

1 Dents, Wrinkles, and Wrinkle Bends

1.1 Course Description

Dents, wrinkles, and wrinkle bends can pose a significant threat to pipeline integrity. As part of their threat management, this course describes how these anomalies are characterized (i.e., position on pipe, size of feature, interacting elements) and examines different assessment methods used (e.g., acceptance criteria, analysis tools, jurisdictional variations) and steps taken to assess the severity and potential impact on pipeline integrity. It also outlines potential follow-up actions based on findings from non-destructive examination (NDE).

Self-assessments reinforce key concepts, and a final graded assessment evaluates the learner's understanding of the material. The online course format allows individuals to review and reinforce the material at their own pace. What sets this course apart is its holistic approach and the inclusion of a case study, which provides the learner with an opportunity to apply their knowledge in a practical and relevant way within the industry.

Note: This course does not include the assessment of data collected through in-line inspection (ILI).

Format: Online

Duration: ~1 hour

1.2 Learning Objectives

By the end of the course, participants should be able to:

1. Describe how dents, wrinkles, and wrinkle bends are characterized.
2. Examine assessment methods for dents, wrinkles, and wrinkle bends.
3. Examine the non-destructive examination process for dents, wrinkles, and wrinkle bends.
4. Outline follow-up actions based on findings.

1.3 Who Should Take This Course

The course is best suited for:

- Individuals who are involved in pipeline integrity and are seeking to understand how dents, wrinkles, and wrinkle bends are assessed within the context of threat management.
- Early-to-mid-career practitioners with an engineering/technical background (e.g., technicians, technologists, engineers).
- Individuals with a basic understanding of pipeline design, construction, and operation principles and activities.

1.4 Course Topics

Main topic areas covered in this course include:

- Background
 - Threat Identification Process
 - Major Threat Categories
 - Causes of Dents, Wrinkles, and Wrinkle Bends
 - Assessment of Dents, Wrinkles, and Wrinkle Bends
 - Overview of the Anomaly Assessment Process
- Characterizing Dents, Wrinkles, and Wrinkle Bends
 - Characterizing Dents, Wrinkles, and Wrinkle Bends
 - Interaction Considerations for Dents
 - Interaction Considerations for Wrinkles and Wrinkle Bends

- Assessment Methods
 - Acceptance Criteria
 - Benefits and Limitations of Acceptance Criteria
 - Tools for Analysis
 - Assessments of Deformation Features
 - Jurisdictional Variations
- The NDE Process
 - Excavation
 - Coating Examination
 - Pipe Surface Preparation
 - Components of the NDE Process
 - Site Clean-Up
 - Outputs
 - Follow-Up Actions
 - Validate ILI
 - Reinspection Interval
- Case Study