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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Army **Date:** March 2014

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| Appropriation/Budget Activity 2040: Research, Development, Test & Evaluation, Army / BA 7: Operational Systems Development | R-1 Program Element (Number/Name) PE 0205410A / Materials Handling Equipment |
|--|--|

| COST (\$ in Millions) | Prior Years | FY 2013 | FY 2014 | FY 2015 Base | FY 2015 OCO # | FY 2015 Total | FY 2016 | FY 2017 | FY 2018 | FY 2019 | Cost To Complete | Total Cost |
|--|-------------|---------|---------|--------------|---------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element | - | - | - | 0.834 | - | 0.834 | 0.402 | 0.304 | 0.750 | 0.750 | - | 3.040 |
| EE9: Materials Handling Equipment - Advanced Development | - | - | - | 0.834 | - | 0.834 | 0.402 | 0.304 | 0.750 | 0.750 | - | 3.040 |

The FY 2015 OCO Request will be submitted at a later date.

Note

Funding realigned from 603804A Project G14

A. Mission Description and Budget Item Justification

This program element supports component development and Material Handling Equipment (MHE) prototyping and stays abreast of emerging and available technologies to be integrated into military MHE to address identified capability gaps and warfighter objectives. This project enables the development of selected technologies and transition to system integration and development or production of MHE products. MHE includes Rough Terrain Forklifts, Rough Terrain Container Handlers (RTCH) and Cranes, as well as ancillary MHE equipment, to support distribution of critical supplies in the theater of operations. FY15 funding will allow innovative research with the goal to improve fuel efficiency, diagnostic tasks, and to enhance operation of MHE equipment.

| B. Program Change Summary (\$ in Millions) | <u>FY 2013</u> | <u>FY 2014</u> | <u>FY 2015 Base</u> | <u>FY 2015 OCO</u> | <u>FY 2015 Total</u> |
|---|-----------------------|-----------------------|----------------------------|---------------------------|-----------------------------|
| Previous President's Budget | - | - | - | - | - |
| Current President's Budget | - | - | 0.834 | - | 0.834 |
| Total Adjustments | - | - | 0.834 | - | 0.834 |
| • Congressional General Reductions | - | - | | | |
| • Congressional Directed Reductions | - | - | | | |
| • Congressional Rescissions | - | - | | | |
| • Congressional Adds | - | - | | | |
| • Congressional Directed Transfers | - | - | | | |
| • Reprogrammings | - | - | | | |
| • SBIR/STTR Transfer | - | - | | | |
| • Adjustments to Budget Years | - | - | 0.834 | - | 0.834 |

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| Appropriation/Budget Activity 2040 / 7 | R-1 Program Element (Number/Name) PE 0205410A / <i>Materials Handling Equipment</i> | Project (Number/Name) EE9 / <i>Materials Handling Equipment - Advanced Development</i> |
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| COST (\$ in Millions) | Prior Years | FY 2013 | FY 2014 | FY 2015 Base | FY 2015 OCO # | FY 2015 Total | FY 2016 | FY 2017 | FY 2018 | FY 2019 | Cost To Complete | Total Cost |
|---|-------------|---------|---------|--------------|---------------|---------------|---------|---------|---------|---------|------------------|------------|
| <i>EE9: Materials Handling Equipment - Advanced Development</i> | - | - | - | 0.834 | - | 0.834 | 0.402 | 0.304 | 0.750 | 0.750 | - | 3.040 |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | - | - |

The FY 2015 OCO Request will be submitted at a later date.

A. Mission Description and Budget Item Justification

This project supports component development and Material Handling Equipment (MHE) prototyping and stays abreast of emerging and available technologies to be integrated into military MHE to address identified capability gaps and warfighter objectives. This project enables the development of selected technologies and transition to system integration and development or production of MHE products. MHE includes Rough Terrain Forklifts, Rough Terrain Container Handlers (RTCH) and Cranes, as well as ancillary MHE equipment, to support distribution of critical supplies in the theater of operations. FY15 funding will allow for innovative research with the goal to improve fuel efficiency, diagnostic tasks, and to enhance operation of MHE equipment.

