



Pipeline and Hazardous
Materials Safety Administration

Pipeline Construction Quality Status Report

API 2010 Pipeline Conference

April 21, 2010

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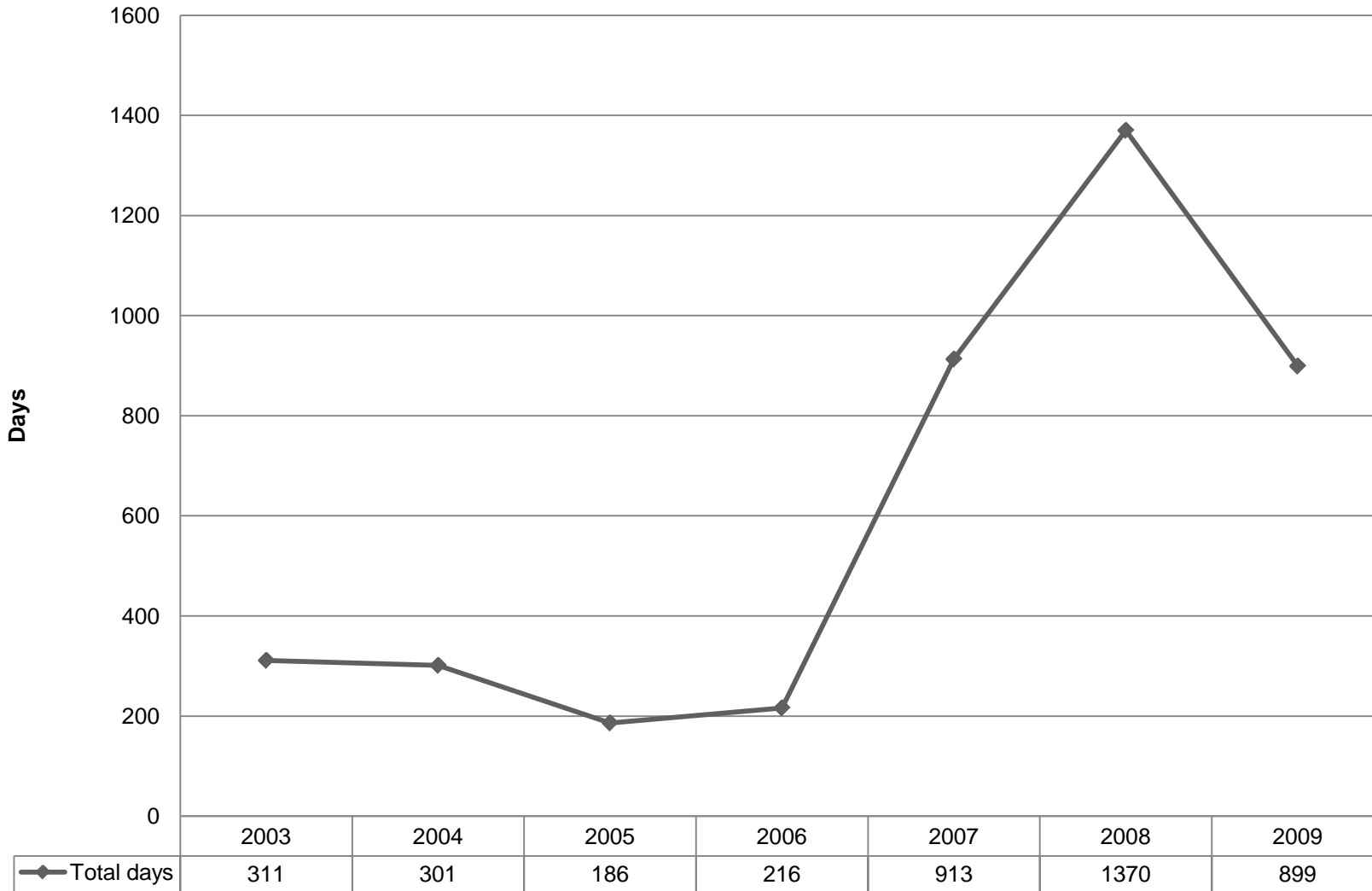
PHMSA Mission

- **To ensure the operation of the Nation's pipeline transportation system is:**
 - Safe
 - Reliable
 - Environmentally sound

