BWROG ECCS Suction Strainers – NRC Public Meeting ML14190A002

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BWR OWNERS' GROUP

BWR Expertise – Proven Solutions

Topics

Overall Perspective on 10CFR50.46 Rulemaking

10CFR50.46c Intersection with Suction Strainer Issues

Path Toward Enhanced Communications

Risk Informed Option for Addressing

10CFR50.46 Long Term Cooling

Implementation / Compliance Outlook

Summary

Overall Perspective on 10CFR50.46 Rulemaking

BWROG projects involved with monitoring / providing input on 10CFR50.46c

- Reload Analysis and Core Management Committee (RACMC)
  - Review & commentary opportunities via EPRI Reg-TAC
- ECCS Suction Strainers Committee (deterministic approach)
  - Review & commentary opportunities coordinated with BWROG RACMC
- ECCS Suction Strainers Risk-Informed Solutions Committee (newly formed in May 2014)
  - Review & commentary on GSI-191 related 50.46c content via NEI task force (incipiency)

10CFR50.46c Intersection with Suction Strainer Issues

ECCS Acceptance Criteria Rulemaking – ECCS SS intersection

- ECCS Suction Strainers Committee (deterministic approach)
  - BWROG-13032: Responses to Supplemental RAIs Associated with Boiling Water Reactor Owners' Group (BWROG) Licensing Topical Report NEDC 33608P (June 28, 2013)
    - RAI-7 S1: Related to satisfaction of adequate long-term core cooling in criterion (b)(5) if cladding experiences significant reheating (i.e., one or more additional thermal cycles)

Path Toward Enhanced Communications

ECCS Suction Strainers Committee (deterministic approach)

- Existing: Regular (3 – 4 times per year) public meeting with NRC Staff to review project & submittals status
- New: NRC evaluating & scheduling BWROG-prioritized pending submittals (6)
- New: Presentations / information to be provided to NRC in advance to foster more-effective interactions at public meetings

Path Toward Enhanced Communications (cont.)

ECCS Suction Strainers Risk-Informed Solutions Committee (newly formed in May 2014)

- Risk-Informed approach to resolve NRC Letter dated April 10, 2008, “Potential Issues Related to Emergency Core Cooling Systems (ECCS) Strainer Performance at Boiling Water Reactors”
- First in-person opportunity to interface with NRC Management / Staff (June 12, 2014 public meeting)
- First in-person opportunity to interface with NEI 50.46c Task Force (July 22, 2014 pre-public meeting / ML14143A246 public meeting attendance)
- Second in-person opportunity to interface with NRC Staff (July 23, 2014 public meeting)

Path Toward Enhanced Communications (cont.)

ECCS Suction Strainers Risk-Informed Solutions Committee (newly formed in May 2014) (cont.)

- Third in-person opportunity to interface with NRC Staff (first opportunity for significant technical interface)
  - In-progress date / time planning between counterpart PMs
  - Tentatively, September 9, 2014
- 2015 Outlook
  - Expecting three technical interface public meetings with NRC Staff to shape ultimate BWROG technical submittal
  - Communication / interface with EPRI Reg-TAC / 50.46c NEI Task Force as a matter of course

Risk Informed Option for Addressing

ECCS SS Risk-Informed Committee created in May 2014

- Purpose
  - The BWROG is pursuing a risk-informed evaluation to characterize risk associated with ECCS Suction Strainer fouling as compared to risk associated with other major industry initiatives to improve safety (e.g., Fukushima Response)
  - Aligns with NRC / NEI initiative to prioritize resources (COMSECY-14-0014 – *Cumulative Effects of Regulation of Risk Prioritization Initiative: Update on Recent Activities and Recommendations for Path Forward*)

10CFR50.46 Long Term Cooling

December 2010

- BWROG submitted NEDC-33608P, Boiling Water Reactor Emergency Core Cooling Suction Strainer In-Vessel Downstream Effects, Revision 1
  - Responded to NRC RAI round 1 in May 2012

January 2011

- NEDC-33608P – Revision 2, submitted to NRC
  - Responded to NRC RAI round 2 (S1 and S2) in June 2013

10CFR50.46 Long Term Cooling (cont.)

