RIC 2014

Consensus Standards for New and Improved Plants

"The Use of High Density Polyethylene Pipe in Nuclear Power Plants"

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Disclaimer

This presentation is the intellectual property of Frank Schaaf, the comments made are his alone and are not an ASME official position.

CALLAWAY HDPE PIPE PROJECT

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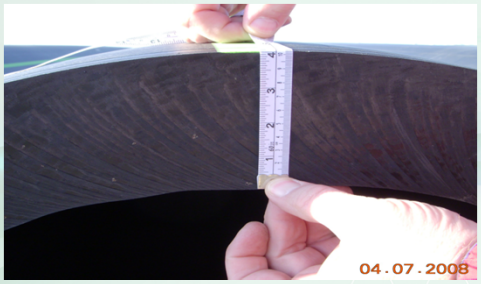
- Second plant to file a Relief Request with the NRC, first to start the replacement work
- The "Safety Related" pipe specification required 36 inch DR 9 pipe (non-standard for ASTM F714)
- About 2,000 feet of Safety Related Pipe
- From June 2007 to November 2008, replaced a total of 40,000 feet pipe with HDPE pipe

CALLAWAY HDPE PIPE PROJECT

- Project
  - Quality Assurance - Callaway Program
  - Design by Sargent & Lundy
  - Material by ISCO
    - Dow Chemical – Resin
    - WL Plastics – Pipe
    - IPPI – Fittings
  - Fusing – Callaway Plant
    - Trained 40 machine operators (ISCO)
    - IPPI – Miter Elbows & Flanges
      - Used Callaway Program, placed team in plant (QA, ANII, Fusing Engineer)
  - NDE – Ultrasonic Method (TOFD)
  - Problems – Used ASME Meeting space (NRC, ANII, Owner, Vendors and ASME input)

CALLAWAY HDPE PIPE PROJECT



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ASME CURRENT STATUS

- SECTION III
  - Section XI requirements were removed in Rev 1 of CCN-755
  - CCN-755 is being incorporated as a Section III Appendix
- SECTION XI
  - CCN-808 is in the process of being approved
- ISSUES (No change in 6 years)
  - Primary Degradation Mechanism – Slow Crack Growth
  - Fusion Procedure – Cold Fusion
  - NDE – Detection of Flaws

ASME CURRENT STATUS

- NEEDED RESEARCH (Roadmap)
  - Need new material science for HDPE
  - Need access to Gas Technology Institute (GTI)
  - Need research protocols ie. fused joint quality requirements
- OWNER (wants to use HDPE)
  - Follow HDPE roadmap developed by NESCC leading to NRC acceptance (ASME maintains roadmap)
  - Come to the ASME Code meetings

The Use of High Density Polyethylene Pipe in Nuclear Power Plants

- **Questions**