Status of Union of Concerned Scientist's EQ-Related 2.206 Petition

Fall 2015 EQ Technical Conference

Nuclear Utility Group on Equipment Qualification

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UCS' 2.206 Petition

Petitioner: Union of Concerned Scientists -- David Lochbaum

- **Petition Filed on July 29, 2011 (Open Roughly 47 months)**
- **<u>Issues/Actions Requested</u>:**
  - The petitioner requested that NRC issue a demand for information to the licensees of GE BWRs with Mark I and Mark II containment designs on how the facility complies with GDC 44, "Cooling Water," of Appendix A, "General Design Criteria for Nuclear Power Plants," to 10 CFR Part 50, and 10 CFR 50.49, "Environmental Qualification of Electric Equipment Important to Safety for Nuclear Power Plants," with respect to SFPs.
- **Proposed Director's Decision Issued – April 17, 2015**
- **Tentative Final Director's Decision – October – November 2015**

UCS' 2.206 Petition

Proposed Director's Decision

- Historical review of licensing reviews for Mark I and II plants
- NRC acceptance of their licensing bases during period of licensing, 1971 to 1991
- GDC 44 not applicable – only applicable to heat removal for normal operation of reactor support systems, or for reactor decay heat removal under normal operating conditions, and containment heat removal under reactor accident conditions.
- Also single failure applies, using onsite or offsite power
- Analysis of Spent Fuel Cooling at BWRs
  - Staff acceptance of all SFP heat removal designs
  - Transfer of all heat to ultimate heat sink unnecessary
  - Acceptance of operator actions as well

UCS' 2.206 Petition

NRC Response – 50.49

- NRC reviews included conditions from breaks, as well as conditions assumed to occur during the mitigation of design basis events
- Licensees have identified equipment affected, and the NRC has accepted the lists
- However, sustained loss of SFP cooling has not been considered a design basis event
- Loss of sustained SFP cooling capability would not affect equipment necessary to shut down the reactor.

UCS' 2.206 Petition

- Although SFP forced cooling loss would cause a pool temperature rise, the fuel would be adequately cooled as long as inventory was sufficient to maintain conditions to cool the fuel
- Surface evaporation would be at boiling T. And heat would rise in the containments
- Unlikely pressurization
- Full core cooling (infrequent configuration) would be adequate

UCS' 2.206 Petition

- Post Susquehanna inquiry in 1990's NRC conducted a survey, related to the reliability of the SFP forced cooling function
- Resolved the issues in 1997
- Later evaluation of shared secondary containment conditions – ongoing, but responses thus far indicate that equipment relied on for safe shutdown in the event of an earthquake would remain operable

UCS' 2.206 Petition

- Additional measures to respond to Fukushima
  - SFP cooling instrumentation
  - Additional strategies for maintaining SFP cooling
  - All over a range of events, including beyond design basis

- NRC proposes to deny the petition because it has reasonable assurance that the design and operation of SFP cooling systems for Mark I and II designs satisfy the current design and licensing basis requirements

UCS' 2.206 Petition

UCS Responded on May 8, 2015

- UCS Position
  - Heat loads from spent fuel pools and their support equipment have not been accounted for within GDC 44 calculations and evaluations. Thus, while GDC 61 is being met for the spent fuel pools inside containment, GDC 44 might not be met. Both GDC must be met
  - DFIs are still needed, and requested, to show how licensees comply with 10 CFR 50.49. When EQ calculations and evaluations properly include the post-accident heat loads from the spent fuel pool and any supporting equipment operation, their responses should be quite simple and straight-forward. But if the spent fuel pool and/or supporting equipment heat loads have been ignored in these calculations, the secondary containment temperatures will likely be non-conservative as they had been at Dresden.

UCS' 2.206 Petition

QUESTIONS ?