Mechanical Damage Technical Workshop

Prevention Technology Research

Pipeline & Hazardous Materials Safety Administration
Pipeline Safety R&D Objectives

- Fostering the development of new technologies
- Strengthening regulatory requirements and related national consensus standards
- Improving & disseminating knowledge to decision makers
# Prevention Program Elements and Goals

<table>
<thead>
<tr>
<th>Program Elements</th>
<th>Program Element Goals</th>
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<tbody>
<tr>
<td>1. Damage Prevention</td>
<td>Reducing the number of incidents and accidents resulting from excavation damage and outside force</td>
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<td>2. Pipeline Assessment and Leak Detection</td>
<td>Identifying and locating critical pipeline defects using inline inspection, direct assessment and leak detection</td>
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<td>3. Defect Characterization and Mitigation</td>
<td>Improving the capability to characterize the severity of defects in pipeline systems and to mitigate them before they lead to incidents or accidents</td>
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<td>4. Improved Design, Construction, and Materials</td>
<td>Improving the integrity of pipeline facilities through enhanced materials, and techniques for design and construction</td>
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<td>5. Systems for Pipeline Mapping and Information Management</td>
<td>Enhancing the ability to prevent and respond to incidents and accidents through management of information related to pipeline location (mapping) and threats definition</td>
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<td>6. Enhanced Operation Controls and Human Factors Management</td>
<td>Improving the safety of pipeline operations through enhanced controls and human factors management</td>
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<tr>
<td>7. Risk Management &amp; Communications</td>
<td>Reducing the probability of incidents and accidents, and mitigating the consequences of hazards to pipelines</td>
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<tr>
<td>8. Safety Issues for Emerging Technologies</td>
<td>Identifying and assessing emerging pipeline system technologies for opportunities to enhancing their safety</td>
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Mechanical Damage Challenges
Prevention R&D

- Coordinating various research efforts
- What’s the development order?
- Developing the right technology
  - Technology
  - Knowledge
  - Standards
- Live demonstration test beds needed – field conditions
## Mechanical Damage Challenges
### Prevention R&D

<table>
<thead>
<tr>
<th>#</th>
<th>Project ID</th>
<th>Contractor</th>
<th>Project Title</th>
<th>PHMSA</th>
<th>Co-Share</th>
<th>%</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>DTRS56-04-T-0006</td>
<td>C-FER Technologies</td>
<td>&quot;Effectiveness of Prevention Methods for Excavation Damage&quot;</td>
<td>$70,000</td>
<td>$80,000</td>
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<tr>
<td>2</td>
<td>DTPH56-05-T-0004</td>
<td>Electricore, Inc.</td>
<td>&quot;Use of Unmanned Underwater Vehicle (UUAV) for Pipeline Surveillance to Improve Safety and Lower Cost&quot;</td>
<td>$399,932</td>
<td>$285,000</td>
<td>71</td>
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<td>3</td>
<td>DTPH56-05-T-0004</td>
<td>Electricore, Inc.</td>
<td>&quot;Use of Unmanned Air Vehicle (UAV) for Pipeline Surveillance to Improve Safety and Lower Cost&quot;</td>
<td>$457,361</td>
<td>$625,416</td>
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<td>4</td>
<td>DTRS56-04-T-0012</td>
<td>ITT Industries Space Systems, LLC</td>
<td>&quot;Hazardous Liquids Airborne Lidar Observation Study (HALOS)&quot;</td>
<td>$452,266</td>
<td>$455,267</td>
<td>67</td>
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<td>5</td>
<td>DTRS57-05-C-10110</td>
<td>Physical Sciences Inc.</td>
<td>Infrasonic Frequency Seismic Sensor System for Pipeline Integrity Management&quot;</td>
<td>$748,308</td>
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</table>

**Totals:** $2,127,867 $1,445,683
Research Projects funded by Pipeline Safety R&D Program

http://primis.phmsa.dot.gov/rd/projectmap.htm
Mechanical Damage Challenges
Prevention R&D

What kind of technologies are expected?

1. Lesions Learned from past accidents & Failures

2. Low Cost, High Reliability, Automated Approach

3. Quicker Turn Around in Defect Notification

4. Not Invented Here

4. Remote Monitoring –M2M Technologies
Mechanical Damage Challenges
Prevention R&D

What kind of results are expected?

1. Universal understanding of route cause failure analysis

2. Set goal to reduction or eliminate unnecessary digs

3. Demonstrate cost effect leak detection and encroachment monitoring technologies

4. Continued Support in hosting Deployment of Technologies
Pipeline Safety R&D Program
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