Pressure Testing Pipe in HCAs

DOT Public Meeting:
Integrity Management in High Consequence Areas for Gas

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Pressure Testing Issues

Should the requirement to pressure test pipeline to verify integrity against material and construction defects be limited to pipeline segments for which information suggests a potential vulnerability to such defects? If so, what information should be relied upon?

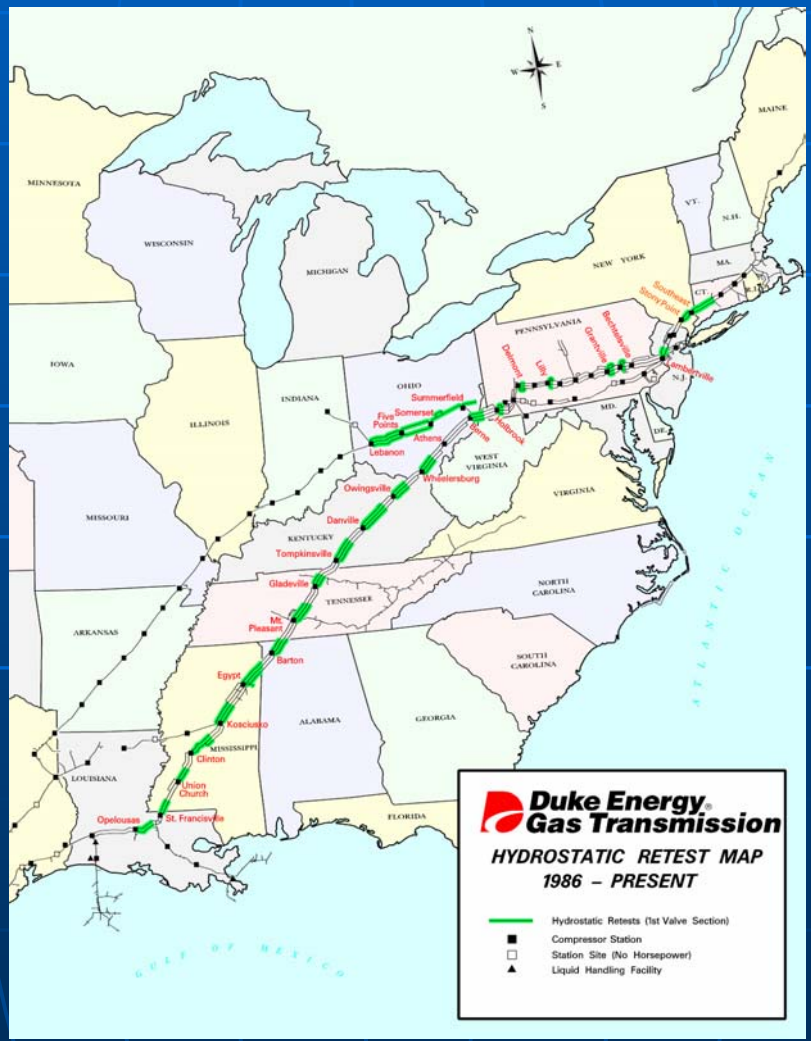
Pressure Testing Issues

- The NPRM standard requires a pressure test at least once in the life of the segment regardless of actual risk
- Limited/no technical justification to have to pressure test low stress pipe due to material and manufacturing defects other than those with historical operating problems
- Raises significant safety and service reliability issues due to difficulties in dewatering pipe, winter freeze-offs, and introducing corrosion causing bacteria
- Gas transportation capacity outages beyond the EEA analysis, particularly at the intrastate/LDC level
- Higher environmental impact

Proposed Alternative

- Utilize standards as developed by ASME in B31.8S
- Incorporate technical reports by Battelle on vintage pipe, Kiefner on cyclic pressure effect on pipe and the HSB summary-practical guide for operators
- Pressure test only lines that pose a real threat based on risk assessment; do not be required to pressure test all lines regardless of the facts

A Snapshot of a Hydrostatic Retest Program



A Snapshot of a Hydrostatic Retest Program

- Total mileage tested: 1343 miles (1986 – Present)
- Total number of test sections: 63
- Very high applied hydrostatic test pressures: 50% of mileage greater than 100% SMYS
- Average age of pipeline: 35 years in service
- Approximate cost: $50MM

A Snapshot of a Hydrostatic Retest Program

- Test Results
  - 30 hydrostatic test failures total
    - **Defective pipe seam (14 of 30 failures)**
      - **9 ERW seam failures in a single MAOP Uprate Project**
      - **2 Flashweld seam failure**
      - **3 DSAW seam failures**
    - **Defective pipe (1 of 30 failures)**
    - **Defective Girth Weld (1 of 30 failures)**
    - **Gouge (1 of 30 failures)**
      - **97% SMYS failure pressure**
    - Stress Corrosion Cracking (11 of 30 failures)
    - No failure cause reported for two failures (2 of 30)
    - No hydrostatic test failures in a dent
    - No hydrostatic test failures exhibited any evidence of fatigue

Recommended Rule Language

(iii) Manufacturing and construction defects. To address manufacturing and construction defects (including seam defects), an operator must perform an analysis of the pipeline segment to determine the risk of failure from these mechanisms. Per ASME B31.8S, manufacturing and construction related defects shall be considered stable defects under the operating conditions that they have previously experienced. If pipeline operating conditions change such that there is an increase in operating pressure above the historical operating pressure (i.e. the highest pressure recorded during the five years prior to the effective date of this rule), an increase in the MAOP, or an increase in the influence of stresses that may promote cyclic fatigue, the operator shall assess the pipeline segment using an assessment method allowed by this section.