Pipeline Research Council International

National Academies Pipeline Valves Study

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Thomas Marlow – Senior Program Manager

- Manage Research Execution Programs in collaboration with PRCI staff, PRCI member representatives, and research contractors

- Overall review and support of Technical Committees (TC) representing the breadth of the PRCI Research Execution Programs

- 40 years experience in natural gas transmission and distribution operations and maintenance, construction, codes and standards, gas measurement, underground storage, and pipeline integrity management

- Bachelor degree in Business Administration, a Master of Science in Management and is ANSI Certified Maintenance and Reliability Professional

- Implementation and governance experience of Pipeline Safety Regulations; emergency planning and response; and installation, maintenance, design, and operations of gas and hazardous liquid pipeline transmission systems
Pipeline Research Council International is...

**PIPELINE**
- Natural gas
- Crude oil & petroleum products
- Biofuels
- Hydrogen/renewable natural gas
- CO₂
- Related facilities

**COUNCIL**
- Forum for ideas & opportunities
- Peer-based
- Industry-driven
- Source of research inventory

**RESEARCH**
- Knowledge
- Technology
- Deployment & transfer
- Innovation

**INTERNATIONAL**
- Asia
- Australia
- Europe
- Middle East
- North America
Our Mission
To collaboratively deliver relevant and innovative applied research to continually improve the global energy pipeline systems.
Our Vision

Develop innovative solutions that provide for the safest, cleanest, and most efficient transportation and storage of energy via global pipeline systems.
Our Members

• **Worldwide Research Organization**
  - 45 North American Companies (U.S. & Canada)
  - 25 Non-NA (Australia, China, Europe, India, Japan, & Saudi Arabia)

• **36 Energy Pipeline Operating Companies**
  - 16 Natural Gas Transmission
  - 10 Liquid
  - 10 Liquid/Natural Gas

• **3 Pipeline Industry Organization (PIO) Members**
  - American Petroleum Institute (API)
  - Association of Oil Pipe Lines (AOPL)
  - Operations Technology Development (OTD)

• **34 Associate Members & Technical Program Associate Members**
  - Australia, Canada, China, Europe, Japan, U.S.
PRCI Research – Valve Spacing and Automation

- Compendium with a catalog listing of completed research on Valve Spacing and Automation
- 17 total completed research reports
- Research in the compendium also includes non-PRCI research that is publicly available.
- Compendium includes abstracts of each report and links to access the report
Abstract:
The design stress standards and design rationale for valve spacing, structure count, and corridor width as currently stated in existing natural gas pipeline codes is summarized in this review.
Abstract:
This comprehensive report developed the basis for spacing of valves on gas transmission pipelines and includes:
1. A cost benefit analysis on valve spacing
2. A risk analysis on valve spacing, and
3. A noise/blast wave analysis on valve spacing.
Does your firm have incident records that include incident response times? This includes time to detect the incident, time to close valves, and time to respond to emergency. Do the records also have the cause of the incident?

- For all PHMSA reportable incidents, this is required to be collected including the associated root cause
  - The related information is publicly available
    - [https://www.phmsa.dot.gov/incident-reporting](https://www.phmsa.dot.gov/incident-reporting)
- Many operators now have Safety Management Systems in place which also collect the same information for non-reportable and for near-misses
ASV/RCV - Related Questions for Pipeline Operators

In your experience, how likely is it for guillotine-type ruptures to occur and what are the causes?

- Trend data by cause for the past two decades can be accessed on the Pipeline Hazardous Materials Safety Administration webpage located here [PHMSA 20 Year Trend Dashboards](https://www.prci.org).
For the Interstate Natural Gas Association of America, Pipeline Research Council International, or other industry associations, what data are available on ASVs and RCVs?

• Reference Research Compendium
  – Valve Spacing and Automation
What policies or training have you established in your control center regarding a controller’s authority to shut down the pipeline? How did you arrive at those policies and procedures?

- Operators are required to have training and procedures in place per the PHMSA published Control Room Management/Human Factors final rule in the Federal Register on December 3, 2009, which became effective on February 1, 2010.
How do emergency responders know where the pipelines and valves are? Are maps and procedures shared with local personnel?

- Geospatial Information Systems (GIS) and or Paper Maps
- Information is shared with local emergency management agencies
- The National Pipeline Mapping System [https://www.npms.phmsa.dot.gov/PipelineOperator.aspx](https://www.npms.phmsa.dot.gov/PipelineOperator.aspx) is also utilized by Emergency Response Agencies. Operators are required to provide updates to NPMS for the pipelines that fall under the regulation.
Has PRCI done any work on the magnitude of property damage, product loss, environmental damage, clean-up and remediation costs for different types of locations?

• PRCI has not. However, there are many others available that are primarily focused on liquid pipeline failures. One example is “Statistical analysis of environmental consequences of hazardous liquid pipeline accidents,” published by the National Center for Biotechnology Information.

• Abstract - Although pipelines are the safest method to transport fuels, they are associated with risks due to failures, leading to significant negative consequences. This paper investigates pipeline accident data provided by PHMSA (Pipeline and Hazardous Material Safety Administration) between 2010 and 2017, with a focus on environmental consequences of hazardous liquid pipeline accidents. The average amount of released product, the average time elapsed between the accident, the emergency response from the oil company, and the average costs of environmental remediation are estimated.
ASV/RCV - Related Questions for Pipeline Operators

The 1999 DOT study concluded that no fatality or injury savings from RCVs as all occurred immediately or within 3 minutes of a rupture. Does PRCI have alternate thinking on this in past 20 years?

- PRCI has not completed any studies related to fatality or injury savings. The PRCI mission is focused on delivering relevant and innovative applied research to continually improve the global energy pipeline systems. PRCI studies the technical aspects of available or new technology to evaluate feasibility from a science perspective and recommends solutions.

- The referenced report is “REMOTELY CONTROLLED VALVES ON INTERSTATE NATURAL GAS PIPELINES” (Feasibility Determination Mandated by the Accountable Pipeline Safety and Partnership Act of 1996) September 1999. See embedded file above.
Concluding Remarks
Thank you!

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