REQUEST FOR ADDITIONAL INFORMATION 535-4287 REVISION 2

3/2/2010

US-APWR Design Certification

Mitsubishi Heavy Industries

Docket No. 52-021

SRP Section: 11.03 - Gaseous Waste Management System
Application Section: 11.3

QUESTIONS for Balance of Plant Branch 2 (ESBWR/ABWR) (SBPB)

11.03-16

RAI 11.3-1 Supp 1 (eRAI 4287, Question 16421) (Related to eRAI 2007, Question 7886)

The staff asked the applicant in RAI 188-2007, Question 11.3-1 to provide in the DCD additional information to justify how the guidance in Regulatory Position 2.3 (which points to Regulatory Position 5) is met. The applicant replied to Question 11.3-1 in its response to Request for Additional Information (RAI) Number 188-2007, Revision 1, dated March 10, 2009. In its response the applicant stated, "According to Table 3.2-2 (Sheet 32 of 53) the GWMS components are all designed to the codes and standards of Class 6, which as shown in Table 3.2-3, means that codes and standards meeting RG 1.143 are applied. Also, Table 3.2-2 (Sheet 32 of 53) shows that the seismic category of SSCs in the GWMS are classified based on RG 1.143."

The staff has reviewed the applicant's response to the RAI and recognizes that DCD Section 3.2.2.5, "Other Equipment Classes," states, "The codes and standards defined in RG 1.143, Table 1, are applied to equipment Class 6 components." However, RG 1.143, Regulatory Position 5, "Classification of Radwaste Systems for Design Purposes," states:

> "Any systems or components in a RW-IIa facility that store, process, or handle radioactive waste in excess of the A1 quantities given in Appendix A, 'Determination of A1 and A2,' to 10 CFR Part 71, 'Packaging and Transportation of Radioactive Material,' are classified as RW-IIa. These systems or components that process radioactive waste in excess of the A2 quantities but less than the A1 quantities given in Appendix A to 10 CFR Part 71 are classified as RW-IIb. All other components are classified as RW-IIc. This classification may be modified for specific radwaste components."

To ensure that RG 1.143, Regulatory Position 5 guidance is met, the applicant is requested to provide a discussion of each of the GWMS components and the quantities of radioactive waste they process. Based on this discussion, provide in the DCD appropriate classifications (RW-IIa, RW-IIb, or RW-IIc) for the systems or components that process radioactive waste similar to the proposed Table 11.2-20 for the LWMS.

11.03-17

RAI 11.3-3 Supp 1 (eRAI 4287, Question 16422) (Related to eRAI 2007, Question 7888)

The staff asked the applicant in Request for Additional Information, RAI188-2007, Question 11.3-3 to provide additional information in the DCD to confirm compliance with SRP Section 11.3, SRP Acceptance Criteria 6. Additionally, the staff asked the applicant to specify in the DCD which components and piping are designed to withstand a hydrogen explosion. The applicant replied to Question 11.3-3 in its response to RAI 188-2007, Revision 0, dated March 10, 2009. The staff reviewed the response and found that it did not sufficiently address the guidance contained in SRP Section 11.3, SRP Acceptance Criteria 6. The supplemental RAI below specifies the additional information needed to ensure compliance with this specific SRP acceptance criteria.

1) In its response, the applicant stated, "These components are designed to comply with SRP Section 11.3, including SRP Acceptance Criteria 6… The design provides initial alarm at high concentration setpoint for operator action, and at the 'high-high alarm' setpoint, the sources of the gas to the charcoal beds are automatically isolated by valves in the closed position… The malfunction of the hydrogen analyzer is already considered for the row 'oxygen/hydrogen analyzer skid; oxygen analyzer skid,' as the hydrogen analyzer is part of the oxygen/hydrogen analyzer skid."

- The reference to the removal of the "Hydrogen gas analyzer" from Table 11.3-3, "Equipment Malfunction Analysis," Sheet 2 of 2, the malfunction of the "Hydrogen gas analyzer" is described as when the hydrogen gas concentration exceeds the explosive limit, and the malfunction of the "Oxygen/hydrogen analyzer skids; oxygen analyzer skid" is described as when these skids fail to monitor hydrogen or oxygen concentration. Clarify how the malfunction of the hydrogen analyzer is already considered in Table 11.3-3.

- The "Result" of a malfunction of the "Oxygen/hydrogen analyzer skids; oxygen analyzer skid" in Table 11.3-3, "Equipment Malfunction Analysis," Sheet 1 of 2, states, "Even when both analyzers are out of service, manual sampling can support the automatic function." Provide in the DCD additional discussion explaining how manual sampling can support an automatic function, or justify why the current "Result" is acceptable.

2) The applicant proposed to revise the FSAR to include at the end of Section 11.3.2.1.4 the text, "In the unlikely case that the oxygen concentration does reach 4%, automatic control features are initiated at this 'high-high alarm' setting. When the high-high alarm occurs, the sources of the gas to the charcoal bed are isolated by closing the valves." SRP Acceptance Criteria 6.C of SRP 11.3 states, "The process gas stream should be analyzed for potentially explosive mixtures and annunciated both locally and in the control room."

- Provide in the DCD indication that monitoring of potentially explosive mixtures is annunciated both locally and in the control room, or justify why annunciation locally and in the control room is unnecessary.

3) Address the following items related to SRP Acceptance Criteria 6.D of SRP 11.3:

- SRP Acceptance Criteria 6.D of SRP 11.3 states, "For systems not designed to withstand a hydrogen explosion, dual gas analyzers (with dual being defined as two independent gas analyzers continuously operating and providing two independent measurements verifying that hydrogen and/or oxygen are not present in potentially explosive concentrations) with automatic control functions are required to preclude the formation or buildup of explosive hydrogen/oxygen mixtures. Gas analyzers should annunciate alarms both locally and in the control room." The applicant's response to RAI 11.03-3 stated, "The oxygen analyzer described in Section 11.3.2.1.3 is a dual analyzer, which conforms to the definition in SRP Acceptance Criteria 6.D." Provide in the DCD discussion of the provisions of SRP Acceptance Criteria 6.D of SRP 11.3, or justify why these provisions are not discussed in the DCD.

- SRP Acceptance Criteria 6.D of SRP 11.3 states, "Control features to reduce the potential for explosion should be automatically initiated at the 'high-high alarm' setting." In its response the applicant proposed to revise the FSAR to state, "In the unlikely case that the oxygen concentration does reach 4%, automatic control features are initiated at this 'high-high alarm' setting. When the high-high alarm occurs, the sources of the gas to the charcoal bed are isolated by closing the valves." Provide in the DCD discussion of each of the applicable automatic control features that are discussed in SRP Acceptance Criteria 6.D of SRP 11.3, or justify why these provisions are not discussed in the DCD. In other words, specify which automatic control features are initiated at the 'high-high alarm' setting. Additionally, clarify in the DCD whether the valves isolating the sources of the gas to the charcoal bed fail in the closed position.

- SRP Acceptance Criteria 6.D of SRP 11.3 states, "Gas analyzers should have daily sensor checks, monthly functional checks, and quarterly calibrations…All gas analyzer instrumentation systems shall be nonsparking" Provide in the DCD discussion of gas analyzer daily sensor checks, monthly functional checks, quarterly calibrations, and instrumentation, or justify why these checks, calibrations, and nonsparking provisions may not be needed.