Liaison Report – API SC21

Report to Subcommittee 6
API 2020 Winter Conference
January 22, 2020
Omni Hotel, Fort Worth, Texas

Tim Haeberle
Chief Consulting Engineer – Materials & Processes
Baker Hughes
API Subcommittee 6

API SC21 Chairman
• Rob Hilts, Halliburton

API SC21 Winter Meeting
• This afternoon from 1:30 – 5:00 PM

Active Materials Projects
• Task Group Mechanical Property Temperature De-rating (Karthik Krishnan)
  • Testing completed, but problems with data

• Joint API-ASTM Task Group on Hardness Conversions for ASTM E-140: (Tim Haeberle)
  • Covers PH Nickel Alloys and Martensitic Stainless Steels
  • Round robin testing completed, but problems with data
  • Joint API-ASTM TG meeting held in December to discuss issues with data plot path forward
  • More analysis to be done and possible re-testing, pending API funding

• Task Group on Pipeline Flanges and Fittings Sub-standard Properties (Kirk Baker)

- continued -
Active Materials Projects

- Task Group on API Bolting TGRs (Lester Burgess)
  - Subgroup 1 (TGR-4, TGR-8) – 21TR1 - Selection of Bolting Materials (Carly Antonucci)
    - 1st Edition of API 21TR1 issued in August 2019
    - Two annexes already under development by Subgroups 2 and 3
  - Subgroup 2 (TGR-3) - Coatings for Short Term Corrosion Protection (Adam Dyer)
    - API funded test program with bolting at 32-34 HRC and 52-54 HRC and various coatings
    - Will add results to API 21TR1 as Annex B
    - Another round of testing is proposed for the future, pending funding
  - Subgroup 3 (TGR-1) - Requirements for Max Hardness on Bolting Material (John Farraro)
    - Ballot for Annex to API 21TR1 with summary of test results closed 16 January 2020 and passed
    - One conclusion recommends 34 HRC max hardness with a 135 KSI max yield strength for API 20E

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Active Materials Projects

- **Subgroup 4 (TGR-1) – Hardness Testing Accuracy and Uncertainty** (Lester Burgess for Sri Chimbli)
  - Round robin tests underway
  - Will propose wording to for API product specifications on how to improve Rockwell C test accuracy

- **Subgroup 5 – Hardness Increase of Cold-Rolled Threads in PH Nickel Alloys** (Adam Dyer)
  - Testing includes step loading per ASTM F1624 plus thread hardness mapping
  - May add residual stress analysis
  - Hope to have testing completed by June 2020

- **Subgroup 6 - SN Fatigue Curve Development for L7 Bolting** (Andrew Grohmann)
  - Addressing BSEE request for data
  - Testing underway, with 2 heats of bolts and 3 stress ranges, in air and seawater + CP

- **Liaison with ASTM (TGR 1) - Requirements for Prevention of Internal HE** (Lester Burgess)
  - ASTM has revised the threshold for requiring baking after plating in ASTM B633 from 31 HRC to 39 HRC to match ASTM F1941
Informative Reports on Additive Manufacturing

- Powder for Additive Manufacturing – Powder is Just Powder, Right? (Greg Chitwood)
- Powder Degradation in Powder Bed Fusion Additive Manufacturing (Nate Kistler)
- Additive Manufacturing – Just a Passing Fad or Here to Stay? (Kevin Yap)
- Additive Manufacturing for Severe Service Valves (Steve Freitas)
- Update on API 20S – Qualification of Additively Manufactured Materials (Carlo De Bernardi, ConocoPhillips)

Liaison Reports

- Liaison Report SC6 (Tim Haeberle)
- Liaison Report SC17 (Andrew Grohmann)
- Liaison Report SC20 (Rick Faircloth)
- Liaison Report on API 20E and 20F Bolting (Tom Goin)
- Liaison Report on NACE MR0175 / ISO 15156 activities (Tim Haeberle)
- Liaison Report on ASTM Items of Interest (Lester Burgess)

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Informative Reports - General

- Selection of Candidate Materials for Mildly Sour HPHT Well Applications (Brent Sherar)
- Continuous Cast Tubes (Evan Berlin)