INTERAGENCY R&D Program Presentation

Department of Transportation
Department of Energy
Department of Commerce
Department of the Interior
The main objective is to provide an informative, joint pipeline R&D program presentation which describes the collaboration, coordination and project co-funding activities that has resulted from the passage of the Pipeline Safety Improvement Act of 2002 (PSIA 2002).

More specifically to identify and describe the following:

1. Requirements of PSIA 2002 and joint implementation
2. Current project funding levels
3. Current project co-funding between programs
4. Technology demonstrations
5. Project hand-offs
6. Future joint activities
Pipeline Safety Improvement Act of 2002 (PSIA 2002)

PSIA-2002 required that the Department of Transportation (DOT), the Department of Energy (DOE), and the National Institute of Standards and Technology (NIST) in the Department of Commerce (DOC) “shall carry out a program of research, development, demonstration and standardization to ensure the integrity of pipeline facilities.”

The agencies have agreed to the areas of responsibility as described by constructing the following:

1. An Interagency Five-Year R&D Program Plan for Pipeline Safety and Integrity

2. A Memorandum of Understanding

3. Annual Update Reports
Interagency Implementation of the PSIA 2002 Mandate

To be able to Collaborate, Coordinate and Co-Fund effectively, the following activities have been designed:

1. Quarterly interagency meetings to discuss each program’s R&D activities and identify joint opportunities

2. Periodic Government/Industry R&D Forums to identify challenges and gaps in pipeline technology and safety

3. Collaborative review of agency research solicitation submissions

4. Technology demonstrations involving interagency hand-off of R&D project responsibility as technology is proven feasible

5. Interagency calendar to illustrate our scheduled activities

6. Interagency Pipeline R&D Program presentation to consolidate information on collaboration, coordination and project co-funding activities
## Agency Responsibilities Related to PSIA 2002 Program Elements

<table>
<thead>
<tr>
<th>Program Elements</th>
<th>On-Shore</th>
<th>Off-Shore</th>
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<tbody>
<tr>
<td>1. Materials inspection</td>
<td>DOT</td>
<td>DOI</td>
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<td>2. Pipe anomaly detection</td>
<td>DOT</td>
<td>DOI</td>
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<tr>
<td>3. Internal inspection and leak detection technologies</td>
<td>DOT</td>
<td>DOI</td>
</tr>
<tr>
<td>4. Methods of analyzing content of pipeline throughput</td>
<td>DOT</td>
<td>DOI</td>
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<td>5. Pipeline security</td>
<td>DOT</td>
<td>DOI</td>
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<td>6. Risk assessment methodology</td>
<td>DOT</td>
<td>DOI</td>
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<td>7. Communication, control, and information systems surety</td>
<td>DOT</td>
<td>DOI</td>
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<td>8. Fire safety of pipelines</td>
<td>NIST</td>
<td>DOI</td>
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<td>9. Improved excavation, construction, and repair technologies</td>
<td>DOT</td>
<td>DOI</td>
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<tr>
<td>10. Other appropriate elements</td>
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<tr>
<td>a. Materials analysis &amp; development</td>
<td>DOT</td>
<td>DOI</td>
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<tr>
<td>b. Standardization activities</td>
<td>NIST</td>
<td>NIST</td>
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Assuring the safety and integrity of hazardous liquid and natural gas pipelines through R&D activities designed to support identification, characterization, detection and management of risks to safety and integrity;

Historically focused on developing new and advanced infrastructure technologies having greater developmental risk and expected to be commercialized over a longer time frame. The Administration has proposed to transfer responsibility for developing these pipeline safety technologies to the Department of Transportation’s Office of Pipeline Safety;

Developing standards, advanced materials and fire safety technologies; and

Through the Minerals Management Service, assuring pipeline safety and integrity through regulation and inspection of offshore pipelines.
NIST is not appropriated R&D monies to address PSIA 2002 technical subjects. NIST conducts pipeline related research for a fee and currently is under contract with DOT, DOE and other feds to conduct R&D that may address PSIA 2002 technical subjects.
## Recent Joint Funding Activities

