

- A schedule for completing the integrity assessment.
- An explanation of the assessment methods the operator selected and an evaluation of risk factors the operator considered in establishing the assessment schedule for the pipeline segments.
- For an operator using direct assessment, a plan that takes into consideration the definition of ECDA and ICDA Regions and the complementary tools to be used for each ECDA regions.
- A process describing how the operator is ensuring that the baseline assessment is being conducted in a manner that minimizes environmental and safety risks (*e.g.*, where would launchers and receivers be placed; how the operator plans to dispose of hydrostatic test water; how low point drains would be tested; what extra attention would be given during excavations.). This proposed requirement applies to any assessment method the operator uses and to the reassessments, not just the baseline assessment.

Direction on the analysis of threats, including the data requirements, and on the selection of assessment techniques is provided in ASME B31.8S, Appendix SP-A.

Internal inspection is one of the most useful tools in an integrity management program. Depending on the threats present, RSPA/OPS expects an operator, with pipelines that are piggable or that can easily be made piggable, to consider using geometry tools (for detecting changes in circumference) and metal loss tools (for determining wall anomalies, or wall loss due to corrosion). Both high resolution and low resolution metal loss tools can be beneficial in integrity assessment. For details of each internal inspection tool, including their selection, capabilities, effectiveness, and use, operators should refer to Section 6 of the ANSI/ASME B31.8S. This standard discusses corrosion/metal loss tools for internal and external corrosion threat, crack detection tools corrosion cracking threat, metal loss or geometry tool for third party and mechanical damage threat.

This proposed rule will allow "other technology" as one of the four methods to assess the condition of pipeline segments that could impact high consequence areas. RSPA/OPS expects that as these tools are developed they may become useful assessment tools or as complements to direct assessment tools. We expect these tools could be used where internal inspection tools cannot be used, where pressure testing

is not feasible, and where only one type of currently proven direct assessment tool could be used or where pipeline is not easily accessible for direct assessment. Some examples of such applications are, cased piping (*i.e.*, under either a river or road crossing), pipe in frozen ground or where bare pipe needs to be examined. Two examples of emerging technologies currently being reviewed and evaluated by RSPA/OPS are: (1) Long-range ultrasonic testing or guided wave ultrasonic testing for in-service monitoring of corrosion and other metal loss defects; and (2) "No-Pig" technology, a tool that can determine internal and external corrosion of the pipeline from above ground.

#### (f) How Does an Operator Identify Potential Threats to Pipeline Integrity? Proposed § 192.763(f)

The proposed rule requires each operator to identify and evaluate all potential threats to pipeline integrity in each area of potential high consequence. Threats that an operator must consider include, but are not limited to:

- Time dependent threats such as internal corrosion, external corrosion, and stress corrosion cracking;
- Static or resident threats such as fabrication or construction defects;
- Time independent threats such as third party damage and outside force damage; and
- The effect of human error.

The nine threat categories that comprise the first three general types of threat are discussed in ASME B31.8S, Appendix SP-A. In this Appendix human error is treated as a contributing factor to many of the major threats rather than as a separate threat. For example, it may be the dominant cause of rupture for third party damage incidents in which the equipment operator attempted to locate the pipeline before beginning excavation, but was given erroneous information about the location of the pipeline. In that Appendix, soil erosion is not treated as a separate threat, but viewed as a contributor to making the pipe more vulnerable to third party damage or outside force damage. Appendix SP-A presents detailed prescriptive requirements for managing the integrity of each of the nine threat categories. These requirements include the minimum data set needed to evaluate the presence of a threat, integrity assessment options, responses and mitigation approaches, assessment intervals and candidate performance measures.

The proposed rule also requires each operator to: (1) Collect data needed to

evaluate each threat; (2) integrate numerous risk factors; (3) evaluate the susceptibility of each affected segment to each threat; and (4) prioritize affected segments in accordance with the ASME/ANSI B31.8S. The minimum sets of data needed to evaluate each of the nine threat categories are presented in Appendix SP-A of that standard.

Data integration requirements in the proposed rule should be satisfied by addressing the requirements in ASME/ANSI B31.8S, Section 4. Data integration must go beyond risk modeling to include consideration of specific locations where combination of these risk factors may lead to increased risk significance. Examples of data integration are presented in Section 4 of the referenced standard.

Human error analysis required by the proposed rule should follow the proposed training requirements.

If piping with certain material coating and environmental characteristics is in an HCA and the assessment shows it to be severely corroded, then other similar piping outside the high consequence area must also be evaluated, and mitigated as appropriate. This provision is critical in ensuring that the knowledge accumulated in implementing the integrity management requirements on pipe segments within HCAs is effectively utilized to improve integrity throughout the system.

#### *The following additional requirements and guidance applies to the assessment process:*

- Pipelines exposed to threats that represent higher risks should generally be assessed sooner than those with threats that represent lower risk. Thus, for the baseline assessment, 50% of covered segments (the higher risk segments) will have to be assessed within five years if pressure test, internal inspection or alternative equivalent technology is used, and within four years if direct assessment is used. The determination of which segments are at higher risk should be made using methods discussed in ASME B31.8S, Section 5. Here several alternative risk assessment approaches are described for use in ranking segments for integrity assessment.
- Pipelines that operate at a stress level less than 30% SMYS fail differently (*i.e.*, leak rather than rupture) from those operating at higher stress. Therefore, different integrity assurance techniques may be appropriate. These low stress pipes have been shown both by fracture mechanics analysis and by evaluation of failure experience data to fail by leaking, not by rupture. Therefore, the techniques most effective in assuring the integrity of these