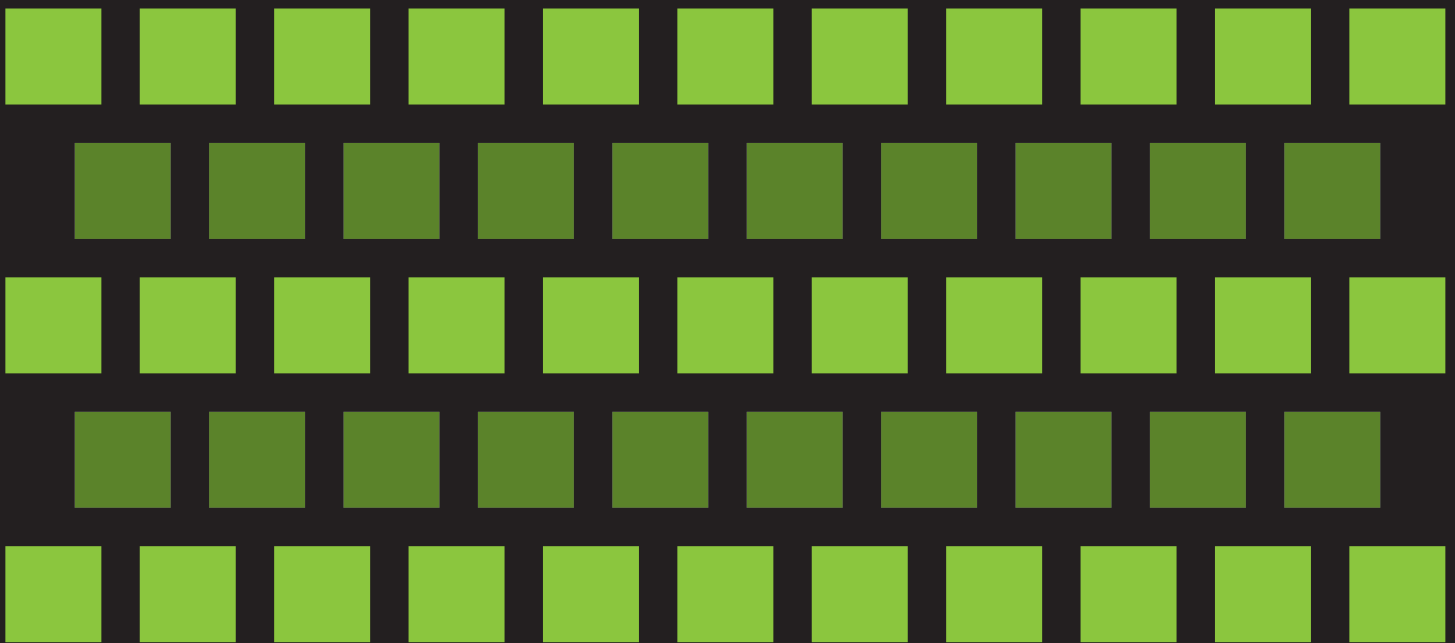


STP-PT-011

INTEGRITY MANAGEMENT OF STRESS CORROSION CRACKING IN GAS PIPELINE HIGH CONSEQUENCE AREAS



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FOREWORD

In response to concerns about managing the threat of stress corrosion cracking (SCC) in high-pressure gas transmission pipelines, and in the light of recently introduced legislation concerning integrity management plans focusing on high consequence areas (HCAs), a group of five major gas transmission companies initiated a joint industry project (JIP) in January 2006 to develop technical rationales to support the key processes of SCC integrity management, including hydrostatic testing, in-line inspection (ILI) and SCC direct assessment (DA). These partner companies include Spectra Energy (formerly Duke Energy Gas Transmission), El Paso Pipeline Group, Panhandle Energy, TransCanada Pipelines Ltd. and Great Lakes Gas Transmission.

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ABSTRACT

This report includes a compilation of results obtained through a series of white papers developed as part of a gas transmission company JIP addressing specific issues related to SCC in gas pipeline HCAs. This report presents the overall project approach, findings and outcomes. The overall outcome of the JIP has been the development and collation of a significant body of supporting information, made available to pipeline operators and to the pipeline industry, providing the basis for sound decision making regarding the issues to be addressed when managing the integrity of pipelines that are potentially subject to the threat of SCC. In particular, this report includes:

- A review and update of SCC experience in 130,000 miles of high-pressure gas pipelines.
- Validation of the ASME B31.8S criteria for determining segments and HCAs most likely to be susceptible to high pH SCC.
- Demonstration that the modified ASME B31.8S criteria also are applicable to near-neutral pH SCC.
- Development of guidelines and algorithms for prioritizing pipeline segments and HCAs for SCC assessment, and for selecting excavation sites most likely to show evidence of SCC.
- Development of guidance for conducting SCC hydrostatic tests.
- Development of a categorization scheme for determining crack severity and mitigation response.
- Development of a method for determining the intervals between re-tests when using hydrostatic testing, ILI or SCC DA to manage SCC.
- Provision of guidance for determining how many excavations are necessary during SCC DA.
- Development of a process for utilizing condition monitoring activities for SCC management when low levels of SCC are experienced.
- Identification of revisions to improve the existing ASME B31.8S guidance for SCC.