<table>
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<tr>
<th>Co-Funded by</th>
<th>Co-Funded Effort</th>
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<tr>
<td></td>
<td>1. Steel Catenary Riser Flexjoint Design and Performance Project</td>
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<tr>
<td></td>
<td>2. An Assessment of Magnetization Effects on Hydrogen Cracking for Thick Walled Pipelines</td>
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<tr>
<td></td>
<td>3. Steel Catenary Riser Integrity Management</td>
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<td></td>
<td>4. DW RUPE: Deepwater GOM Pipeline Damage Characteristics &amp; Repair Options</td>
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<td>5. New Touch-Down Zone Solutions for Steel Catenary Risers</td>
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<td></td>
<td>6. Remote Sensing (Leak Detection) Technology Demonstration</td>
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<td></td>
<td>7. Advanced Sensor (Pipe Inspection) Technology Demonstration</td>
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<td>NIST</td>
<td>8. Laboratory Research to update Consensus Standards</td>
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<td></td>
<td>9. Sensor to Platform Integration for Unpiggable Gas Pipelines</td>
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Six Consecutive Years of DOT & DOI Research Project Co-Funding

- Leveraging R&D resources on mutual jurisdictional areas offshore
- Co-funded 15 research projects (FY 2000 – FY 2005)
- Projects have focused on technology & risk assessments as well as standards development

Level of Success

Created a positive perception in the offshore pipeline industry, that regulators can effectively cooperate to pursue R&D efforts which promote safety, protection of the environment and address our energy needs
# Research & Development Projects with Successful Hand-Offs

![Department of Energy](image1.png) ![Department of Transportation](image2.png)

<table>
<thead>
<tr>
<th>Project Title</th>
<th>Research Contractor</th>
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<tr>
<td>1. Application of Remote-Field Eddy Current Testing to Inspection of un-Piggable Pipelines - DTRS56-02-T-0001</td>
<td>Southwest Research Institute 6220 Culebra Road San Antonio, TX 78238-5166</td>
</tr>
<tr>
<td>2. Mechanical Damage Inspection Using MFL Technology - DTRS56-02-T-0002</td>
<td>Battelle 505 King Ave. Columbus, OH 43201</td>
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<tr>
<td>3. Hazardous Liquids Airborne Lidar Observation Study (HALOS) -DTRS56-04-T-0012</td>
<td>ITT Industries Space Systems 1447 St. Paul Street, Rochester, NY 14653</td>
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</table>
Technology Demonstrations

• Evaluate the merit of technologies that are reaching the prototype stage

• Expose the technologies to the environment in which the technology must be operated successfully

• Promote the deployment and utilization of new technologies through observations and participation by pipeline operators, equipment vendors, standards organizations, and pipeline safety officials

• Just one stage in a technology transfer process but can be considered a major milestone for achieving an ultimate research goal.

Two Technology Demonstrations Held

1. Remote Sensing of Natural Gas Leaks
   Rocky Mountain Oilfield Testing Center
   September 13-17, 2004
   Casper, Wyoming

2. Internal Inspection of non-Piggable Gas Pipelines
   Battelle's Pipeline Simulation Facility
   September 13-17, 2004
   Columbus, Ohio
Joint Government/Industry Pipeline R&D Forum

The purpose of the forum is to identify the impacts, opportunities, and needs arising from the R&D provisions of the Pipeline Safety Improvement Act of 2002 (PSIA) from the perspective of relevant government agencies, industry, and pipeline R&D funding organizations and to identify the key challenges facing industry and government, current research efforts, and potential research that can help to meet these challenges.

