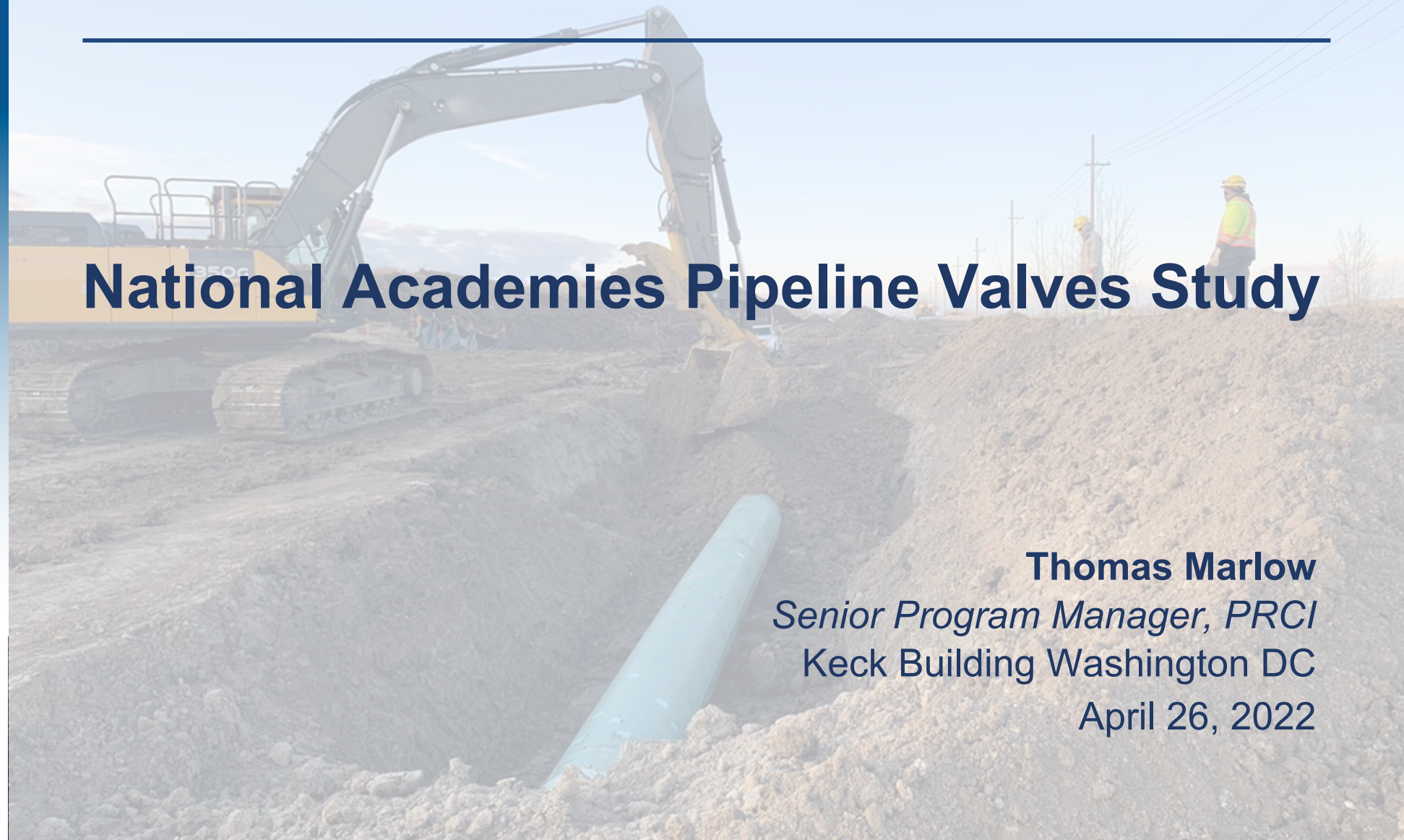

Pipeline Research Council International

National Academies Pipeline Valves Study

Thomas Marlow
Senior Program Manager, PRCI
Keck Building Washington DC
April 26, 2022

PRCI™

LEADING PIPELINE RESEARCH

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


celebrating 70 PRCI years
1952 - LEADING PIPELINE RESEARCH - 2022

Pipeline Research Council International is…

PIPELINE
- Natural gas
- Crude oil & petroleum products
- Biofuels
- Hydrogen/renewable natural gas
- CO_2
- Related facilities

RESEARCH
- Knowledge
- Technology
- Deployment & transfer
- Innovation

PRCI™

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

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.

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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.

