

GENERIC ISSUE MANAGEMENT CONTROL SYSTEM REPORT FOR THE FIRST HALF OF FISCAL YEAR 2018

SUMMARY STATUS OF ACTIVE GENERIC ISSUES

Active Generic Issues

During this reporting period (October 2017 - March 2018), the U.S. Nuclear Regulatory Commission (NRC) staff continued its evaluation of three open generic issues (GIs) and two proposed GIs. Regarding the two proposed GIs, the staff continued its assessment of a potential GI involving the effects of high-energy arcing faults involving aluminum at nuclear power plants to determine whether the issue should proceed into the regulatory office implementation stage of the GI process. The staff is conducting a workshop with the industry in April 2018 to discuss future activities to resolve the issue. The staff also received a new potential GI on the adequacy of licensee's procedures to address anticipated operational occurrences. The staff determined that there is no immediate safety concern and is evaluating whether the issue meets all the screening criteria to proceed in the GI program.

The open GIs currently in the regulatory office implementation stage are GI-191, GI-199, and GI-204. The subsections below summarize the actions associated with these three open GIs. Additional information on the status of open GIs can be found on the GI dashboard on the NRC's public Web site at <http://www.nrc.gov/about-nrc/regulatory/gen-issues/dashboard.html>.

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

This GI is concerned with the possibility that, after a loss-of-coolant accident in a pressurized-water reactor (PWR), debris accumulating on the emergency core-cooling system sump screen may result in clogging and restriction of water flow to the 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.

A related issue that needs to be resolved before closing GI-191 is the potential for debris to bypass the sump strainers and enter the reactor core. In 2008, the NRC staff determined that additional industry-sponsored testing was necessary to resolve this issue. In 2012, the industry completed the additional testing and submitted 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 based upon revision 2 of this topical report as an acceptable model for assessing the effects on core cooling from fibrous, particulate, and chemical debris reaching the reactor vessel. This report included a conservative limit on the amount of fiber reaching the core. In order to justify higher in-vessel fiber limits than previously approved, the Pressurized Water Reactor Owners Group submitted a new topical report, WCAP-17788, "Comprehensive Analysis and Test Program for GSI-191 Closure (PA-SEE-1090) - Cold Leg Break (CLB) Evaluation Method for GSI-191 Long-Term Cooling." The NRC staff is reviewing the report and expects to complete its review by the end of 2018.

Based on the interactions with stakeholders and the results of the industry testing, the NRC staff developed three options that would provide licensees with alternative approaches for resolving

GI-191. Option 1 involves using previously approved models and test methods. Option 2 involves implementing additional mitigative measures and selecting either a deterministic or risk-informed approach. Option 3 involves separating the regulatory treatment of the sump strainer and in-vessel effects. 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. In response, the Commission issued a staff requirements memorandum on December 14, 2012, approving these options for licensees to use for closure of GI-191. Licensees have since notified the NRC of the option that they have selected and are developing proposed technical resolutions for the staff to review.

Of the 36 operating reactor sites subject to GI-191, 9 chose Option 1, using WCAP-16793-NP. All nine sites have submitted their evaluations, which the NRC staff has reviewed and approved. Therefore, all activities on Option 1 plants have been closed out.

The remaining 27 operating reactor sites chose Option 2, which involves implementing mitigative measures and selecting a deterministic or risk-informed approach. Most intend to use topical report WCAP-17788 to evaluate in-vessel debris effects. Plants that elect to use a risk-informed approach are following the pilot plant for that method, South Texas Project, which closed the issue in the summer of 2017. No sites are pursuing Option 3, which involves separating the regulatory treatment of the sump strainer and in-vessel effects.

In December 2017 and January 2018, the NRC received closure letters for GL 2004-02 from St. Lucie, Turkey Point, Point Beach, and Seabrook. Based on current schedules, the staff expects all activities associated with this GI to be completed by the end of 2020.