Recent

- NRC agreed to completing RAI-2 review with Safety Evaluation Report (SER) for NEDC-33608P, Revision 2 by the end of 2013
- On August 29, 2013, NRC communicated delays in review – new date: July 2014
- BWROG Chairman sent letter to NRC on September 11, 2013 requesting NEDC-33608P SER resources
  - Option 1: Full review
  - Option 2: Limited review – Benchtop Testing
- December 4, 2013 public meeting, BWROG restated importance of NEDC-33608P reviews

10CFR50.46 Long Term Cooling (cont.)

Recent (cont.)

- NRC communicated at public meetings on April 30, 2014 & June 12, 2014, that reviewer resources continue to challenge the review and prospective final Safety Evaluation (SE) associated with NEDC-33608P
- BWROG and NRC Staff currently developing a prioritization matrix for review of backlog submittals (including NEDC-33608P)

10CFR50.46 Long Term Cooling (cont.)

NEDC-33608P, Revision 2: Appendix A – BWROG Fuels Testing Program Summary

- Sections
  - Test 1: Lower Plenum Refilling from Fuel Bypass (Re-flood Backflow)
  - Test 2: Core Re-flood Rate Test (Re-flood Rate)
  - Test 3: Lower Tie Plate Blockage Test (Inlet Blockage)
  - Test 4: Upper Tie Plate Blockage (Outlet Blockage)

10CFR50.46 Long Term Cooling (cont.)

Test 1: Lower Plenum Refilling from Fuel Bypass (Re-flood Backflow)

- Purpose
  - To confirm time for reactor vessel lower plenum refilling is acceptable given potential debris entrapment in bypass flow pathways

Test 2: Core Re-flood Rate Test (Re-flood Rate)

- Purpose
  - To confirm that the time for bundle re-flood is acceptable given the potential for debris entrapment in the lower tie plate and bypass region flow paths

10CFR50.46 Long Term Cooling (cont.)

Test 3: Lower Tie Plate Blockage Test

- Purpose
  - To establish the experimental blockage function for the fuel bundle lower tie plate and lower spacers when exposed to debris

