Understanding Hard Spots - Guidance for In-the-Ditch Assessment Process

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Hard spots in pipelines have been historically associated with multiple failures in the past. Although assessment of hard spots is a critical aspect of integrity management of pipelines, several aspects of the detection, identification, quantification, and evaluation of hard spots has been a continuing challenge for the industry. The aim of the paper is to discuss the in-the-ditch assessment activities for hard spots from the perspective of confirming the presence of hard spots reported by ILI and validating the hardness values associated with the hard spot. This is a critical step in managing hard spots for two reasons: 1) typical workflow for in-the-ditch verification of hard spots is highly resource-intensive and therefore efficient deployment of resources is necessary, and 2) the outcomes of in-the-ditch activities influence the interpretation of the quality of ILI data as well as the repair/remediation process.

Several in-the-ditch NDE technologies/methods are currently being used by various operators to identify hard spot areas and quantify the hardness levels associated with such areas. While the use of various technologies is perfectly reasonable, it is important to establish a set of guidelines that allow consistent outcomes and interpretation of the data generated from in-the-ditch activities. Without a consistent process, results from in-the-ditch efforts can lead to misleading conclusions and ineffective remediation for hard spots.

This paper provides practical guidance for establishing a workflow for in-the-ditch activities, including surface preparation, data collection and documentation, hardness measurements, and interpretation of hardness results. Following the guidance presented in the paper, operators will be able to increase consistency between information collected by various NDE vendors, have higher confidence in the verification of ILI results, and have a more robust set of data on which an effective hard spot integrity management program can be built.

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