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ASME Section XI Update

PDI/NRC Meeting
Fall 2011

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Pending Code Items Related to App VIII

- Code Case N-653-1 (Rewrite of Suppl. 11)
  - Out for Ballot at Standards Committee (August)
    - Received negative votes in three categories
      - Inadequate tracking/explanation of changes
      - Concern with false call acceptance criteria for procedure qualifications – based on incorrect reading of CC
      - NRC negative related to minimum length of flawed grading units – NRC reviewed testing process during visit to EPRI Charlotte in November
    - Plan is to respond to negatives and reintroduce this item for second consideration at February Code Week

- Intent Inquiry – Supplements 5 & 7
  - Regarding the use of computer modeling to expand qualifications for inner radius examination to allow launching the UT beam from alternate examination surfaces
  - This item is tabled at TG-App VIII pending NRC and PNNL staff review of computer modeling used in qualification activities

Pending Code Items (continued)

- Intent Inquiry – Appendix I I-3000
  - In 2004 Edition, I-3000 included the following sentence in regards to examination coverage for DM welds:

    "When examination from both sides is not possible, procedures and personnel qualified for single side examination in accordance with Appendix VIII, Supplement 10, with all flaws on the opposite side of the weld, shall be used to examine the required volume."
  - My inquiry stated that this wording contradicts the requirements of Supplement 10 and asked if that was the intent
  - I proposed a Code change to clarify this sentence as follows:

    ". . . .Supplement 10, using flaws on the opposite side of the weld, ..."
  - This wording more closely matches those in10CFR50.55a, paragraph (b)(2)(xv)(A)(2)

Activities at TG-CASS

- TG-CASS re-established about 5 years ago
  - In response to strides being made in technology for CASS UT inspection
  - Time to re-examine the merit of developing Appendix VIII, Supplement 9

- TG make-up (98% NDE; 2% Fracture Mechanics)
  - PNNL staff with CASS project ties (NDE)
  - EPRI staff with CASS project ties (NDE)
  - Tim Griesbach from SIA (PFM)
  - NRC staff (NDE)
  - Utility NDE personnel
  - Vendor NDE personnel

Activities at TG-CASS (cont.)

- Fracture Mechanics Work
  - Multi-year industry project recently completed on Fracture Mechanics considerations for CASS
    - Showed critical flaw sizes to be prohibitive when using deterministic fracture mechanics (~10%)
    - Showed more promising critical flaw sizes could be justified using probabilistic fracture mechanics
    - Tim will be working with Code committee on flaw evaluation standards to incorporate PFM for CASS material into Section XI
    - Important fracture mechanics questions linger on inspection volume and flaw type
      - Where do we expect flaws to happen?
      - What mechanism?
      - What morphology?

Activities at TG-CASS (cont.)

- NDE Work
  - Industry and PNNL continue to press forward with projects to improve examination methods for CASS
    - Technical updates provided on quarterly basis, by both organizations
      - Strides being made with low frequency UT for CASS flaw detection
        - Primarily phased array techniques being studied, with some limited studies of conventional techniques
        - All studies conducted using encoded data
      - ID inspection capabilities also being studied now
        - Incorporating ET and UT examination
  - Detection capability shows promise on thinner material
    - Are all castings created equal?
  - Detection for thicker material and through-wall sizing are still major gaps for rolling CASS into Appendix VIII

Activities at TG-CASS (cont.)

- Updating Appendix III
  - General TG opinion is that advancements in UT techniques for CASS should be employed for Appendix III examinations in the near term
    - Code Case and supporting white paper being drafted to add a CASS specific supplement 2 to Appendix III, containing updated UT techniques
      - Additional training or hands-on practice requirements
      - Use of frequencies and angles shown to be effective in CASS
      - Different approaches based on wall thickness

Status on Existing Code Actions

- Work on Steve Doctor's Appendix VIII review comments
  - Supplement 14 – clarification of wording for procedure qualification test requirements for detection, length sizing and depth sizing
    - Submitted an intent inquiry with proposed Code change in August
    - Board approved in October
  - Next item to be introduced will be unclear wording in length sizing and depth sizing requirements of Supplement 14:

    "(e) Supplement 2 or Supplement 3 examination procedures, equipment, and personnel are qualified for length-sizing when the flaw lengths estimated by ultrasonics, as compared with the true length, do no exceed 0.75 in. (19mm) RMS, when they are combined with a successful Supplement 10 qualification."
- Supplement 12 Intent Inquiry
  - To clarify that the ferritic grading units added to a successful austenitic qualification were not intended to span the full thickness and diameter range of the qualification
    - Inquiry submitted in August – Board approved in October

Additional Item of Interest

- NRC Report
  - The next draft revision of 10CFR50.55a is scheduled out in April 2012 and will incorporate by reference up to the 2011 Addenda of Section XI
    - Will 50.55a be updated annually?
    - Each new Code addenda incorporated by NRC requires a review of industry PD Program to ensure compliance with all applicable Code years for Appendix VIII