NRR Briefing

Title: Oconee Flood Protection (NRR/DRA)
Category: Status
Background: Adequacy of Flood Protection for Standby Shutdown Facility (SSF) Given Failure of the Jocassee Dam

Due to its configuration on Lake Keowee, the Oconee three-unit site relies entirely on accident mitigation from the Standby Shutdown Facility (SSF) to provide RCP seal cooling, inventory control, and secondary side heat removal under several conditions including a site flood from rupture of the upstream Jocassee Pumped Storage Dam. In 2006, the staff using the Significance Determination Process (SDP) evaluated a performance deficiency of an unanalyzed opening made in the SSF rendering it vulnerable to external flood. The licensee appealed the finding twice. During a re-evaluation on the second appeal, the staff discovered that the licensee had erroneously computed a random Jocassee Dam rupture frequency that was significantly lower than what should have been based on actual data.

In the 1980s, the licensee had performed a flooding analysis which predicted a resultant flood height of 4.71 feet given Jocassee Dam rupture. This study was used to justify constructing a seismically qualified 5-foot flood protection wall around the entrance to the SSF and was incorporated into the FSAR becoming part of their licensing basis. In the early 1990s, due to a national response plan, the Federal Energy Regulatory Commission (FERC) with the licensee performed a flood analysis which predicted a flood height of between 12 and 16 feet. In 1992, the licensee removed the 5-ft wall and Jocassee rupture flood protection references from their licensing basis using a potentially inappropriate argument. The earlier flooding study which predicted a 4.71-foot flood height is not available. Only the latter FERC flood analysis is available which clearly demonstrates that the current wall does not provide adequate flood protection.

Another discrepancy relates to the lower Jocassee Dam rupture frequency which is referenced in several documents including the Oconee Individual Plant Examination of External Events (IPEEE) and license renewal Severe Accident Mitigation Alternatives (SAMA) submittals. Moreover, other licensees with similar dam rupture vulnerabilities might have adopted this rupture frequency and used it to justify screening out consideration of external flood damage at their sites. Since the extent and impact at the individual sites of this underestimate is unknown, the staff will communicate concerns of potential deficiencies with licensees. Licensees may be required to re-visit flooding calculations to ensure validity.

Successes/Accomplishments:

A draft action plan has been prepared, is partially underway, and stakeholders have been identified. A team was assembled initially with personnel from DRA, DE, DORL, and DPR to consider several options on how to proceed. Staff and management meet regularly and provide progress to the ADES. A preliminary averted cost estimate for use in a regulatory analysis has been performed. A draft Information Notice has been written. Potential stakeholders have been briefed through various presentations made to the ET/LT, inter-office Risk Management Team (RMT), DRA staff, and NSIR.

Plans and Schedules:

One option is to address the removal of SSF flood protection references from the licensing basis and require the licensee to re-instate the wall in the licensing basis. The second option considered compliance using the backfit rule, 10 CFR 109. The staff is investigating whether a backfit regulatory analysis needs to be done. In either case, the licensee only has the current FERC study. In order to comply with the requirements of adequate flood protection, compensatory measures need to be taken by the licensee to protect the SSF beyond the 5-foot level. A third option was to simultaneously use the first two options with a heavier emphasis on the backfit aspect. The team will also assess issuing an order following the guidance of LIC-504, "Integrated Risk-Informed Decision-Making Process for Emergent Issues".
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