Pipeline Construction and Material Quality Issues

- **2007 Pipeline Construction Season and later:**
 - Quality issues - coating, welding, materials, backfill and other general construction issues
 - Pipe Diameters: 20-inch through 42-inch
 - Various Pipeline Operators, Suppliers & Contractors
- **Pipe Strength – low/variable strength**
- **Welding – joint geometry, repairs & procedures**
- **Coating Quality – mainly in field**

Federal Inspector Inspection Time (Days)

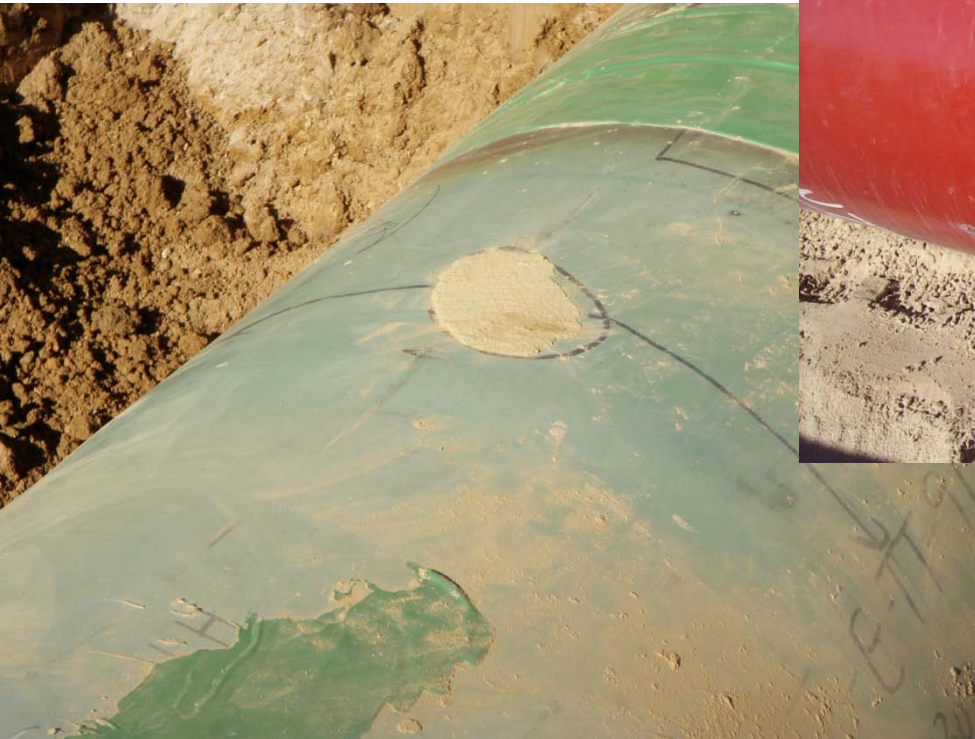


Construction Issues - Summary

Topic	Occurrences
Coating*	117
Welding*	87
Excavation	20
Nondestructive testing	20
Pipe material*	12
Bending	9
Lowering in*	7
Hydrotesting	4
Design	3
Other	8