Benefits & Outputs:

1. Provides a consensus list of R&D gaps and challenges that can validate current research focus and topics for future solicitations

2. Allows for information dissemination both at program & project levels

3. Provides program and project feedback that can be used as part of a peer review process

4. Contributes to a positive perception that government and industry can work together to develop new technologies and improve safety
Pipeline R&D Program Websites

http://www.netl.doe.gov/scngo/index.html

Welcome to PHMSA's Pipeline Safety Research and Development Website.
This site is dedicated to the coordination and dissemination of Research and Development information related to Pipeline Safety.
OPS conducts and supports research to support regulatory and enforcement activities and to provide the technical and analytical foundation necessary for planning, evaluating, and implementing the pipeline safety program.
OPS is sponsoring research and development projects focused on providing near-term solutions that will increase the safety, cleanliness, and reliability of the Nation's pipeline system.
Recent R&D projects are focused on:
- Leak detection; detection of mechanical damage
- Damage prevention; improved pipeline system control, monitoring, and operations
- Improvements in pipeline materials. These projects are addressing technologically important problems that can be implemented to improve pipeline safety.

In 2003, a study by the General Accounting Office (GAO) found that OPS's R&D program is aligned with OPS's mission and pipeline safety goals.

For more information, please view our Annual Report for FY2003. You may also request a print copy at our address given below.

Technical Activities
...developing measurement and standards infrastructure for US industry and the nation with expertise in electrochemical processing, magnetic materials, materials performance, materials structure and characterization, and metallurgical processing.

Metallurgy Highlights

Riser Systems for Deepwater Semi-submersible Floating Production System (note: click photo for a larger view)

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Metallurgy Webmeister

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Phone (301) 975-6478
TTY (301) 975-8295
Pipeline Safety Improvement Act of 2002

Pipeline Safety Improvement Act of 2002 (PSIA 2002)

PSIA-2002 mandates that the Department of Transportation (DOT), the Department of Energy (DOE) and the National Institute of Standards and Technology (NIST) in the Department of Commerce (DOC) "shall carry out a program of research, development, demonstration and standardization to ensure the integrity of pipeline facilities."

The Five-Year R&D Program Plan identifies program elements, as well as specific areas of agency expertise, and establishes a framework for coordination and collaboration by the participating agencies. The participating agencies agree to work together on the development and application of performance measures to evaluate research effectiveness of pipeline facility research, development, and demonstration projects. While it was not one of the agencies formally mandated to participate, the Department of the Interior's (DOI) Minerals Management Service (MMS) contributed to the development of the initial plan and has been part of the interagency group since its inception.

In order to stay focused on the collaboration and coordination of the PSIA 2002 group activities, quarterly coordination meetings are held.

Section 12 of PSIA 2002:

Interagency Research and Development Five-Year Program Plan For Pipeline Safety and Integrity:
- Five Year Interagency Research and Development Program Plan

Interagency Update Reports to Congress:
- TBA to be filed one after another

Memorandum of Understanding Among The Department of Transportation, Department of Energy And The National Institute of Standards And Technology:
- Pipeline Research Memorandum of Understanding
## Joint Items/Events – Fiscal 2005

<table>
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<th>Who is Involved</th>
<th>Fiscal 2005 Collaborative Activities and Milestones</th>
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<tr>
<td></td>
<td>Interagency Coordination Meeting</td>
<td>October 20, 2004</td>
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<td>Road Mapping Workshop on Liquefied Natural Gas</td>
<td>November 8-9, 2004</td>
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<td>Joint Review of DOI/MMS Research Solicitation</td>
<td>December, 2004</td>
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<td>Submissions</td>
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<td>Transportation Research Board’s 84th Annual</td>
<td>January 11, 2005</td>
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<td></td>
<td>Meeting</td>
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<td>GTI/DOE Gas Technology Conference</td>
<td>Jan 30 – Feb 2, 2005</td>
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<td></td>
<td>Interagency Coordination Meeting</td>
<td>February 2005</td>
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<td></td>
<td>Government/Industry Pipeline R&amp;D Forum</td>
<td>March 22-24, 2005</td>
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<td>Interagency Coordination Meeting</td>
<td>May 2005</td>
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<td>Interagency Coordination Meeting</td>
<td>September 2005</td>
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