B. Accomplishments/Planned Programs (\$ in Millions)

| | FY 2013 | FY 2014 | FY 2015 |
|---|---------|---------|---------|
| <p>Title: Baseline Fuel Efficiency of Material Handling Equipment (MHE)</p> <p>Description: Develop standard duty cycles for fielded system, investigate training/technology for improving efficiency and validate performance of proposed changes.</p> <p>FY 2015 Plans: Continue baseline and evaluate new solutions for fluid and controls</p> | - | - | 0.250 |
| <p>Title: Upgrade RTCH control systems and on-board diagnostics</p> <p>Description: Perform analysis of current control systems and technology which can be used to improve performance and reliability. Investigate integration of on-board diagnostics to aid in operation and maintenance.</p> <p>FY 2015 Plans: Investigate current RTCH control systems and conduct Market Research</p> | - | - | 0.434 |
| <p>Title: Investigate Robotic Assist on Material Handling Equipment (MHE)</p> <p>Description: Research and demonstrate technologies which would enhance operation such as the inclusion of cameras, collision sensors and lifting aids.</p> <p>FY 2015 Plans:</p> | - | - | 0.150 |

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|---|----------------|----------------|----------------|
| B. Accomplishments/Planned Programs (\$ in Millions) | FY 2013 | FY 2014 | FY 2015 |
| Conduct research into appliqué which will enhance operation | | | |
| Accomplishments/Planned Programs Subtotals | - | - | 0.834 |

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

| Line Item | FY 2013 | FY 2014 | FY 2015 Base | FY 2015 OCO | FY 2015 Total | FY 2016 | FY 2017 | FY 2018 | FY 2019 | Cost To Complete | Total Cost |
|---|----------------|----------------|-------------------------|------------------------|--------------------------|----------------|----------------|----------------|----------------|-----------------------------|-------------------|
| • RDT&E: 0604804A, <i>Logistics and Engineer Equipment, Engineering Development (H14)</i> | 1.265 | 0.298 | 0.283 | - | 0.283 | 0.972 | 0.951 | 0.607 | 0.627 | Continuing | Continuing |

Remarks

D. Acquisition Strategy

Procure prototype component items for engineering tests and demonstrations with subject matter experts. Conduct trades between cost and improved maintainability and environmental risk reduction. Process engineering change proposals, update technical manuals and training materials, and prepare supporting acquisition documents and data to procure new training aids.

E. Performance Metrics

N/A

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| Exhibit R-4, RDT&E Schedule Profile: PB 2015 Army | | Date: March 2014 |
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| | FY 2013 | | | | FY 2014 | | | | FY 2015 | | | | FY 2016 | | | | FY 2017 | | | | FY 2018 | | | | FY 2019 | | | |
|--|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| | 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 |
| Baseline fuel efficiency of equipment | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Improve operational efficiency | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Investigate current RTCH control systems and conduct market research | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Electrical backbone update | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Improve camera system | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Investigate robotic assist on Material Handling Equipment | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Engineer R&D support | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

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| Exhibit R-4A, RDT&E Schedule Details: PB 2015 Army | | Date: March 2014 |
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Schedule Details

| Events | Start | | End | |
|--|---------|------|---------|------|
| | Quarter | Year | Quarter | Year |
| Baseline fuel efficiency of equipment | 1 | 2015 | 4 | 2015 |
| Improve operational efficiency | 1 | 2016 | 4 | 2019 |
| Investigate current RTCH control systems and conduct market research | 1 | 2015 | 4 | 2015 |
| Electrical backbone update | 1 | 2016 | 4 | 2019 |
| Improve camera system | 1 | 2016 | 4 | 2019 |
| Investigate robotic assist on Material Handling Equipment | 2 | 2015 | 4 | 2019 |
| Engineer R&D support | 1 | 2016 | 4 | 2019 |