Construction Issues

- **Coating Issues**



Construction Issues

- **Low Strength Pipe**



Construction Issues

- Pipe bevel ends and alignment – high/low



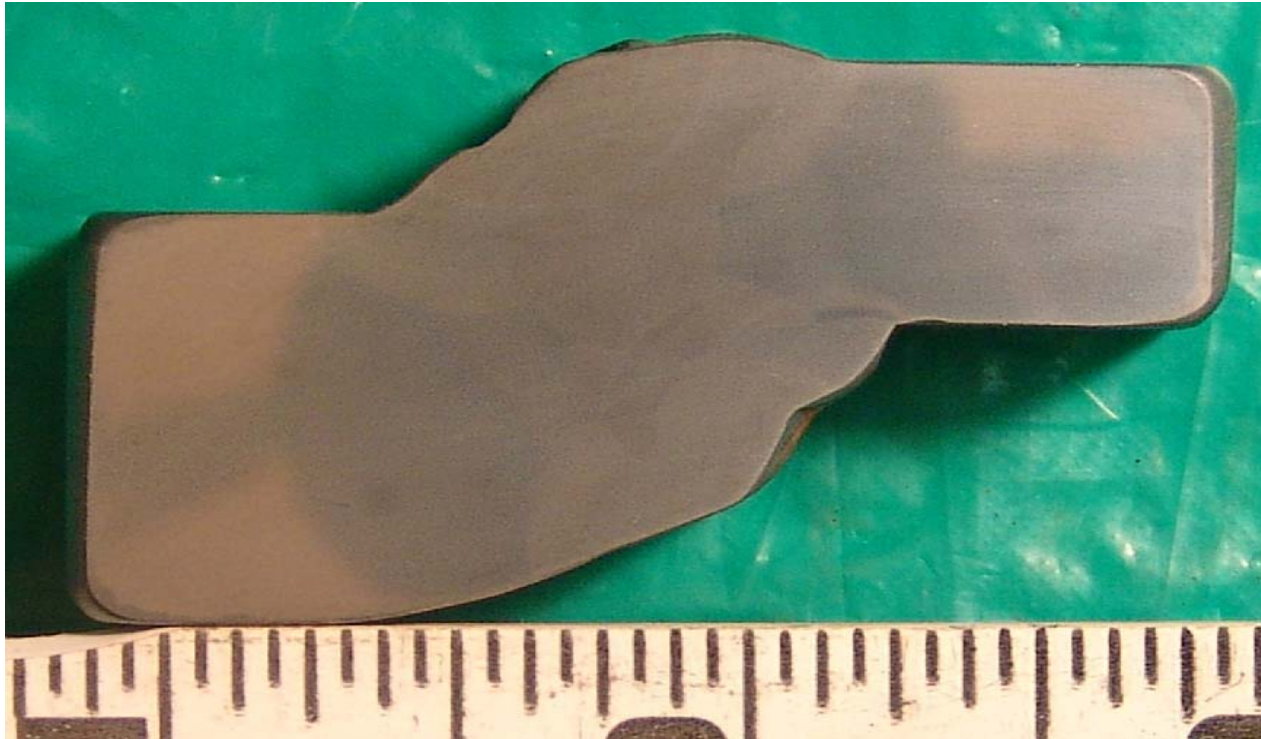
Construction Issues

- Welding, NDT, Transitions, & Alignment
- Cut Induction Bends



Construction Issues

- **Alignment – does it meet standards for API 1104**



PHMSA Actions to Date

- April 2009:** PHMSA New Construction Workshop
- May 2009:** ADB: Potential Low and Variable Yield and Tensile Strength & Chemical Composition Properties in High Strength Line Pipe
- June 2009:** PHMSA Letter to Industry Trade Associations
- June 2009:** API Standards Conference
- Summer 2009:** Letters to Alt MAOP SP holders on Low Strength Pipe
- Spring/Fall 2009:** Worked with Operators to identify/remove low strength pipe
- August 2009:** Construction web site established
- November 2009:** Weld in service ruptleak due to alignment and welding
- January 2010:** Weld in service leak
- March 2010:** ADB: Girth Weld Quality Issues Due to Improper Transitioning, Misalignment, and Welding Practices of Large Diameter Line Pipe

Industry Actions

1. **Workshops**
2. **Pipe Quality Work Groups (8 work groups)**
3. **Construction Work Groups (5 work groups)**
4. **Standards updates**

API 5L - Actions to Date

- **API 5L – proposed changes for “low strength” pipe**
 - QA management system for the supplying steel and rolling mill
 - Standard sampling locations along plate or coil length according to documented procedures
 - Modifications to retest procedures
 - Manufacturing Procedure Specification
 - Inspection and Test Plan
 - Manufacturing Procedure Qualification Tests – mechanical tests
 - Qualification consider assessment of coil/plate tensile property variability and coil/plate to pipe strength changes
- **PHMSA is appreciative of API efforts**
 - “Proposed” revisions to API 5L need timely approvals

API 1104 – Needed Actions

- **Appendix A – Guidance for ECA**
- **Appendix A - Weld Procedure – Essential Variables**
 - Change in the grade or manufacturing process of the pipe material or a change in the chemical composition or processing – Different- steel manufacturers and hot rolling practices
 - Major change in joint design – (API 1104 & API 5L)
 - Pipe Bevel Alignment – usage of API 5L and/or ASME B31.8 or 31.4 criteria - (API 1104 & API 5L)