Test 4: Upper Tie Plate Blockage Test

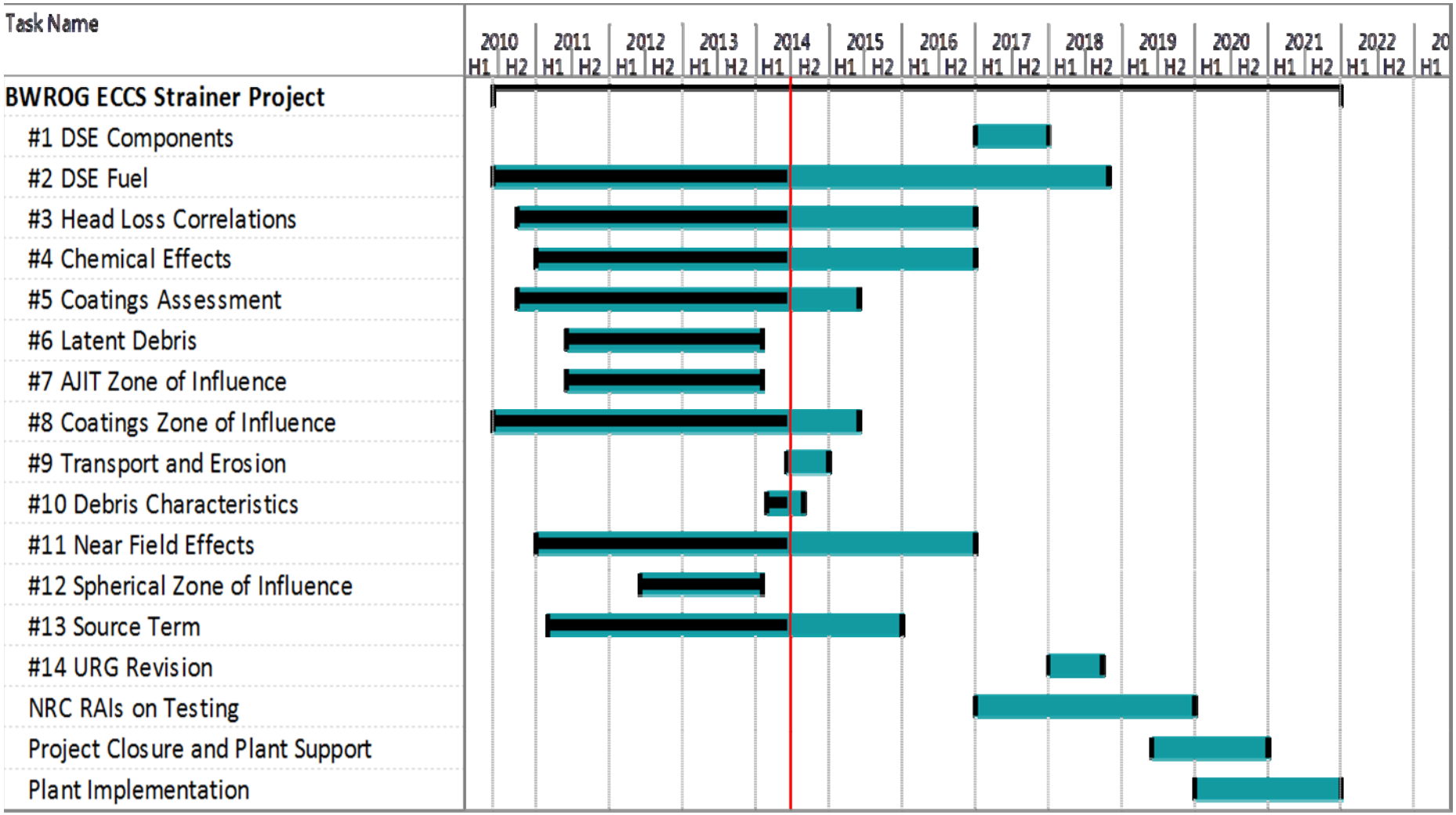
- Purpose
  - To establish the experimental blockage function of the fuel bundle upper tie plate and upper spacers when exposed to debris during long-term cooling
  - To quantify local debris accumulation at interfaces with spacer grids and tie plates (divided into two possible testing phases)

10CFR50.46 Long Term Cooling (cont.)

BWROG Perspective

- Definition of “Long-term Cooling;” location of details: in the rule or in subsequent Reg Guides
- Specific reheat value for cladding temperature (800F versus 1200F)
- PRA model reporting requirements: specific versus existing industry reporting standards
- Schedule for rule’s implementation: BWRs first to implement based on assumptions associated with fuel choice

Implementation / Compliance Outlook – Deterministic BWROG Project



Implementation / Compliance Outlook – Risk-Informed BWROG Project

Continuing 2014 Activities

- Initial committee meeting
  - July 30-31, 2014
  - Outline the ultimate risk-informed submittal
  - Committee comprised of BWROG IRIR, Licensing and ECCS Suction Strainer (deterministic) members
- Prospective September 9th public meeting with NRC Staff
  - First in-person opportunity to discuss the proposed risk-informed submittal and underlying parameters

Implementation / Compliance Outlook – Risk-Informed BWROG Project (cont.)

2015 Activities

- Committee meeting 1
  - January 2015
- Public Meeting 1 with NRC Staff
  - February / March 2015
- Committee meeting 2
  - April / May 2015
- Public Meeting 2 with NRC Staff
  - May / June 2015
- Committee meeting 3
  - July / August 2015
- Risk-Informed submittal to NRC Staff in 4Q 2015

Summary

- BWROG is participating in 50.46c development through EPRI Reg-TAC / NEI interface
- BWROG ECCS SS (deterministic) project awaiting NRC Staff review and approval of GE Fuels LTR (NEDC 33608P)
- New ECCS Suction Strainers Risk-Informed Solutions Committee; first meeting July 30-31, 2014
  - First ECCS Suction Strainers Risk-Informed meeting with NRC Staff tentatively scheduled for September