

SUPPLEMENTAL SCC QUESTIONNAIRE
GAS TRANSMISSION OR LIQUID PIPELINE

1. Pipeline Safety Advisory Bulletin - ADB-03-05 - October 8, 2003
 - Review Bulletin with operator, if operator is not familiar with.
 - Reference also Baker Stress Corrosion Cracking Study at:
http://primis.phmsa.dot.gov/gasimp/docs/SCC_Report-Final_Report_with_Database.pdf

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: McChord has not found evidence of SCC, they check any time the pipe is exposed

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: Yes, McChord does not consider SCC as a risk. They have found no evidence of SCC and do not meet all the operating conditions which would make them susceptible to SCC

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/envIRON./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: Yes

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

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- Age $\geq$ 10 years
- 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 $\geq$ 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)