Seam Weld and Risk Assessment Workshop

July 2011

Operator Experience

- Primary method for seam assessments has historically been ILI (~ 80% of the time ILI is utilized).
- Preferred ILI type has been TFI with some recent experience with Spiral MFL.
- Spike H2O testing has been used (~20% of the time)

Seam Integrity Assessment Determination

- Low Frequency ERW or Lap Welded Pipe.
- Discovery of Grooving or Preferential Seam Corrosion.
- Seam related in-service failures since the last integrity test.
- Pressure Cycle and Crack Growth Analysis will determine the re-assessment interval.

ILI vs. Hydrotest

- Hydrostatic testing –
  - Pros – Assurances that all injurious defects are removed. Establishes a definitive safety margin. Through pressure cycle and crack growth analysis a more definitive re-assessment interval can be established.
  - Cons – More just surviving defects will remain in the line. Potential to grow defects during the hydrostatic test. Pressure Reversals. Line downtime.

ILI vs. Hydrotest

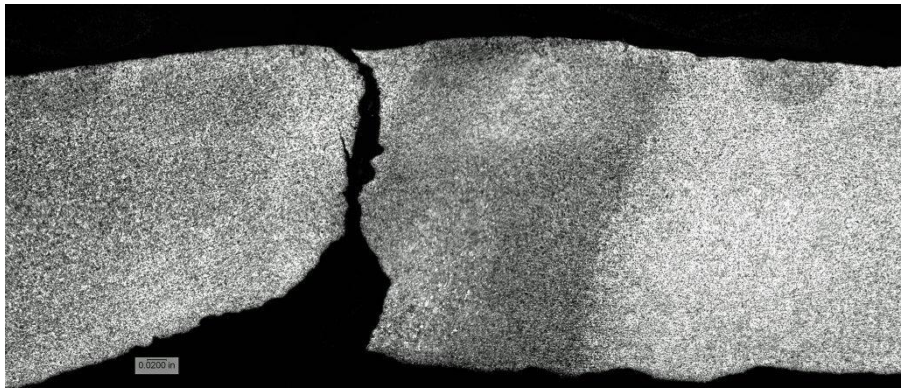
- In-Line Inspection
  - Pros – Identification and Examination of Seam Defects through Direct Assessment. Higher population of cracking and seam defects are removed. Combined corrosion and cracking assessment completed.
  - Cons – Probability of Detection limitation may leave potentially injurious defects in the pipeline.

Hydrostatic Spike Testing

- Maximize spike test pressures to operating pressure ratios after evaluating pipe metallurgical history.
- Minimize spike test pressure hold times to minimize defect growth during the test. Achieve target pressure then ensure pressure is stabilized over the entire segment.

Operator Experience

- Manufacturing Defect – Stress Riser and Crack Initiation – Pressure Cycle Fatigue



Association of Oil Pipe Lines