SUPPLEMENTAL SCC QUESTIONNAIRE
GAS TRANSMISSION OR LIQUID PIPELINE

   • Review Bulletin with operator, if operator is not familiar with.
   • Reference also Baker Stress Corrosion Cracking Study at:

   Comments:

2. Has the pipeline system ever experienced SCC (in service, out of service, leak, non-leak)?
   • Type of SCC?
     Classical - high pH
     Non-classical – low or near neutral pH
   • What are the known risk indicators that may have contributed to the SCC?

   Comments:

3. Does the operator have a written program in place to evaluate the pipeline system for the presence of SCC? If no, have operator explain. If operator has not considered SCC as a possible safety risk, go to #10.

   Comments:

4. Has/does the operator evaluate the pipeline system for the presence of SCC risk indicators?

   Comments:

5. Has the operator identified pipeline segments that are susceptible to SCC?

   Comments:

6. If conditions for SCC are present, are written inspection, examination and evaluation procedures in place?

   Comments:
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7. Does the operator have written remediation measures in place for addressing SCC when discovered?

Comments:

8. What preventive measures has the operator taken to prevent recurrence of SCC?
   • Modeling?
     • Crack growth rate?
     • Comparing pipe/environment/CP data vs. established factors?
   • Other?
     • Hydrotest program?
     • Intelligent pigging program?
     • Pipe re-coating?
     • Operational changes?
     • Inspection program?
   • Other?

Comments:

9. Does the operator incorporate the risk assessment of SCC into a comprehensive risk management program?

Comments:

Continue below for those operators who have not considered SCC as a possible safety risk.

10. Does the operator know of pipeline and right of way conditions that would match the risk indicators for either classical or non-classical SCC? See typical risk indicators below.

Comments:

High pH SCC Potential Risk Indicators
   • Known SCC history (failure, non-failure, in service, and during testing)
   • Pipeline and Coating Characteristics
   • Steel grades X-52, X-60, X-65, X-70, and possibly X-42
     • Age ≥ 10 years
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- Operating stress > 60% SMYS
- Pipe temperature >100 deg. F (typically < 20 miles d/s of compression)
- Damaged pipe coating
- Soil Characteristics
  - Soil pH range: 8.5 to 11
  - Alkaline carbonate/bicarbonate solution in the soil
  - Elevated soil temperature contributing to elevated pipe temperature
- Polarized cathodic potential range: -600 to -750 mV, Cu/CuSO4

Low or Near-Neutral pH SCC Potential Risk Indicators
- Known SCC history (failure, non-failure, in service, and during testing)
- Pipeline and Coating Characteristics
  - Steel grades X-52, X-60, X-65, X-70, and possibly X-42
    - Age ≥ 10 years
    - Frequently associated with metallurgical features, such as mechanical damage, longitudinal seams, etc.
  - Protective coatings that may be susceptible to disbondment
    - Any coating other than correctly applied fusion bonded epoxy, field applied epoxies, or coal tar urethane . . .
    - Coal tar
    - Asphalt enamels
    - Tapes
    - Others
- Soil Characteristics
  - Soil pH range: 4 to 8
  - Dissolved CO2 and carbonate chemicals present in soil
  - Organic decay
  - Soil leaching (in rice fields, for example)

- “Normal” cathodic protection readings (disbonded coating shields the pipe from cp current)