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PHMSA Issues Advisory Bulletins Urging Pipeline Operators to Evaluate Recently Constructed Pipelines for Girth Weld Failures

On March 24, 2010, the Department of Transportation's Pipeline and Hazardous Materials Safety Administration (PHMSA) issued an Advisory Bulletin urging owners and operators of large diameter, high strength natural gas and hazardous liquids pipeline systems to evaluate lines for potential girth weld failures caused by misalignment and other issues. Operators should review construction and operating records and conduct engineering reviews of projects constructed in 2008 and 2009 with 20-inch or greater diameter grade X70 and higher line pipe.

BACKGROUND: GIRTH WELD PROBLEMS IN RECENTLY CONSTRUCTED PIPELINES

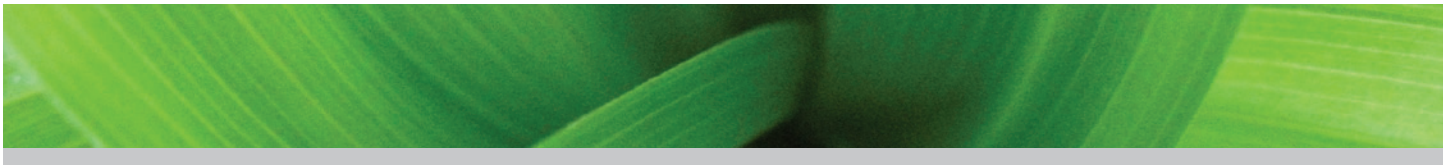
Several large diameter, 20-inch or greater, high strength (API 5L X70 and X80) natural gas and hazardous liquids pipelines, constructed in 2008 and 2009, have experienced field hydrostatic test failures, in-service leaks, or in-service failures in line pipe girth welds. Metallurgical and mechanical tests and inspections conducted after these events indicated that these failures and leaks were caused by pipe with weld misalignment, improper bevels of transitions, improper back welds, and improper support of the pipe and appurtenances. In addition, some pipe end conditions failed to meet the design and construction requirements established by the American Petroleum Institute (API), American Society of Mechanical Engineers, and Manufacturers Standardization Society of the Valve and Fittings Industry, Inc.

Specifically, PHMSA found instances where (1) pipe and induction bend girth weld bevels were not properly transitioned and aligned during welding; (2) pipe ends did not meet API 5L pipe end diameter and diameter out of roundness specifications; (3) girth welds did not meet API 1104 misalignment and allowable "high low" criteria. PHMSA also found non-destructive testing (NDT) quality control problems for some girth welds that failed in service, where procedures did not conform to API 1104 and operator procedures.

PHMSA URGES PIPELINE OPERATORS TO EVALUATE GIRTH WELDS ON NEW PIPELINES

In light of these findings, PHMSA has issued an Advisory Bulletin urging pipeline owners to evaluate recently constructed large diameter pipelines for potential girth weld failures that may be caused by misalignment and other issues. Operators should assess all large diameter, 20-inch or greater high strength line pipe transitions and cut factory bends or induction bends installed during 2008 and 2009. To identify system problems with pipe girth weld geometry/out-of-roundness, diameter tolerance, and wall thickness variations, operators should review material specifications, field construction procedures, results from caliper and deformation tools, welding procedures, NDT records, and failures or leaks occurring during hydrostatic testing or in-service operations.

Review of Construction and Manufacturing Procedures. Operators should ensure that pipeline construction complied with federal pipeline safety regulations, and that pipe, fittings, factory bends, and induction bends comply with applicable standards. Operators also should review manufacturing procedure specifications for the



production, rolling, and bending of steel pipe, fittings, bends and other appurtenances to ensure that pipe end conditions (diameter and out of roundness tolerances) and transition bevels are suitable for girth welding.

Procedural Compliance. Operators should ensure that field personnel that weld line pipe, fittings, bends, and other appurtenances are qualified, follow qualified procedures, and document work performed. Operators should seek to ensure that pipe girth weld alignment is optimized by using experienced and trained welders, suitable pipe, and detailed procedures. Operators must verify through inspection and documentation that field practices for weld bevels, pipe alignment, back welding and transitions conform to industry standards and the operator's procedures, and that field girth welds are made and non-destructively tested pursuant to federal pipeline safety requirements. Operators should ensure that NDT procedures, including film type and radiation source selection are optimized for weld defect detection, and that repairs are completed according to established welding procedures.

Protection From Abnormal Load. Each material component of a pipeline (line pipe, fittings, bends, and other appurtenances) must be able to withstand operating pressures and other anticipated external loadings without impairing serviceability. When backfilling and performing other work in the right-of-way, operators should take all practicable steps to protect each transmission line from abnormal loads and to minimize loads. In addition, because PHMSA's post-incident reviews determined that several pipeline integrity problems were present on pipelines located in hilly terrain and high stress concentration areas (crossings, streams, and sloping hill sides with unstable soils) operators should pay special attention to girth welds with variations in wall thickness that are located in areas where significant pipe support and backfill settlement issues after installation may be present.

Finally, even if an operator does not identify any girth weld concerns, PHMSA's advisory bulletin reminds operators that, if they have any knowledge, findings or operating history leading them to believe that their newly constructed, high material grade, large diameter line pipe segments contain these type of girth weld transitions, the operator should conduct engineering reviews to ensure compliance with pipeline safety regulations.

IMPLICATIONS

This is the second advisory bulletin PHMSA has issued cautioning operators of gas and hazardous liquid pipelines about safety issues associated with newly constructed pipeline projects using large diameter, high strength steel (see May 29, 2009 Issue Alert, "PHMSA Issues Advisory Bulletin Regarding Microalloyed High Grade Pipe That May Not Meet Minimum Specifications" at http://www.vnf.com/news-alerts-365.html). Pipeline operators are required to ensure the integrity of their pipeline systems, and PHMSA makes clear in this advisory bulletin that reducing integrity risks associated with newly constructed large diameter pipeline systems may require that operators take specific measures to identify and remedy potential girth weld problems.

FOR ADDITIONAL INFORMATION

Van Ness Feldman regularly counsels clients on issues related to pipeline construction, permitting, safety, and operation. Specifically, the firm has in-depth experience counseling clients on compliance with the Pipeline Safety Act and regulations. If you are interested in additional information regarding PHMSA's Advisory Bulletin, or any other energy-related federal activity, please contact Susan Olenchuk at (202) 298-1896, or Jonathan Simon at (202) 298-1932, or any member of the firm's Natural Gas or Oil and Products Pipeline practice groups.