



# **INTERAGENCY R&D Program Presentation**

**Department of Transportation  
Department of Energy  
Department of Commerce  
Department of the Interior**

**NIST**  
National Institute of  
Standards and Technology



# Presentation Objective

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

Program Elements	On-Shore	Off-Shore
1. Materials inspection	DOT	DOI
2. Pipe anomaly detection	DOT	DOI
3. Internal inspection and leak detection technologies	DOT	DOI
4. Methods of analyzing content of pipeline throughput	DOT	DOI
5. Pipeline security	DOT	DOI
6. Risk assessment methodology	DOT	DOI
7. Communication, control, and information systems surety	DOT	DOI
8. Fire safety of pipelines	NIST	DOI
9. Improved excavation, construction, and repair technologies	DOT	DOI
10. Other appropriate elements	DOT	DOI
a. Materials analysis & development	NIST	NIST
b. Standardization activities	NIST	NIST



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. ;



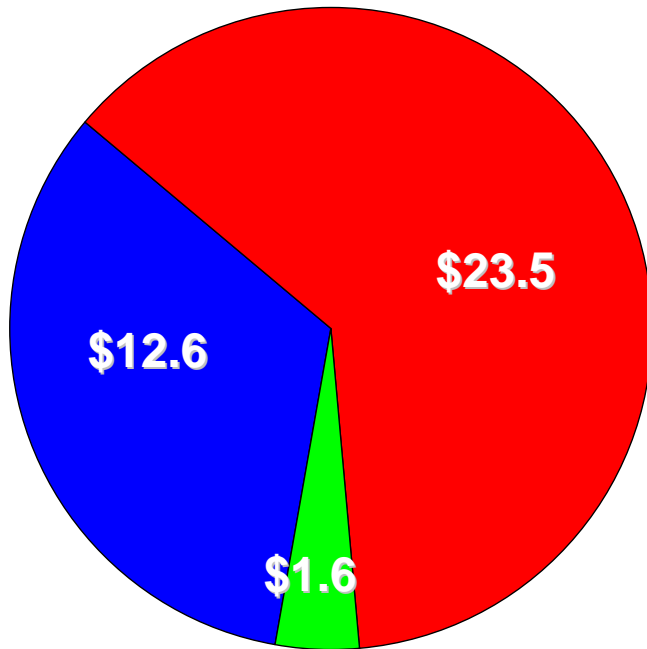
Developing standards, advanced materials and fire safety technologies; and



Through the Minerals Management Service, assuring pipeline safety and integrity through regulation and inspection of offshore pipelines.

