

3 DESIGN OF STRUCTURES, COMPONENTS, EQUIPMENT, AND SYSTEMS

Appendix A, "Design Certification Rule for the U.S. Advanced Boiling Water Reactor," to Title 10 of the *Code of Federal Regulations* (10 CFR) Part 52, "Licenses, Certifications, and Approvals for Nuclear Power Plants," constitutes the standard design certification (DC) for the U.S. Advanced Boiling Water Reactor (ABWR) design. To document the U.S. Nuclear Regulatory Commission (NRC) staff's review supporting initial certification of the ABWR, the staff issued a final safety evaluation report (FSER) in NUREG-1503, "Final Safety Evaluation Report Related to the Certification of the Advanced Boiling Water Reactor Design," in July 1994 and NUREG-1503, Supplement 1, in May 1997.

The staff is documenting its review of the GE-Hitachi Nuclear Energy (GEH or the applicant) application for renewal of the ABWR DC in Supplement 2 to NUREG-1503. Chapter 1 of this supplemental FSER describes the staff's review process for the ABWR DC renewal. This supplemental FSER section documents the NRC staff's review specifically related to Chapter 3, "Design of Structures, Components, Equipment, and Systems," Section 3.2.3, "Safety Classifications," of the GEH Design Control Document (DCD), Revision 7. Except as modified by this supplement to the FSER, the findings made in NUREG-1503 and its Supplement 1 remain in full effect.

3.2.3 Safety Classifications

In a letter dated August 25, 2015 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML15237A192) the applicant proposed to add ABWR design enhancements to the spent fuel pool (SFP) level instruments that conform with applicable guidance specified in the Japan Lesson-Learned Project Directorate-Interim Staff Guidance (JLD-ISG)-2012-03, Revision 0, "Compliance with Order EA-12-051, Reliable Spent Fuel Pool Instrumentation," which endorses with exceptions and clarifications the methodologies described in the Nuclear Energy Institute (NEI) industry guidance document NEI 12-02, Revision 1, "Industry Guidance for Compliance with NRC Order EA-12-051, To Modify Licenses with Regard to Reliable Spent Fuel Pool Instrumentation." This change to the design of SFP instruments resulted in a change to ABWR DCD Tier 2, Chapter 3, Table 3.2-1, that added SFP instrumentation to the table and identified the instrumentation's location, safety and quality classifications, and seismic categorization.

In addition, this change resulted in changes to the following ABWR DCD sections:

- Tier 1, Section 2.6.2, "Fuel Pool Cooling and Cleanup System," including Figure 2.6.2 and Table 2.6.2; and
- Tier 2, Chapter 1, Tables 1.8-21 and 1.8-22

These ABWR design enhancements would provide a potential COL applicant the means for meeting requirements of 10 CFR 50.155, "Mitigation of Beyond-Design Basis Events," regarding requirements for safety-related SFP instrumentation which codified the requirements stemming from Commission Order EA-12-051.

Section 22.2 of this FSER supplement provides the staff's review of these changes and other changes associated with the new SFP instrumentation.

References

1. 10 CFR 50.155, "Mitigation of Beyond-Design Basis Events."
2. 10 CFR Part 52, Appendix A, "Design Certification Rule for the U.S. Advanced Boiling Water Reactor."
3. NRC, NUREG-1503, "Final Safety Evaluation Report Related to the Certification of the Advanced Boiling Water Reactor Design," July 1994 (ADAMS Accession No. ML080670592).
4. NRC, NUREG-1503, "Final Safety Evaluation Report Related to the Certification of the Advanced Boiling Water Reactor Design," Supplement 1, May 1997 (ADAMS Accession No. ML080710134).
5. GEH, ABWR Standard Plant Design Certification Renewal Application Design Control Document, Revision 5, Tier 1 and Tier 2, November 2010 (ADAMS Accession No. ML110040323).
6. GEH, ABWR Standard Plant Design Certification Renewal Application Design Control Document, Revision 6, Tier 1 and Tier 2, February 2016 (ADAMS Accession No. ML16214A015).
7. GEH, ABWR Standard Plant Design Certification Renewal Application Design Control Document, Revision 7, Tier 1 and Tier 2, December 2019 (ADAMS Accession No. ML20007E371).
8. JLD-ISG-2012-03, Revision 0, "Compliance with Order EA 12-051, Reliable Spent Fuel Pool Instrumentation" August 29, 2012 (ADAMS Accession No. ML12221A339).
9. Order EA-12-051, "Order Modifying Licenses with regard to Reliable Spent Fuel Pool Instrumentation," March 12, 2012 (ADAMS Accession No. ML12056A044).
10. NEI 12-02, Revision 1, "Industry Guidance for Compliance with NRC Order EA-12-051, To Modify Licenses with Regard to Reliable Spent Fuel Pool Instrumentation" August 2012 (ADAMS Accession No. ML122400399).