

13 CONDUCT OF OPERATIONS

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13 CONDUCT OF OPERATIONS

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 13, "Conduct of Operations," Section 13.5, "Plant Procedures," 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.

13.5 Plant Procedures

13.5.1 Regulatory Criteria

In a letter dated July 20, 2012 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML12125A385), the NRC identified 28 suggested changes for GEH's consideration that the staff considered to be regulatory improvements or changes that could meet 10 CFR 52.59(b) criteria. In Item No. 17 of the letter, the NRC staff suggested that GEH update the emergency procedure guidelines and severe accident management guidelines (SAMGs) for the ABWR consistent with Nuclear Energy Institute (NEI) 91-04, Revision 1, "Severe Accident Issue Closure Guidelines," issued December 1994 (ADAMS Accession No. ML072850981). GEH responded in letters dated June 19, 2015 (ADAMS Accession No. ML15170A034) and January 30, 2017 (ADAMS Accession No. ML17031A056). GEH proposed to amend DCD, Tier 2, Section 13.5, "Plant Procedures," to include additional information for combined license (COL) applicants referencing the ABWR DC, to address procedures, regarding the development of plant specific technical guidelines (PSTGs), emergency operating procedures (EOPs), SAMGs, and extensive damage mitigation guidelines (EDMGs). The changes relate to an issue that is outside the scope of the DC, and a COL applicant addressing the issue would be subject to the requirements as they exist at the time the COL application is filed. Therefore, the changes are "amendments," as this term is defined in Chapter 1 of this supplemental FSER and are evaluated using the regulations applicable and in effect at the time of renewal.

In 10 CFR 52.79(a)(29)(ii), the NRC requires the COL applicant to submit plans for coping with emergencies, other than the plans required by 10CFR 52.79(a)(21). As discussed in the 2007 amendments to the 10 CFR Part 52 rule (Volume 72 of the *Federal Register*, page 49386 (72 FR 49386)), this requirement is meant to capture, for example, EOPs. The staff acceptance criteria associated with EOPs are in NUREG-0800, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants: LWR Edition" (SRP), Section 13.5.2.1, "Operating and Emergency Operating Procedures," Revision 2, issued March 2007.

The SAMGs are a voluntary industry initiative and no specific regulatory requirements govern their acceptability. While SAMGs are not a regulatory requirement, the U.S. nuclear industry has committed to developing and maintaining the SAMGs in accordance with NEI 91-04, "Severe Accident Issue Closure Guidelines", Revision 1, December 1994. Therefore, the staff reviewed GEH's changes for consistency with the current industry approach.

In accordance with 10 CFR 52.80(d), COL applicants must provide a description and plans for implementation of the guidance and strategies intended to maintain or restore core cooling, containment, and spent fuel pool cooling capabilities under the circumstances associated with the loss of large areas of the plant due to explosions or fires, as required by 10 CFR 50.54(hh)(2).

13.5.2 Summary of Technical Information

In its letters dated June 19, 2015 and January 30, 2017, the applicant proposed to expand the COL Information Items in DCD Tier 2, Section 13.5.3.2, "Emergency Procedure Development," as stated to clarify ABWR Procedures as follows:

- Procedure development will integrate the EOPs, SAMGs, and EDMGs using industry Boiling Water Reactors Owners Group (BWROG) guidance as endorsed by applicable NRC regulatory guides (RGs) consistent with the Fukushima Near-Term Task Force (NTTF) Recommendations as described in SECY-11-0124, "Recommended Actions to be Taken Without Delay from the NTTF Report," dated September 9, 2011 (ADAMS Accession No. ML11245A127).
- Development of the PSTGs, EOPs, and SAMGs will use as inputs the standard ABWR emergency procedure guidelines described in the ABWR DCD and generic industry guidance given in NEI 91-04, Revision 1, which includes the industry commitment to incorporate severe accident strategies into the overall accident management program.
- EDMGs will be development as described in NEI 06-12, "B.5.b Phase 2 & 3 Submittal Guideline," Revision 2, December 2006 (ADAMS Accession No. ML070090060).
- The EOPs, EDMGs, and SAMGs will be integrated in a cohesive, effective and useable manner as described in NEI 14-01, "Emergency Response Procedures and Guidelines for Beyond Design Basis Events and Severe Accidents," Revision 0, September 2014 (ADAMS Accession No. ML14269A236).