Joint API – Needed Actions

- **Weld Tolerances – (API 1104 and API 5L)**
 - Pipe, diameter of body and pipe ends - API 5L
 - Bevel Design – API 1104 & ASME B31.8 and B31.4
 - Alignment – API 1104
 - Varying/uneven wall thickness (ASME B31.4 and B31.8)
 - Bends – cut within bend – ovality/out-of-roundness criteria
- **Repair welding – (API 1104)**
 - Preheat
 - Welding procedures
 - Post heat
 - NDT standards

Transition Weld Failures

- **Weld Failures – Transition and Cracking**
 - Pipe Sizes: 42-inch, 36-inch, 30-inch, and 20-inch
- **Alignment – bevel and uneven wall thickness**
- **Ovality and out-of-roundness**
- **Lateral displacement during construction**
- **Soil settlement**
- **Overburden loads**
- **Pipeline right-of-way topography**

PHMSA Expectations

- **Hold safety paramount**
- **Protect the public and environment**
- **Follow the regulations**
- **Update standards - reflective of issues**
- **Focus on people and processes**
 - Quality Management Systems

Looking Ahead

- **PHMSA construction inspection focus will continue**
- **Expect increased use of enforcement actions on all construction issues – 72%SMYS and 80%SMYS**
- **Quality – focus on**
 - Pipe and Coatings
 - Field Construction – welding, coatings, backfill, & inspection
- **May need to explore other options:**
 - More effective regulations and standards
 - Timely enforcement actions
 - Operator qualification for construction

PHMSA – links

- **Pipeline Safety Guidance – Advisory Bulletins, Low Strength Pipe Guidelines, MAOP Rule FAQs**
 - <http://www.phmsa.dot.gov/pipeline/guidance>
- **Construction Activities**
 - <http://primis.phmsa.dot.gov/construction/index.htm>
- **MAOP Rule – FAQs**
 - <http://primis.phmsa.dot.gov/maop/index.htm>
- **Special Permits – FAQs**
 - <http://primis.phmsa.dot.gov/classloc/faqs.htm>



U.S. Department of Transportation

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Pipeline Construction and PHMSA

Quality Action Plan

FAQs

Meetings

Typical Construction Issues

Links

What's New

Related Web Sites

Send Feedback

Pipeline Construction

Since 2007, the pipeline industry has been experiencing unparalleled growth driven by the need to satisfy the Nation's energy demand and bring new sources of supply to the market. As a result, PHMSA has stepped up the number of new pipeline construction inspections performed each year and our inspections of these new pipeline projects have discovered a number of issues that if left unresolved could have an impact on the long and short term integrity of the pipeline.

Many of these new pipeline construction projects have applied for special permits to deviate from PHMSA regulations. When PHMSA has approved requested special permits we have required the operator to go above and beyond our current regulatory requirements to prove and maintain both short and long term pipeline integrity. Many issues have been discovered that could have impacted pipeline integrity as a result of these special permit conditions of approval required by PHMSA. Through new construction inspections, performed during the 2008 pipeline construction season, PHMSA inspectors discovered issues requiring immediate operator remediation prior to the pipeline being placed in service or requiring pressure reduction to assure pipeline integrity. Issues discovered during PHMSA inspections have included poor quality control and procedures for welding, coating, and materials; as well as inadequate operator inspection and general construction practices.



PHMSA has met with operators constructing new pipelines on several occasions to discuss issues found during inspection. In an effort to reach out to all member of the pipeline industry, PHMSA hosted a workshop in collaboration with our State partners, the Federal Energy Regulatory Commission (FERC) and Canada's National Energy Board (NEB) in April 2009. The objective of the workshop was to inform the public, alert the industry, review lessons learned from inspections, and to improve new pipeline construction practices prior to the 2009 construction season. This website makes available information discussed at the workshop and provides a forum in which to share additional information about pipeline construction concerns. This workshop focused on transmission pipeline construction, a workshop to address distribution pipeline construction will be held in the first quarter of 2010.

In 2009, PHMSA challenged industry leaders to come up with a plan or practice to resolve these issues. A letter was sent by PHMSA to industry trade groups to encourage their members to have quality action plans in place for each new pipeline construction project. PHMSA has received responses from all the trades concerning their efforts to resolve new pipeline construction issues and enforce and maintain best practices.

PHMSA knows how important it is to get pipeline construction right and the potential impact on pipeline integrity that can occur should the pipeline not be constructed to the highest standard. We are committed to continue our focus on new pipeline construction inspections and issues in the years to come.



**Pipeline and Hazardous
Materials Safety Administration**

Thank you

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