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BWRVIP - GEH Safety Communications Activities

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Meetings

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Background

- Several GEH-Hitachi Safety Communications (SCs) issued since 2009 regarding errors and/or improper consideration of recirculation line break (RLB) and annulus pressurization (AP) loads for evaluation of BWR internals
- Potential impact includes:
 - Calculation of loads
 - Flaw evaluations
 - Allowable flaw sizes
 - Inspection frequencies
- Not all components affected

GEH SCs

- SC 09-01 R0: **Annulus Pressurization Loads Evaluation**–
 - Mass/energy release did not consider dynamic response (only applicable to “New Loads” plants only)
- SC 09-03 R1: **Shroud Screening Criteria Reports**
 - Acoustic load not considered in GEH shroud screening criteria reports
- SC 11-07 R0: **Impact of Inertial Loading and Potential New Load Combination from Recirculation Suction Line Break Acoustic Loads**
 - Inertial loads from AC on secondary components (e.g., core spray piping) not considered
 - Load interaction between AC and AP not considered
 - Not part of current design basis of any BWR
- SC 12-08 R0: **Impact of Plant Changes on Bio-Shield Wall Doors**
 - Pressure loads on biological shield wall doors – off-rated conditions on shield door not considered

GEH SCs

- SC 12-20 R1: **Error in Method of Characteristics Boundary Conditions Affecting Acoustic Loads Analyses**
 - Acoustic load calculation error in MOC code
- SC 13-08: **Shroud Support Plate-to-Vessel Evaluation for AC Loads**
 - Acoustic load not considered in shroud support attachment to the RPV
- SC 14-01 (Draft): **Non-conservative Acoustic Load Calculated by WHAM (Water Hammer Analytical Method)**
 - Non-conservative WHAM AC load on jet pump, shroud & shroud support plate
- SC 14-02 (Draft): **Acoustic Load and Flow-induced Load on Jet Pump**
 - Jet pump structural evaluation (flaw handbook, repair & etc.) incorrectly applied flow-induced load (FIL) as acoustic load & drag load as FIL
- SC 14-03: **Acoustic Load Pressure Difference on Access Hole Cover**
 - Structural evaluation incorrectly applied average shroud support plate acoustic load ΔP as local acoustic load ΔP

BWRVIP Actions

Review of SCs on BWRVIP Guidelines

- Evaluation of SCs included review of the following reports:
 - Inspection & Evaluation Guidelines
 - Repair Design Criteria
 - Supporting documents
- BWRVIP reports were binned according to impact
 - Bin 1: Not affected at all and require no action
 - Bin 2: Reports that would benefit from augmented guidance regarding loads and load combinations
 - Bin 3: Technical bases that are likely impacted

BWRVIP Actions

Results of SC Review

- Revision to BWRVIP-25, “Core Plate Inspection and Flaw Evaluation Guidelines”
 - Revision to BWRVIP-180, “Access Hole Cover Inspection and Flaw Evaluation Guideline”
 - Revision to BWRVIP-38, “Shroud Support Inspection and Flaw Evaluation Guideline”
 - Revision to BWRVIP-26-A, “Top Guide Inspection and Flaw Evaluation Guideline”
 - Develop a new BWRVIP report on “Loads and Load Combinations” guidance that can be used to evaluate a flawed component when no design/evaluation requirements are provided by the OEM or the AE
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- Revision of I&E Guidelines expected to be completed by 2017

BWRVIP Actions

Survey of Utility Status

- The BWRVIP conducted a survey of members in June 2014 to gauge the status of the BWR fleet with regards to which plants are impacted by the GEH Recirculation Line Break (RLB) load Safety Communications (SCs), how are they impacted, and what actions they have taken to address them.
- The results showed that:
 - Members had entered the GEH SC's into a corrective action system.
 - Members had reviewed margins in flaw evaluation handbooks to understand if an immediate revision was required.
 - Members had reviewed use of current flaws to ensure margin was sufficient given the challenge from the GEH SC's.
 - The survey results showed that members were aware and engaged with the GEH SC's and their impact at a site level.

BWROG Activities

- Finite Break Opening Time (FBOT) Project
 - A project to assess the options and licensing impacts of using a finite break opening time when postulating a recirculation line break. Included in this consideration is the use of 50.59 as opposed to a license amendment for plants choosing to use this approach.
 - Part 1: Regulatory basis determination of 50.59 of FBOT application
 - Part 2: FBOT application for AC loads
 - Part 3: Typical plant example with FBOT AC load reduction
 - Part 4: FBOT generic screening document

Summary

- BWRVIP has reviewed all the SCs for relevance to the BWRVIP guidelines
- Actions being taken to revise and update BWRVIP guidance where appropriate
- Based on industry survey, owners are fully aware of the SCs and can apply them as applicable on a plant specific basis
- BWROG is evaluating the use of finite break opening time independent of BWRVIP actions
- Completion of revisions to I&E Guidelines by 2017



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