

GENERIC ISSUES PROGRAM SEMIANNUAL REPORT SUMMARY STATUS OF ACTIVE GENERIC ISSUES

Reactor Generic Issues

The U.S. Nuclear Regulatory Commission's (NRC's) Generic Issues (GI) program is currently evaluating three open GIs and tracking their resolution. These three open GIs are currently in the Regulatory Office Implementation stage: GI-191, "Assessment of Debris Accumulation on PWR Sump Performance;" GI-199, "Implications of Updated Probabilistic Seismic Hazard Estimates in Central and Eastern United States on Existing Plants;" and GI-204, "Flooding of Nuclear Power Plant Sites Following Upstream Dam Failure." The following information briefly describes and summarizes the status of each open GI.

GI-191, "Assessment of Debris Accumulation on PWR Sump Performance"

This GI considers the possibility that, following a loss-of-coolant accident (LOCA) in a pressurized-water reactor (PWR), debris accumulating on the emergency core-cooling system (ECCS) sump screen may cause clogging and restrict the flow of water to the ECCS pumps. As a result of this GI and the related Generic Letter 2004-02, "Potential Impact of Debris Blockage on Emergency Recirculation during Design Basis Accidents at Pressurized-Water Reactors," dated September 13, 2004, all PWR licensees increased the size of their containment sump strainers, significantly reducing the risk of debris clogging the strainers.

In December 2010, the Commission determined that it was prudent to allow the nuclear industry to complete testing on in-vessel effects and a zone of influence, and to develop a path forward. Based on the interactions with stakeholders and the results of the industry testing, in 2012 the NRC staff developed three options that would provide licensees with alternative approaches for resolving GI-191. The staff proposed these options to the Commission in SECY-12-0093, "Closure Options for Generic Safety Issue-191, Assessment of Debris Accumulation on Pressurized-Water Reactor Sump Performance," dated July 9, 2012. The Commission issued a staff requirements memorandum on December 14, 2012, approving the options for closing GI-191. Licensees have since notified the NRC of the option that they have selected and are developing proposed technical resolutions based on the option selected.

- All the plants that chose Option 1, which involves using previously approved models and test methods, have submitted their evaluations. The NRC staff has reviewed the licensee closure letters and closed out the GI for these plants as of June 2016.
- The plants that chose Option 2, which involves implementing additional mitigative measures and selecting a deterministic or risk-informed approach, will follow Topical Report WCAP 17788, "Comprehensive Analysis and Test Program for GSI-191 Closure," which is currently under review by the NRC staff, or will use the industry's proposed risk-informed approach submitted by the pilot plant, the South Texas Project. Subsequently, licensees will submit closure letters based on the topical report to the NRC by the end of 2018.

- The plants that chose Option 3, which involves separating the regulatory treatment of the sump strainer and in-vessel effects, are also waiting on the results of the staff's review of the South Texas risk-informed approach. Subsequently, Point Beach is expected to submit its plant evaluation for NRC staff approval in the summer of 2018.

A related issue that needs to be resolved to close GI-191 is the potential for debris to bypass the sump strainers and enter the reactor core. In 2012, the industry completed additional testing to address the effects of debris on the flow through the reactor core and submitted Revision 2 to Topical Report WCAP-16793-NP, "Evaluation of Long-Term Cooling Considering Particulate, Fibrous and Chemical Debris in the Recirculating Fluid." In 2013, the NRC staff issued its safety evaluation report of the topical report, finding it an acceptable model for assessing the effects on core cooling in PWRs from fibrous, particulate, and chemical debris that bypass the sump strainers.

To date, nine sites have successfully resolved GI-191. Based on current schedules, the staff expects this GI will be closed by the end of 2018.

GI-199, "Implications of Updated Probabilistic Seismic Hazard Estimates in Central and Eastern United States (CEUS) on Existing Plants"

This GI considers how current estimates of the seismic hazard level at some nuclear sites in the CEUS might be higher than the values used in their original designs and previous evaluations. Following collaboration with the Electric Power Research Institute (EPRI), the NRC staff issued a safety/risk assessment report, "Implications of Updated Probabilistic Seismic Hazard Estimates in Central and Eastern United States on Existing Plants," dated September 2, 2010. In conjunction, the NRC issued Information Notice 2010-18, "Generic Issue 199, 'Implications of Updated Probabilistic Seismic Hazard Estimates in Central and Eastern United States on Existing Plants,'" dated September 2, 2010.

Following the March 2011 nuclear event in Japan, the NRC incorporated its efforts associated with GI-199 into its Fukushima Dai-ichi response activities. Consequently, as part of a March 12, 2012, request for information under 10 CFR 50.54(f), the NRC asked all nuclear power plants to reevaluate their seismic hazards using present-day guidance and methods. The CEUS sites submitted their reevaluated seismic hazard reports in March 2014. Of the 61 sites, the staff has completed its assessments of the reevaluated seismic hazards reports for all 58 CEUS sites and all 3 sites in the western United States (WUS). Based on these reports, the NRC staff determined the need for sites to complete a Seismic Probabilistic Risk Assessments (SPRAs) or other seismic evaluations, as documented in a letter to the CEUS sites, dated October 27, 2015. Overall, 18 operating reactor sites have screened in for completion of SPRAs, and 9 sites have screened out of any further evaluations. The remaining 34 sites are required to perform only limited-scope evaluations (i.e., high-frequency evaluations, low-frequency evaluations, or spent fuel pool evaluations).

The NRC staff has started reviewing submittals of limited-scope evaluations received for low-frequency evaluations and spent fuel pools. In addition, in April 2017, the NRC received the first (of 18) seismic probabilistic risk assessments (SPRA) from Vogtle. The

staff expects it will take 6 to 8 months to complete a review of each SPRA. The staff anticipates to complete its review of all SPRAs in 2020.

In addition, in the NRC's final determination letter dated October 27, 2015, the staff identified specific nuclear sites that were required to complete specific short-term individual plant evaluations. Of the 61 sites, the NRC identified 34 sites that needed to perform expedited seismic evaluation process (ESEP) reports. The NRC staff has completed its reviews of all 34 ESEP reports. The ESEP reports confirmed that adequate seismic margin existed to safely shut down the plants without the need for modifications while lengthier seismic evaluations were being conducted. Licensees have notified the NRC of 15 plant upgrades that have been completed for CEUS plants that did not require an outage. Modifications for WUS plants are scheduled to be completed by June 2018.

GI-204, "Flooding of Nuclear Power Plant Sites Following Upstream Dam Failure"

This GI considers the potential flooding effects from upstream dam failure(s) on nuclear power plant sites, spent fuel pools, and sites undergoing decommissioning with spent fuel stored in spent fuel pools. NRR proposed this GI in July 2010. Similar to GI-199, the NRC has incorporated its efforts associated with this GI into the Fukushima Dai-ichi response activities.

In March 2012, the NRC sent letters to licensees requesting the reevaluation of all flood hazards, including dam failures, using present-day guidance and methodologies. All sites have completed their flood hazard reevaluations. The NRC has begun to issue assessments of the flood hazard reevaluation reports and expects to complete them by the end of 2017. The NRC requires those sites having flood-causing mechanisms that exceeded their current design basis to perform an additional analysis. Focused evaluations are due to the NRC in mid-2017, and integrated assessments are due by the end of 2018. It is anticipated that the staff will complete their review of the assessments by 2021.