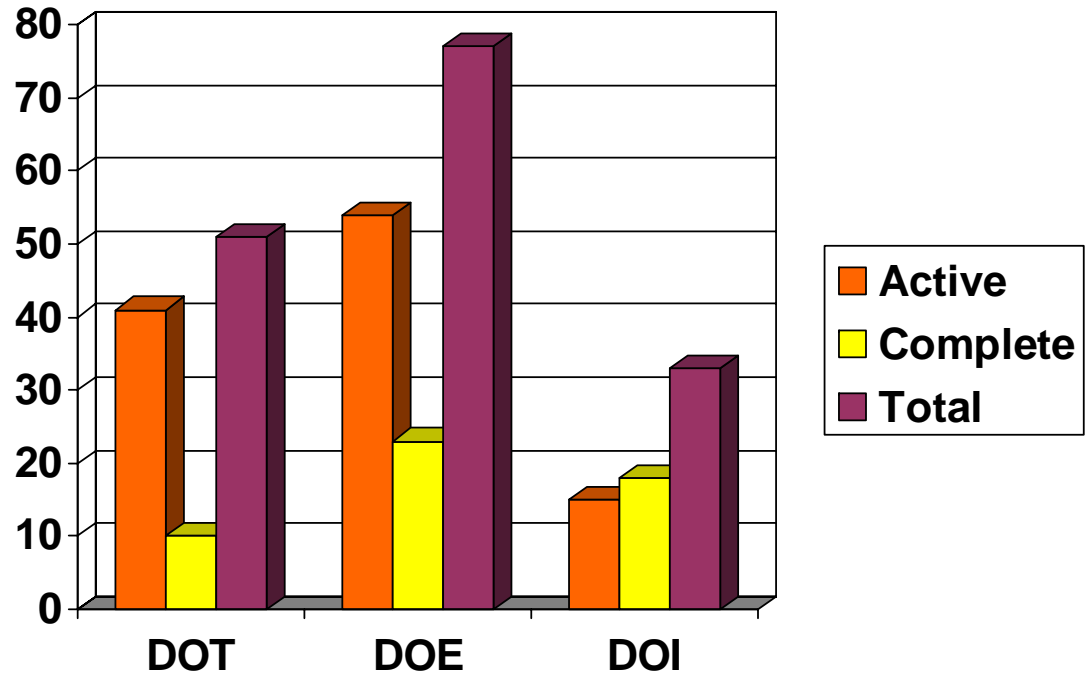
# Program Award Summary\*

**Total Pipeline Research Expenditures**  
(FY '02,'03,'04 in millions)






















■ DOT   
 ■ DOE   
 ■ DOI

**Project Pipeline Awards Since FY 2002**



\* 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

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

# **Six Consecutive Years of DOT & DOI Research Project Co-Funding**

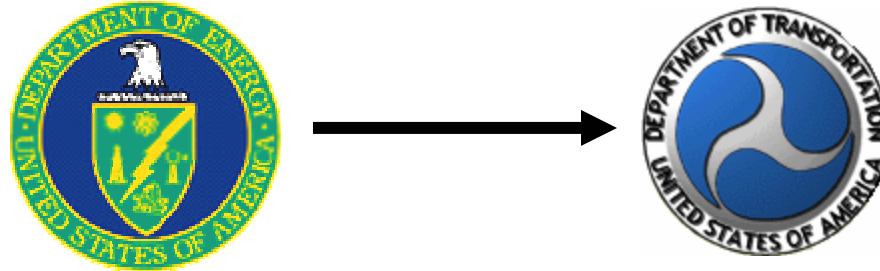
- Leveraging R&D resources on mutual jurisdictional areas offshore
- Co-funded 15 research projects (FY 2000 – FY 2005)
- Projects have focused on technology & risk assessments as well as standards development

## **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



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

# 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://primis.phmsa.dot.gov/rd/index.htm>

**Research & Development**

U.S. Department of Transportation

**R&D Home**

- Technology Demonstrations
- Pipeline Safety Improvement Act of 2002
- Announcements
- Recent Projects
- Meetings
- Success Stories
- Links
- Contacts
- Feedback
- OPS Communications

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 controls, monitoring, and operations; and, improvements in pipeline materials. These projects are addressing technological solutions that can quickly 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.

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

**NATIONAL ENERGY TECHNOLOGY LABORATORY**  
STRATEGIC CENTER FOR NATURAL GAS & OIL

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**NETL**

**The Strategic Center for Natural Gas & Oil**

Integrating All Elements of DOE's Natural Gas & Oil Research

Office of Natural Gas  
Office of Petroleum  
Arctic Energy Center  
Analysis & Planning

**Oil and Gas Funding Opportunity**  
Applications for funding are being accepted until March 1, 2005. [More information](#)

**Results of the September Field Test of Remote Sensor Gas Leak Detection Systems Now Available**  
A demonstration of the capabilities of newly developed natural gas leak detection technologies was conducted September 13-17, 2004 at the Rocky Mountain Oilfield Testing Center (RMOTC) in Casper, WY. [Read more!](#) [PDF-7327KB]

**Interactive Website Pinpoints Areas to Recover More Oil, Gas**  
A software program that projects how much oil or natural gas lies in a reservoir, and how much more can be recovered, has the potential to save millions of dollars while increasing our Nation's oil and natural gas supplies. And it's free. [Read more!](#)

[Highlights Archive](#)

<http://www.metallurgy.nist.gov/>

**Metallurgy Division**

National Institute of Standards and Technology

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**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.

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

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Comments on our website:  
[Metallurgy Webmeister](#)

General NIST inquiries:  
Public Inquiries Unit  
Phone (301) 975-6478  
TTY (301) 975-8295

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NIST CENTENNIAL

<http://www.mms.gov/tarprojectcategories/pipeline.htm>

**MMS**

Offshore Minerals Management  
Technology Assessment & Research

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**Pipelines**

**Pipeline Research**

Through the Technical Assessment & Research (TAR) Program, the MMS is developing a methodology for assessing the safety of existing pipelines as well as the design and installation of future pipeline systems.

Oil and Gas development continues to move farther offshore and into deeper water. Oil and Gas wells are being drilled at water depths greater than 10,000 ft and production systems installed at depths over 7,000 feet. Pipeline networks for gas and oil follow these developments as they move off the continental shelf and down the slope. Reservoirs will be serviced by tension leg platforms or spar platform derivatives with state-of-the-art riser systems and extended capability to handle distant sub sea completions and tie-ins. The business climate will demand innovative pipeline design and installation, reductions in the weight and cost of risers and mooring systems, and solutions to the pipeline reliability.

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

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**Content:**  
[Michael Else](#)

**Page master:**

# Interagency Website for Section 12 of PSIA 2002

The screenshot shows a web browser window with the address bar containing <http://primis.phmsa.dot.gov/rd/psia.htm>. The page title is "Pipeline Safety Improvement Act of 2002". The browser's address bar also shows <http://primis.rspa.dot.gov/rd/psia.htm>. The website content includes a navigation menu on the left with items like "R&D Home", "Technology Demonstrations", "Pipeline Safety Improvement Act of 2002", "Announcements", "Recent Projects", "Meetings", "Success Stories", "Links", "Contacts", "Feedback", and "OPS Communications". The main content area features a header "Pipeline Safety Improvement Act of 2002" and several sections of text and links.

**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:**

- [PSIA 2002 - PUBLIC LAW 107-355-DEC. 17, 2002. Reference SEC. 12. for PIPELINE INTEGRITY, SAFETY, AND RELIABILITY RESEARCH AND DEVELOPMENT](#)

**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

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

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