

# 11.0 Radioactive Waste Management

## 11.4 Solid Waste Management System

NUREG-1503, "Final Safety Evaluation Report Related to the Certification of the Advanced Boiling Water Reactor Design, Main Report," Section 11.4.2, indicates that the solid waste management system meets the guidance of Regulatory Guide (RG) 1.143, Revision 1. However, in reviewing DCD Tier 2, Section 11.4 it was unclear that the solid waste management system was to be designed, constructed, and tested in accordance with the criteria in the RG. In addition, there were apparent discrepancies in the DCD regarding the offgas system and offgas vault design (which are mostly discussed in Section 11.3 of the DCD). This supplemental evaluation documents the staff's review of the design of the radioactive waste management system, as it relates to conformance with RG 1.143 and compliance with associated regulatory requirements.

### 11.4.1 Regulatory Criteria

As explained below, the proposed DCD changes related to the solid waste management system are to supply information omitted from the originally certified DCD to ensure that the solid waste management system meets the regulations applicable and in effect at initial certification. The proposed changes related to the offgas system and offgas vault are to correct errors and inconsistencies in the originally certified DCD associated with the offgas system and offgas vault design descriptions to ensure that the offgas system and offgas vault meets the regulations applicable and in effect at initial certification. Therefore, the proposed changes are "modifications," as this term is defined in Chapter 1 of this supplement, and will be evaluated using the regulations applicable and in effect at initial certification.

The following regulatory requirements provide the basis for the acceptance criteria for the staff's review:

- 10 CFR 52.47(a)(1)(i) (1997), requires that the DC application must contain the technical information which is required of applicants for construction permits and operating licenses by 10 CFR Part 20, Part 50 and its appendices, and Parts 73 and 100, and which is technically relevant to the design and not site-specific."
- 10 CFR Part 50, Appendix A, GDC 2 (1997) requires that structures, systems, and components important to safety be designed to withstand the effects of natural phenomena without loss of capability to perform their safety functions. The design bases for these structures, systems, and components must reflect: (1) Appropriate consideration of the most severe of the natural phenomena that have been historically reported for the site and surrounding area, with sufficient margin for the limited accuracy, quantity, and period of time in which the historical data have been accumulated, (2) appropriate combinations of the effects of normal and accident conditions with the effects of the natural phenomena and (3) the importance of the safety functions to be performed.
- 10 CFR Part 50, Appendix A, GDC 60 (1997) requires that the nuclear power unit design include means to control suitably the release of radioactive materials in gaseous and liquid effluents and to handle radioactive solid wastes during normal reactor operation, including anticipated operational occurrences.

- 10 CFR Part 50, Appendix A, GDC 61 (1997) requires the fuel storage and handling, radioactive waste, and other systems that might contain radioactivity to be designed to assure adequate safety under normal and postulated accident conditions, including appropriate containment, confinement, and filtering systems for radioactive waste systems.

#### **11.4.2 Summary of Technical Information**

RG 1.143, provides, in part, design, construction, and testing criteria for radioactive waste management structures, systems, and components at nuclear power plants. Following the guidance of RG 1.143 ensures that the radioactive waste management systems comply with the pertinent portions of the GDC within the scope of this supplement SE discussed above. GEH ABWR DCD, Tier 2, Table 1.8-20 indicates that RG 1.143, Revision 1, is applicable to the ABWR design and DCD, Tier 2, Sections 11.2 and 11.3 provide information and commitments which ensure that systems and components of the liquid and gaseous waste management systems (including associated structures) are designed and tested in accordance with RG 1.143. However, while NUREG-1503, Section 11.4.2, indicates that the solid waste management system meets the guidelines of RG 1.143, there was no specific commitment in the DCD that the solid waste management system would be designed, constructed, and tested in accordance with RG 1.143. RG 1.143, Regulatory Position 3, specifies the design and testing criteria for solid waste management systems and Regulatory Position 6 provides the quality assurance criteria.

The staff issued RAI 11.04-1, requesting that the applicant provide information ensuring that the solid waste management system conforms with RG 1.143, Revision 1, or provide an alternative approach to meeting the aforementioned NRC regulations. In addition, while the GEH ABWR DCD Tier 2, Section 11.3 specifies that the offgas system is designed in accordance with RG 1.143, the Tier 2 Table 3.2-1 contained several apparent errors and inconsistencies which could potentially create confusion regarding the offgas system and offgas vault design. Therefore, the staff requested that the applicant also correct these errors and inconsistencies in Table 3.2-1.

#### **11.4.3 Staff Evaluation**

In the response to RAI 11.04-1 (ADAMS Accession number ML15099A586), the applicant proposed updating DCD, Tier 2, Section 11.4.1.2 to specify that the solid waste management system design “compli[es] with Regulatory Guide 1.143.” This would include any mobile equipment that is used. In addition, in the response, the applicant proposed correcting the errors associated with DCD Tier 2, Table 3.2-1, which clarifies that the offgas system and offgas vault will be designed in accordance with RG 1.143.

In Supplement 1 of the response to RAI 11.04-1 (ADAMS Accession number ML15202A045), the applicant proposed including additional information in DCD Section 11.4.1.2, not only to specify that the solid waste management system complies with RG 1.143, but also to state that this includes the quality classification, construction, and testing requirements in Subsection 11.2.1.2.1, and building requirements in Subsection 11.2.1.2.2. These subsections provide the design information, including codes and standards, consistent with RG 1.143, for which the solid waste management system must be designed. Therefore, the response to RAI 11.04-1, including Supplement 1, provides DCD changes which ensure that the solid waste management system and offgas system (including associated structures) are designed, constructed, and tested, in accordance with RG 1.143. The staff finds this to be acceptable.

The staff verified that the proposed DCD changes described in the response to RAI 11.04-1, including Supplement 1, were incorporated into DCD Revision 6. Therefore, this issue is resolved.

#### **11.4.4 Conclusion**

Based on the above, the response to RAI 11.04-1 (including Supplement 1), is complete and meets the requirements of 10 CFR 52.47(a)(1)(i) (1997). In addition, the design, construction, and testing criteria of the structures, systems, and components associated with the solid radioactive waste management system and offgas system and offgas vault conform to RG 1.143, and the information in the DCD is now consistent regarding the design of the offgas system and offgas vault. Conforming with RG 1.143, in combination with other aspects of the design, including the design requirements of these structures, the control of radioactive effluents, the radiation shielding design, and other radiation protection design features ensure that these structures, systems, and components are in compliance with 10 CFR Part 50, Appendix A, GDCs 2, 60, and 61. Therefore, the response to RAI 11.04-1 (including Supplement 1) and associated DCD revisions are acceptable.