

# USING TESTING METHODS TO EVALUATE PIPELINE MECHANICAL INTEGRITY

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## ABSTRACT

Evaluating the mechanical integrity of pipelines involves a variety of tools and skill sets. Over the past several years there has been an increased interest in assessing the performance of vintage pipeline systems and specifically evaluating the effects of existing defects on future performance. Examples of defects include girth and seam welds, corrosion, dents, and wrinkle bends. While lessons learned from prior experience and analysis are critical, the role of testing in the evaluation process is receiving focused attention.

This paper includes detailed discussions on how testing has been used over the past decade to help pipeline companies assess the integrity of their pipeline systems. Specific emphasis is placed on helping the reader better understand what testing techniques are most appropriate and determining how to interpret and correlate the results into useful information for operating safe pipelines. Case studies are presented that include studies on seam welds subject to cyclic pressures, wrinkle bends, girth welds, and corrosion in dents. A well-designed test program can be used to validate numerical modeling efforts and provide engineers with insights regarding in situ behavior of pipeline systems.

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