

Pipeline Integrity Management: Methods Selection and Implementation

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Foreword

This standard practice provides guidance on selecting and implementing the Pipeline Integrity Management (PIM) methods (i.e., technologies and processes) to assess and to mitigate threats to pipeline integrity. Predominant threats to pipeline integrity are external corrosion (EC), internal corrosion (IC), stress corrosion cracking (SCC), mechanical damage (first, second, and third party or vandalism), equipment malfunctioning, manufacturing anomalies, construction anomalies, incorrect operations, weather-related, and external forces. The standard is focused on the “selection” and “implementation” of methods and best practices to manage pipeline integrity, but not necessarily on defining all aspects of PIM programs. ASME B31.4, ASME B31.8, ASME B31.8S, API RP 1160, CSA Z662, and other standards that deal with many other aspects of PIM should be used in conjunction with this standard.

A PIM program is a continuous process and is applicable to all stages of the pipeline life cycle, including from engineering and design (FEED), construction, commission, operation, decommission, abandonment, and failure investigation stages. A particular integrity management method may not be applicable to all stages during the life cycle of a pipeline.

The properly designed PIM program is based on processes that incorporate continuous improvement methodology. The lessons learned from each activity should assist in determining opportunities for improvement and in implementing appropriate methods in subsequent activities. Through selection of integrity methods and implementation of PIM program processes, a pipeline operator may identify which threat(s) has occurred, is occurring, or may occur in order to establish appropriate mitigation, monitoring, repair, replacement, or other strategies.

This standard is intended for use by individuals (managers, supervisors, and engineers) and teams planning, designing, selecting, implementing, supervising, and managing pipeline integrity activities, projects, and programs. Selection of optimal integrity methods and implementation overall PIM program processes are key to the successful operation of pipelines.

The selection and implementation strategies described in this standard are specifically intended for buried onshore pipelines, submerged offshore pipelines, and underwater pipelines constructed from metallic materials (mostly carbon steels) and non-metallic materials. Users of this standard must be familiar with all applicable pipeline safety and integrity regulations for the jurisdiction in which the pipeline operates.

In AMPP standards, the terms *shall* and *must* are used to state requirements and are considered mandatory. The term *should* is used to state something that is recommended, but is not considered mandatory. The term *may* is used to state something considered optional.

Scope

The key components for selecting and implementing pipeline integrity management program methods or activities for pipelines are described in this standard. While this standard is focused on pipelines in the oil and gas industry, it may also be applicable to similar pipelines in other industries.

Rationale

This standard practice presents guidance to operators for selecting and implementing methods, technologies, or activities to manage pipeline integrity. This version describes a PIM program that addresses all threats (including from corrosion and other risks) and covers both metallic (carbon steel) and non-metallic pipelines. References to other standards are provided for informational purposes only and are not intended to be requirements or to limit the standards that may be applicable for any pipeline.