13.5.3 Technical Evaluation

The NRC staff evaluated the changes to the COL Information Items as follows:

- The SAMGs are a voluntary industry initiative; Therefore, no regulatory requirements govern the acceptability of SAMGs. However, the staff finds that the updated COL Information Item which applies NEI 91-04 and NEI 14-01, provides that the SAMGs will be developed and maintained consistent with the current industry approach. Therefore, the staff finds the applicant's approach acceptable.

- GEH changed the ABWR DCD, COL Information Item to state that the PSTGs and EOPs will be developed using the standard ABWR emergency procedure guidelines. The staff finds this acceptable because the standard ABWR emergency procedure guidelines were reviewed and found acceptable as part of the initial ABWR certification.
- GEH changed the ABWR DCD, COL Information Item to state that EDMGs will be developed as described in NEI 06-12. Since NEI 06-02 is endorsed by DC/COL-ISG-016, "Compliance With 10 CFR 50.54(hh)(2) and 10 CFR 52.80(d)," the staff finds this update acceptable.
- GEH changed the ABWR DCD, COL Information Item to state that procedure development will integrate the EOPs, SAMGs, and EDMGs using industry BWROG guidance as endorsed by applicable NRC RGs. The staff finds this acceptable since the COL applicant is directed to use NRC-endorsed approaches.
- GEH changed the ABWR DCD, COL Information item to state that these procedures and guidelines will be integrated in a cohesive, effective and useable manner as described in NEI 14-01. While not currently endorsed by the staff, the staff issued draft regulatory guide DG-1319, "Integrated Response Capabilities for Beyond-Design-Basis Events," proposing to endorse NEI 14-01 with clarifications. Therefore, the staff finds that referencing NEI 14-01 in this COL Information Item is acceptable.

The use of COL Information Items for the ABWR DC renewal is appropriate because the overall responsibility for severe accident management is with the COL applicant and or license holder.

The applicant provided the necessary information requested by the staff in the letter dated June 20, 2012, in the ABWR DCD, Revision 7, which incorporated the changes described in the applicant's responses dated June 19, 2015 and January 30, 2017. Therefore, Confirmatory Item 13.5-1 from the staff's advanced safety evaluation report with no open items for the ABWR DC renewal is resolved and closed.

13.5.4 Conclusion

Based on the evaluation provided in this supplemental FSER section, the staff concludes that the design change to the ABWR DCD associated with the revision of the COL Information Items is acceptable, because it provides that the SAMGs will be developed and maintained consistent with the current industry approach and that the EOPs and EDMGs will be developed in a manner acceptable for meeting 10 CFR 50.54(hh)(2), 10 CFR 52.79(a)(29)(ii), and 10 CFR 52.80(d).

References

1. 10 CFR 50.54, "Conditions of Licenses."
2. 10 CFR Part 52, Appendix A, "Design Certification Rule for the U.S. Advanced Boiling Water Reactor."
3. 10 CFR 52.59, "Criteria for Renewal."
4. 10 CFR 52.79, "Contents of applications; technical information in final safety analysis report."
5. 10 CFR 52.80, "Contents of applications; additional technical information."
6. NUREG-0800, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants: LWR Edition" (SRP), Section 13.5.2.1, Revision 2, March 2007 (ADAMS Accession No. ML070100635).
7. NRC, NUREG-1503, "Final Safety Evaluation Report Related to the Certification of the Advanced Boiling Water Reactor Design," July 1994 (ADAMS Accession No. ML080670592).
8. 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).
9. GEH, ABWR Standard Plant Design Certification Renewal Application Design Control Document, Revision 5, Tier 1 and Tier 2, December 2010 (ADAMS Accession No. ML110040323).
10. GEH, ABWR Standard Plant Design Certification Renewal Application Design Control Document, Revision 6, Tier 1 and Tier 2, February 2016 (ADAMS Accession No. ML16214A015).
11. GEH, ABWR Standard Plant Design Certification Renewal Application Design Control Document, Revision 7, Tier 1 and Tier 2, December 2019 (ADAMS Accession No. ML20007E371).
12. SECY-11-0124, "Recommended Actions to be Taken Without Delay from the NTTF Report," September 9, 2011 (ADAMS Accession No. ML11245A127).
13. NEI 91-04, "Severe Accident Issue Closure Guidelines", Revision 1, dated December 1994, the industry standard for SAMGs (ADAMS Accession No. ML072850981).
14. NEI 06-12, "B.5.b Phase 2 & 3 Submittal Guideline," Revision 2, December 2006 (ADAMS Accession No. ML070090060).
15. NEI 14-01, "Emergency Response Procedures and Guidelines for Beyond Design Basis Events and Severe Accidents," Revision 0, September 2014 (ADAMS Accession No. ML14269A236).