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Operator Members

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

LEADING PIPELINE RESEARCH

Catalog No. PR-000-21COMP-R04

Research Compendium – Valve Spacing and Automation

Prepared for the

Members of the Pipeline Research Council International

Prepared by:

Pipeline Research Council International

Authors:

Various

Release Date:

PRCI Research – Valve Spacing and Automation

L41034 Design Rationale for Valve Spacing Structure Count and Corridor Width

Catalog Number: L41034
Research Category: Facility spacing, **Availability:** Publicly available for $50.00
Research Company/Institute: Robert J. Eiber, Consultant, Inc.
Author(s): Eiber
Date of Publication: 12/4/2018 3:36:25 PM, **Number of Pages:** 54
File: L41034 Design Rationale for Valve Spacing Structure Count and Corridor Width.pdf

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.

PRCI Research – Valve Spacing and Automation

L51817 Valve Spacing Basis for Gas Transmission Pipelines

Catalog Number: L51817
Research Category: Facility spacing, **Availability:** PRCI members only
Research Company/Institute: Robert J. Eiber, Consultant, Inc.
Author(s): Eiber
Date of Publication: 12/19/2018 10:28:13 AM, **Number of Pages:** 174
File: L51817 Valve Spacing Basis for Gas Transmission Pipelines.pdf

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.

ASV/RCV - Related Questions for Pipeline Operators

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
- 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]

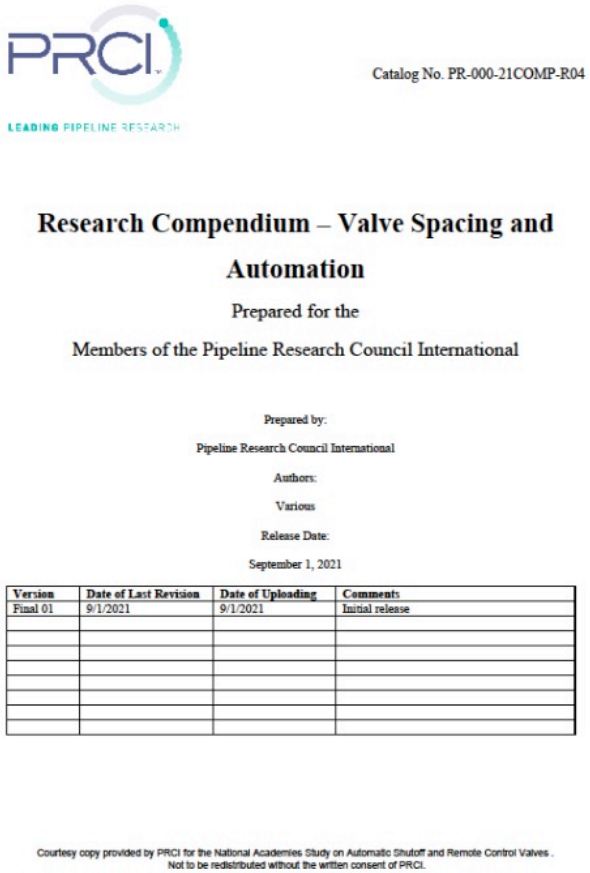
PHMSA Pipeline Incidents: (2002-2021)
Incident Type: Serious **System Type:** GAS TRANSMISSION **State:** (All Column Values) **Offshore Flag :** (All Column Values)

Calendar Year	Number	Fatalities	Injuries
2002	4	1	4
2003	8	1	8
2004	2	0	2
2005	5	0	5
2006	6	3	3
2007	8	2	7
2008	5	0	5
2009	6	0	11
2010	6	10	61
2011	1	0	1
2012	3	0	7
2013	1	0	2
2014	2	1	1
2015	3	6	16
2016	4	3	3
2017	3	3	3
2018	2	1	5
2019	2	1	8
2020	3	2	1
2021	4	4	4
Grand Total	**78**	**38**	**157**

ASV/RCV - Related Questions for Pipeline Operators

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



Catalog No. PR-000-21COMP-R04

Research Compendium – Valve Spacing and Automation

Prepared for the

Members of the Pipeline Research Council International

Prepared by:

Pipeline Research Council International

Authors:

Various

Release Date:

September 1, 2021

Version	Date of Last Revision	Date of Uploading	Comments
Final 01	9/1/2021	9/1/2021	Initial release

ASV/RCV - Related Questions for Pipeline Operators

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

ASV/RCV - Related Questions for Pipeline Operators

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 is also utilized by Emergency Response Agencies. Operators are required to provide updates to NPMS for the pipelines that fall under the regulation

ASV/RCV - Related Questions for Pipeline Operators

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

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Thank you!

Thomas B. Marlow
Senior Program Manager, PRCI
tmarlow@prci.org
703-205-1600 ext. 106