millions)**

| | FY 2008 | FY 2009 | FY 2010 | FY 2011 |
|---|---|---|---|---|
| Previous President's Budget | 19.642 | 0.000 | 0.000 | |
| Current BES/President's Budget | 19.104 | 0.000 | 0.000 | |
| Total Adjustments | -0.538 | 0.000 | 0.000 | |
| Congressional Program Reductions | 0.000 | 0.000 | | |
| Congressional Rescissions | 0.000 | 0.000 | | |
| Total Congressional Increases | 0.000 | 0.000 | | |
| Total Reprogrammings | 0.000 | 0.000 | | |
| SBIR/STTR Transfer | -0.538 | 0.000 | | |

**Change Summary Explanation**

FY 2008

Decrease reflects the SBIR/STTR transfer.

| **Exhibit R-2a**, PB 2010 Defense Advanced Research Projects Agency **RDT&E Project Justification** | **DATE:** May 2009 |
|---|---|

| **APPROPRIATION/BUDGET ACTIVITY** | **R-1 ITEM NOMENCLATURE** | **PROJECT NUMBER** |
|---|---|---|
| 0400 - Research, Development, Test & Evaluation, Defense-Wide/BA 3 - Advanced Technology Development (ATD) | PE 0603764E LAND WARFARE TECHNOLOGY | LNW-01 |

| **COST ($ in Millions)** | **FY 2008 Actual** | **FY 2009 Estimate** | **FY 2010 Estimate** | **FY 2011 Estimate** | **FY 2012 Estimate** | **FY 2013 Estimate** | **FY 2014 Estimate** | **FY 2015 Estimate** | **Cost To Complete** | **Total Cost** |
|---|---|---|---|---|---|---|---|---|---|---|
| LNW-01: LAND WARFARE TECHNOLOGY | 19.104 | 0.000 | 0.000 | | | | | | Continuing | Continuing |

**A. Mission Description and Budget Item Justification**

(U) To support urban area operations, this project developed technologies that serve as force multipliers, enabling safe and effective operations in hostile environments.

| **B. Accomplishments/Planned Program ($ in Millions)** | **FY 2008** | **FY 2009** | **FY 2010** | **FY 2011** |
|---|---|---|---|---|
| Multi-Modal Missile<br><br>(U) The Multi-Modal Missile program is exploring the development of an integrated, networked man-portable weapon system capable of performing surface-to-surface, and surface-to-air missions with an emphasis on extreme precision. Beginning in FY 2009, this program will be funded in PE 0603286E, Project AIR-01.<br><br>*FY 2008 Accomplishments:*<br>- Continued initial system design analysis and trade off studies. | 3.500 | 0.000 | 0.000 | |
| Non-Lethal Alternatives for Urban Operations<br><br>(U) The Non-Lethal Alternatives for Urban Operations effort explored system concepts and enabled technologies for non-lethal weapons in challenging urban and semi-urban environments.<br><br>*FY 2008 Accomplishments:*<br>- Conducted less-than-lethal technology maturation efforts to address and reduce system risk.<br>- Researched and developed prototype chemical system that reversibly denies adversary mobility (people and vehicles) by modifying ground traction, with simultaneous retention of friendly force mobility.<br>- Performed laboratory and limited field tests of mobility control systems. | 4.346 | 0.000 | 0.000 | |
| Concealed Weapons Detection | 3.500 | 0.000 | 0.000 | |

| **Exhibit R-2a**, PB 2010 Defense Advanced Research Projects Agency **RDT&E Project Justification** | | **DATE:** May 2009 |
|---|---|---|
| **APPROPRIATION/BUDGET ACTIVITY**<br>0400 - Research, Development, Test & Evaluation, Defense-Wide/BA 3 - Advanced Technology Development (ATD) | **R-1 ITEM NOMENCLATURE**<br>PE 0603764E LAND WARFARE TECHNOLOGY | **PROJECT NUMBER**<br>LNW-01 |

| **B. Accomplishments/Planned Program ($ in Millions)** | **FY 2008** | **FY 2009** | **FY 2010** | **FY 2011** |
|---|---|---|---|---|
| (U) The Concealed Weapons Detection program explored various phenomenologies for concealed weapons detection.<br><br>*FY 2008 Accomplishments:*<br>- Conducted conceptual verification to determine qualitative performance achievable of stand-off imaging detection.<br>- Developed candidate conceptual designs meeting objective system performance. | | | | |
| Asymmetric Materials for the Urban Battlespace<br><br>(U) The Asymmetric Materials for the Urban Battlespace program investigated a novel class of materials that, either by themselves or as part of a system, provided asymmetric capabilities in visible signatures, ballistic/fragment/blast protection, and personnel transport.<br><br>*FY 2008 Accomplishments:*<br>- Developed and integrated material components and architectures for laboratory testing. | 4.874 | 0.000 | 0.000 | |
| Deep Speak<br><br>(U) The Deep Speak program developed new networking, coding, and waveform techniques that enable communications signals to penetrate the surrounding buildings and underground facilities. This will maintain the warfighters' links to each other and the global network, magnifying our striking power.<br><br>(U) Predictive networking techniques that use current position and velocity information to predict future network topologies will reduce the number of broken links by 98%. The program is planned to transition to the Army.<br><br>*FY 2008 Accomplishments:*<br>- Developed predictive network techniques and demonstrated (through simulation) a significant reduction in the number of broken links in an urban networking environment.<br>- Demonstrated predictive networking, multi-layer waveforms and synthetic speech encoding technologies in typical urban environments. | 2.884 | 0.000 | 0.000 | |

| **Exhibit R-2a**, PB 2010 Defense Advanced Research Projects Agency **RDT&E Project Justification** | | **DATE:** May 2009 |
|---|---|---|
| **APPROPRIATION/BUDGET ACTIVITY**<br>0400 - Research, Development, Test & Evaluation, Defense-Wide/BA 3 - Advanced Technology Development (ATD) | **R-1 ITEM NOMENCLATURE**<br>PE 0603764E LAND WARFARE TECHNOLOGY | **PROJECT NUMBER**<br>LNW-01 |

**C. Other Program Funding Summary ($ in Millions)**

N/A

**D. Acquisition Strategy**

N/A

**E. Performance Metrics**

Specific programmatic performance metrics are listed above in the program accomplishments and plans section.