

REQUEST FOR ADDITIONAL INFORMATION NO. 189-2006 REVISION 0

2/9/2009

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 Health Physics Branch (CHPB)

11.03-6

DCD Tier 2 (Rev 1), Section 11.3, Table 11.3-5 presents calculated annual airborne radionuclide releases (Ci/yr) from some input design parameters and values in Section 11.2, Table 11.2-9 used in the PWR-GALE computer code. Staff review indicates insufficient information is provided to independently confirm the calculated annual airborne radionuclide releases for compliance with 10 CFR 20.1302; 10 CFR 20, Appendix B, Table 2, Column 1; 10 CFR 50, Appendix I; 10 CFR 50.34a; and 10 CFR 50, Appendix A, GDC 60. Please address the following items and revise the DCD to include this information.

1. Section 11.2, Table 11.2-9:
 - (a) Provide the design parameters and values for the fuel handling building, or justify their exclusion.
 - (b) Provide the basis for all values and assumptions used in the PWR-GALE code calculation of annual gaseous radioactive effluent releases. Include value derivations and references (e.g., pointer to applicable FSAR section, RG 1.109 table, etc.).
2. Section 11.3, Table 11.3-5:
 - (a) Note 2 for fuel handling area airborne radionuclide releases states, "The fuel handling area is within the reactor building, but is considered separately in the evaluation." Describe how (e.g., methodology and analysis) and where (e.g., FSAR section) the evaluation of airborne radionuclide releases for the fuel handling building is considered.
 - (b) Note 3 for auxiliary building airborne radionuclide releases states, "Including the reactor building." Describe how airborne radionuclide releases for the auxiliary building are included with the reactor building.
3. Provide the PWR-GALE code input/output files used to calculate the annual airborne radionuclide releases in Table 11.3-5.

11.03-7

DCD Tier 2 (Rev 1), Section 11.3, Table 11.3-8 presents some input design parameters and values used in the GASPAR II computer code and resulting individual annual population pathway doses (mrem/yr) from gaseous radioactive effluents in Table 11.3-9. Staff review indicates insufficient information is provided to independently confirm the calculated individual annual population pathway doses for compliance with 10 CFR 20.1301; 10 CFR 20.1302; 10 CFR 50.34a; 10 CFR 50.36a; 10 CFR 50, Appendix I; and

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10 CFR 50, Appendix A, GDC 60 and GDC 61. Please address the following items and revise the DCD to include this information.

1. Provide the basis for all design parameters and values used in the GASPAR II code calculation. Include value derivations and references (e.g., pointer to FSAR section or table, RG 1.109 table, etc.).
2. Provide the GASPAR II code input/output files used to calculate the gaseous effluent doses in Table 11.3-8.

11.03-8

DCD Tier 2 (Rev 1), Section 11.3, Table 11.3-4 presents input design parameters and values used to calculate radioactive effluent releases and resulting individual annual population dose (mrem/yr) due to a GWMS charcoal bed leak. Staff review indicates insufficient information is provided to independently confirm the calculated individual annual population dose for compliance with 10 CFR 20.1301; 10 CFR 20.1302; 10 CFR 50.34a; 10 CFR 50.36a; 10 CFR 50, Appendix I; and 10 CFR 50, Appendix A, GDC 60 and GDC 61. Please provide details of the dose calculation for the GWMS charcoal bed leak to include the basis for all design parameters and values (e.g., Xe and Kr holdup time), identify "other parameters" from Table 11.2-9 of Section 11.2, provide value derivations and references (e.g., pointer to FSAR section or table, RG 1.109 table, etc.), and revise the DCD to include this information.

11.03-9

DCD Tier 2 (Rev 1), Section 11.3.3.2.1, please check the units of "(t)" given for the reactor coolant mass, m, to calculate noble gas activity in the waste surge tank in Eq. 11.3-1, and revise the DCD as needed. The staff believes the proper unit for reactor coolant mass, m, should be in grams (g).

11.03-10

DCD Tier 2 (Rev 1), Sections 11.3.2 and 11.3.3.1 state, "The vent stack is site-specific and will be included in the design detail." In Section 11.3.3.1, detailed design information for the vent stack is to include the height of release, stack diameter, effluent temperature and flow rate, effluent exit velocity, and size and shape of flow orifices. The vent stack which runs alongside containment is described as the only release point above the top of containment for the GWMS and HVAC systems associated with the reactor, auxiliary, and access buildings. Although information item COL 11.3(3) for vent stack design parameters and release point specific characteristics is presented in Section 11.3.7, there is no explicit statement in Sections 11.3.2 or 11.3.3.1 to direct the COL applicant to take responsibility for information item COL 11.3(3). Please include a statement for the COL applicant to perform information item COL 11.3(3) in the discussion of Sections 11.3.2 or 11.3.3.1.

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11.03-11

DCD Tier 2 (Rev 1), Section 11.3.1.6 states, "The GWMS is designed with permanently installed equipment. The GWMS does not does not include the use of mobile or temporary equipment." In comparison, Section 11.2.1.6 provides a provision with COL information item on a mobile system or temporary equipment for the LWMS also not included in the permanently installed LWMS equipment that may be installed in the auxiliary building at the discretion of facility operation. Given that Section 11.3.2.1 and Table 11.3-11 developed in accordance with RG 1.143 present GWMS design information on codes and standards for flexible hoses and hose connections used in conjunction with a mobile radwaste processing system, please address the following items and revise the DCD to include this information, or justify their exclusion.

1. In Section 11.3.1.6, discuss the provision for a mobile system or temporary equipment for gaseous radioactive waste processing that may be installed at the discretion of facility operation.
2. In Section 11.3.1.6, include an explicit statement to direct the COL applicant to take responsibility for this COL information item.
3. In Section 11.3.7, provide the COL information item for a mobile system or temporary equipment that is not included in the permanently installed GWMS equipment.