Joint Government – Industry Research & Development Forum

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"PRCI's Technology Program for the Energy Pipeline Industry"

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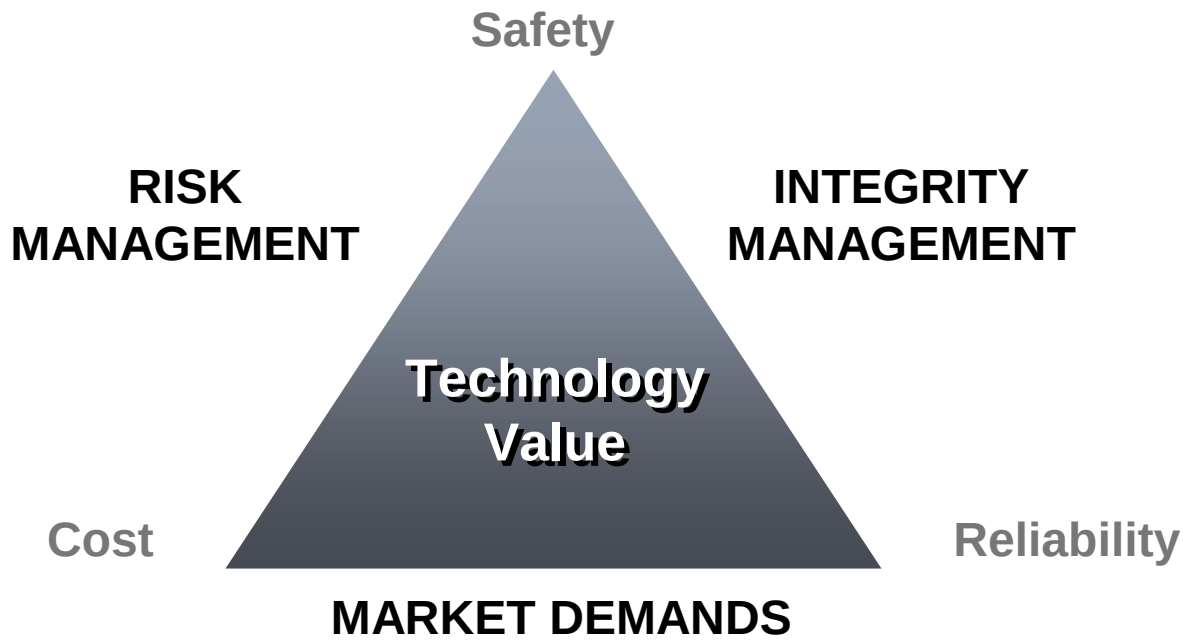
Pipeline Research Council International, Inc. (PRCI)

Our Mission:

To conduct a collaboratively-funded technology development program that enables energy pipelines around the world to provide safe, reliable, environmentally compatible, and cost-effective service to meet customer energy requirements.

Why Technology?



- ***Safety*** of the Public, Employees and the Environment
- ***Reliability*** for Customers and Suppliers
- ***Cost*** Minimization while Maintaining Safety and Reliability

A PRCI Snapshot

- **Established in 1952 by 15 North American Natural Gas Companies to Address Long-Running Brittle Fractures**

- **Current Membership:**
  - 32 U.S., Canadian, and International Pipeline companies
  - > 300,000 miles of natural gas & hazardous liquid pipeline
  - Gas Technology Institute; Our partner in the joint program
  - Association of Oil Pipe Lines

PRCI
Technology for Energy Pipelines

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Who We Are

PRCI Roles and Process

- Board Sets Strategic Goals and Approves Annual Technology Program and Budget
- Technical Committees (TCs) Comprised of Members' Operations & Technical Experts
- TCs Hold 3 Meetings Annually; Propose Programs to Meet Strategic Goals; Solicit Proposals, and Manage Technology Program
- World-class R&D Contractors Provide the TCs a Strong, Diverse Research "Asset Base"

Coordination & Cooperation Are Key

- Among Pipeline Operators
- Among Government Agencies
- Between Industry and Government
- Outreach to the Public and Their Elected and Appointed Representatives

