API SC15 TG1– 15HR, LR, TL4

Houston, February 18, 2016

Report and planning
SC15 TG1 Agenda

• Status: Publication 15HR – 4th ed
• Status: Prototype Fiberglass regression test

• 15HR 5\textsuperscript{th} edition
• 15LR revisions
• 15TL4 revisions
Endurance Regression Recap

What we test now

# 1 # 3 are essentially the same
#2 is of primary interest for LCL stress determination
Failing anywhere away from 2 and measuring wall for Stress makes no sense

stress concentrations, potential failure points
Endurance Prototype test

Separate Joints from pipe, measure independently

5 sets / 5 each
100 – 10,000hrs

6 each
3000 hours

18 each
6,000 hours

5 sets / 5 each
100 – 10,000hrs
Regression status

• 2 sets complete: 200 and 1000 hr
• Behaving well: aging & mode of failure
• Testing by SWRI, UTSA stats professor
• Next failures: WK of March 14, 2016 +/- wk
  – Contact me or Ben to attend
2 3/8” 8rd Joint (2 x 5 ea)

Joint performance to 900 hours, flat to + slope
Standard deviation each set 5% of average failure pressure
2” pipe wall (2 x 5 ea)

Pipe performance to 900 hours, + slope
Standard deviation each set 5% of average

\[ y = 0.2903x + 4839 \]
Summary Endurance testing

- 10 joints and 10 pipe to 1,000hrs

- API 15HR Standard conditions:
  - API 15HR 2” 1500psi rated pipe (OD/t)≈ 20
  - 2 3/8” 8rd joints
  - 150F water inside air outside
  - Aging pressure: 1500/0.67 = 2,240psi ≈ (API 20 yr LCL)

- Failure psi > 2 X LCL_{20yr} pressure after 1,000 hrs
- Both joint/pipe gain strength (+ creep, near complete)
- Expect some decline later (H_2O diffusion (-) effects)
15HR 5\textsuperscript{th} (next edition)

- Upon publication of 4\textsuperscript{th} edition
- I’m inclined to continue 15HR improvements
  - Clear definition of components and relationships
    - Separate/relate cylinders (pipe) from joints from fittings
    - Base test – sub confirmation – Pressure x diameter
    - Logical scaling methods to reduce testing
  - A comprehensive Fittings qualification
  - Flange qualification methods
  - Modify short term test method
  - Chemical resistance guidance
  - Other suggestions please

- Result: API15HR Fully qualified piping system
  - Who will participate? Houston/San Antonio meeting in couple months...
15LR, 15TL4

15LR - Low pressure fiberglass pipe

15TL4 – RP care and use of fiberglass tubulars
    some changes required (i.e. field hydro w/ HR 4th)

Market down / budgets tight

I will proceed with an interested team

Who’s in?
Any Questions?

- David Granderson
- NOV Fiberglass Systems
- +1 210 288 3469
- David.granderson@nov.com