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

This GI addresses how current estimates of the seismic hazard level at some nuclear sites in the central and eastern United States (CEUS) might be higher than the values used in their original designs and previous evaluations. Following collaboration with the Electric Power Research Institute, 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," issued August 2010. In addition, the NRC staff 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 GI-199 into its Fukushima Dai-ichi response activities. Consequently, as part of a March 12, 2012, request for information under Title 10 of the *Code of Federal Regulations* (10 CFR) 50.54(f), the NRC asked all nuclear power plants to reevaluate their seismic hazards using present-day guidance and methods. All CEUS sites submitted their reevaluated seismic hazard reports by March 2014. The staff has completed its assessment of the reevaluated seismic hazards reports for all 58 CEUS sites and all 3 sites in the western United States (WUS).

Based on the staff's assessment of the licensee's reevaluated seismic hazards reports, the staff refined the requirements for individual plants to complete seismic probabilistic risk assessments (SPRAs) or other seismic evaluations. The NRC staff determined which sites are required to complete individual plant evaluations and specified the level of evaluation in the NRC's final

determination letter dated October 27, 2015. Overall, 18 sites (16 CEUS sites and 2 WUS sites) were screened in to submit complete SPRAs, 3 of which have submitted their SPRA; 34 CEUS sites are required to perform limited-scope evaluations (i.e., high-frequency evaluations, low-frequency evaluations, or spent fuel pool evaluations); and 9 sites (8 CEUS sites and the 1 WUS site) were screened out of any further evaluations. The NRC staff completed its review of six limited scopes during this reporting period. Overall, the staff has completed 66 of the 73 limited scope evaluations.

Additionally, of the original 61 sites, the NRC initially selected 48 sites (later reduced to 34 sites) to perform expedited seismic evaluation process (ESEP) reports that were due in December 2014. The ESEP reports confirm that adequate seismic margin exists to safely shut down the plants without the need for modifications while lengthier seismic evaluations were being conducted. The NRC staff has completed its reviews of all 34 ESEP reports. 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 for completion by June 2018.

During this reporting period, the NRC staff completed its review of the seismic probabilistic risk assessment of the Vogtle, of the spent fuel pool limited-scope evaluations of Vogtle and Callaway, and high frequency seismic evaluations of Catawba, Wolf Creek, and McGuire. As of April 2, 2018, the NRC staff had completed its assessment and closed out actions concerning seismic hazard reevaluations for 42 of the 60 operating reactor sites. Based on current schedules, the staff expects that activities associated with this GI will be completed by the end of 2020.

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

This GI relates to 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. The Office of Nuclear Reactor Regulation proposed this GI in July 2010, and the GI has been subsumed as part of the implementation of the recommendations from the agency's Japan Near-Term Task Force.

In March 2012, the NRC sent letters to licensees requesting information under 10 CFR 50.54(f) about the reevaluation of all flood hazards, including dam failures, using present-day guidance and methodologies. All sites have completed flood hazard reevaluations in response to the March 2012 request. The NRC has issued the majority of staff assessments of the flood hazard reevaluation reports and expects to complete the remainder by the end of 2018.

The NRC requires those sites that had flood-causing mechanisms exceeding the current design basis to perform an additional analysis. On June 30, 2015, the staff issued COMSECY-15-0019, "Closure Plan for the Reevaluation of Flooding Hazards for Operating Nuclear Power Plants," which included the option for sites to perform a focused evaluation to fully complete their response to the 10 CFR 50.54(f) request without the need for sites to perform an integrated assessment, depending on the hazard and the site's response to the updated flood hazard. Separately, the Nuclear Energy Institute (NEI) issued NEI 16-05, "External Flooding Assessment Guidelines," dated April 12, 2016, which describes a Flooding Impact Assessment Process (FIAP) to assess the impacts of flood mechanisms not bounded by the design basis flood level. The FIAP directs licensees to perform either a focused or integrated assessment.

During this reporting period, licensees submitted 11 additional focused evaluations for the staff's review. Thus far, 40 out of 52 sites have submitted to the NRC the results of either their focused evaluations or integrated assessments. For 33 out of 52 sites, the NRC staff has issued results of its review of licensee's focused evaluations or integrated assessments. For 6 out of 60 sites all reevaluated hazard mechanisms were bounded by the site's current design-basis. The remaining integrated assessments are expected to be submitted to the NRC by the end of 2018.

As of April 2, 2018, the NRC staff has completed its assessment and closed out all required actions concerning flooding hazard reevaluations for 36 of the 60 operating reactor sites. Based upon current schedules, the staff expects that activities associated with this GI will be completed by the end of 2020.