PRCI Technical Committees

- Corrosion and Inspection
- Design, Construction and Operations (DC&O)
- Materials
- Measurement
- Underground Storage
- Compressor and Pump Station

Building the Technology Agenda

- **Corrosion & Inspection: 7 Programs and ~ $11MM in 2003-2004 For**
  - Locating mechanical damage
  - Enhance integrity of non-piggable pipelines
  - Protect shielded pipe and enhance environmental corrosivity models
  - Identify and prioritize locations for internal corrosion inspection, monitoring, and mitigation
  - Optimize integrity assessment intervals
  - Improve SCC detection, assessment, and management
  - Improve CP system effectiveness

Building the Technology Agenda

- **DC&O: 7 Programs and ~ $5.6MM in 2003-2004 For**
  - Prevention of 3rd party damage
  - Implementing integrity standards
  - Reliability-based design alternatives
  - Determination of maximum safe surface loads
  - Leak detection and notification
  - Prevention of critical pipeline strains
  - Solutions for adverse crossings

Building the Technology Agenda

- **Materials: 4 Programs and ~ $9MM in 2003-2004 For**
  - Integrity assessment and management of in-service damage
  - Maintenance Welding Techniques to Improve Operations
  - New materials and welding processes to lower the cost of new pipeline construction
  - Safety and integrity issues related to advanced material designs

Building the Technology Agenda

- **Measurement: 3 Programs and ~ $2.4MM in 2003-2004 For**
  - Improving integrity and efficiency of measurement/metering equipment
  - Increasing flow measurement effectiveness
  - Improving monitoring of product quality and product/pipe compatibility for enhanced system integrity

Building the Technology Agenda

- **Underground Storage: 3 Programs and ~ $3.2MM in 2003-2004 For**
  - Improving underground storage integrity assessment
  - Enhancing storage capacity, deliverability, and reliability
  - Improving cavern design and operations

Building the Technology Agenda

- **Compressor & Pump Station: 4 Programs and ~ $5.6MM in 2003-2004 For**
  - Improving the reliability of low emission technology
  - Increasing the margin of compliance of low emissions technology
  - Reducing the operations & maintenance costs of compressor and pump station equipment
  - Increasing the operating flexibility of compressors and pumps

R&D Budgets

Program ($MM)	2003	Co-fund.	2004	Co-fund.
DC&O	$1.6MM	$1.0MM	$2.0MM	$1.0MM
Materials	3.0	0.6	3.0	2.5
Corrosion & Inspect	3.8	0.5	3.7	3.1
Compressor & Pump	1.4	1.9	1.3	1.0
Underground Storage	0.6	0.7	1.0	0.9
Measurement	0.7	0.3	1.0	0.4
Total	$11.1MM	$5.0MM	$12MM	$8.9MM
	2003 total	$16.1MM	2004 total	$20.9MM

TOTAL VALUE: $37MM

Industry Collaboration

- **Through PRCI, Natural Gas & Liquids Pipelines Leverage Needs, Funding & Expertise**
  - On integrity management
  - On R&D activities
  - On commitments to government agencies & Congress
- **Annual R&D Forum**
  - Involves industry, government, pipeline constituent groups, and public representatives
  - Informs all parties of R&D currently underway
  - Identifies critical R&D needs for all R&D funding organizations in setting their technology agendas

Benefits of Industry Collaboration

- **Knowledgeable Industry Experts Direct, Shape, and Manage the Programs**
- **Leverage Available Resources –** Improved Funding and Expertise
- **Expand the Knowledge Base –** Each Person; Each Company; Entire Industry
- **Reestablish Public Confidence -** Create Proactive Image of Corporate Commitment to Improving Pipeline Safety and Deliverability

Value Summary

Technology Value = Improvement + Innovation

PRCI Value = What Members Put In + What Members Take Away

- **Their Funding**
- **Their Commitment & Leadership**
- **Their Technical Expertise**
- **Their Application of the Technology**