

US-APWRRAlSPeM Resource

From: Ciocco, Jeff
Sent: Monday, August 20, 2012 2:18 PM
To: us-apwr-rai@mhi.co.jp; US-APWRRAlSPeM Resource
Cc: Spencer, Michael; McCoppin, Michael; Otto, Ngola; Williams, Stephen; Roy, Tarun; Snyder, Amy
Subject: US-APWR Design Certification Application RAI 956-6630 (11.02)
Attachments: US-APWR DC RAI 956 RPAC 6630.pdf

MHI,

The attachment contains the subject request for additional information (RAI). This RAI was sent to you in draft form. Your licensing review schedule assumes technically correct and complete responses within 30 days of receipt of RAIs. However, MHI requests, and we grant, 60 days to respond to this RAI. The schedule will be adjusted accordingly.

Please submit your RAI response to the NRC Document Control Desk.

Thank you,

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Issue Date: 8/20/2012

Application Title: US-APWR Design Certification - Docket Number 52-021

Operating Company: Mitsubishi Heavy Industries

Docket No. 52-021

Review Section: 11.02 - Liquid Waste Management System
Application Section: Liquid Waste Management

QUESTIONS

11.02-35

In FSAR Tier 2, Rev. 3, Table 1.9.1-1, the applicant has endorsed the use of Regulatory Guide (RG) 1.143, Rev. 2, with no exceptions identified (hereafter simply referred as RG 1.143 for brevity). FSAR Table 1.9.1-1 states that the guidance of RG 1.143 applies to structures, systems, and components (SSCs) described in FSAR Tier 2, Rev. 3, and Sections 3.7.2.8.4, 11.2, 11.3, and 11.4.

RG 1.143 lists applicable codes and standards acceptable to the NRC. The codes and standards address specifications on design and construction, materials, welding, and inspection and testing. The regulatory guide identifies natural and man-induced hazards, design loads, and design criteria and associated safety classifications. The safety classifications are RW-IIa (high hazard), RW-IIb (hazardous), and RW-IIc (non-safety), with radiological criteria assigned to each one. The evaluation process of SSCs is described in Regulatory Position C.5, which focuses on acceptable radiological criteria, while Regulatory Position C.6 addresses natural phenomena and man-induced events and combination of design loads and their applicability to the safety classification system.

The assignment of the safety classification is based on the amount of radioactivity contained in systems and components housed within structures, and the resulting dose from unmitigated radiological releases to a member of the public at the protected area boundary (PAB), and a maximum unmitigated occupational exposure within the PAB. The radiological criteria for unmitigated radiological releases (considering the maximum inventory) at the boundary of the unprotected area should not exceed 100 mrem, and the maximum unmitigated exposure to site personnel within the protected area should not exceed 5 rem. Note: the staff has indicated in SRP 11.2 that the annual 500 mrem dose limit at the boundary of the unprotected area in the RG is revised to be 100 mrem to be consistent with current Part 20 requirements.

The applicant is requested to review the following items and confirm and revise all appropriate FSAR sections, tables, and figures, accordingly. The applicant should use these as examples of the staff's concern and review the FSAR beyond those sections identified by the staff in this RAI to ensure a consistent approach in applying the guidance of RG 1.143. While this RAI is issued on FSAR Tier 2, Rev. 3, Section 11.2, it should be noted that its applicability extends to other SSCs (as noted below). The staff deems it more effective to issue a single RAI in avoiding unnecessary duplication

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and facilitate an integrated review and resolution of the staff's concerns across all relevant FSAR sections, since RG 1.143 applies to the LWMS, GWMS, SWMS, and Steam Generator Blow Down Systems with associated wastes being addressed in FSAR Tier 2, Sections 11.2 to 11.4.

Radioactive Waste Processing Facility

A review of the FSAR Tier 2, Rev. 3, Section 3.7.2.8.4 indicates that the design of the Auxiliary Building (A/B) is stated to comply with RG 1.143, under a RW-IIa classification. This section states that the radioactive waste processing facility is contained in the Auxiliary Building of the US-APWR design. Structures, systems, and components making up the liquid waste storage and processing systems that are classified by RG 1.143 classifications are listed in Table 11.2-20. The liquid components in this design are all classified as RW-IIc, which is the lowest possible hazard class, except for the LWMS Filter which is classified as RW-IIa. Similar design commitments are made for the GWMS and SWMS in FSAR Tier 2, Rev. 3, Sections 11.3 and 11.4.

Structures, systems, and components making up the liquid waste storage and processing systems that are classified by RG 1.143 classifications are listed in Table 11.2-20. Structures, systems, and components making up the gaseous waste storage and processing systems that are classified by RG 1.143 classifications are listed in Table 11.3-12. Structures, systems, and components making up the solid waste storage and processing systems that are classified by RG 1.143 classifications are listed in Table 11.4-8. A review of sections 11.2, 11.3 and 11.4 does not indicate an explanation as to what information was utilized to generate the above tables for any of the sections. The information in section 12.2 does not indicate any information representing the radionuclide activity contained in each waste component. The applicant is requested to provide a listing of the expected inventories of radioactive materials in the components in Tables 11.2-20, 11.3-12 and 11.4-8. Additionally, the applicant is requested to provide the methodology for classification of the LWMS, GWMS, and SWMS components for the staff to confirm that such determinations are consistent with the RG 1.143 guidance in assignment of a RW-II a, b, or c classification.

Steam Generator Blow Down and Blow Down Treatment Systems

While the SG Blow Down treatment system is not described in Chapter 11, it is a system that falls under the guidance of RG 1.143, Rev. 2, with its resulting radwaste processed by the LWMS and SWMS. This part of the SG Blow Down system is located in the A/B.

A review of FSAR Tier 2, Rev. 3, Section 10.4.8 and Section 11 indicates that it does not specifically address Regulatory Position C.5 regarding the safety classifications (as RW-IIa, RW-IIb, or RW-IIc) for those portions of the system expected to contain radioactive materials.

The FSAR Sections 10.4.8, 11.1 or 12.2 do not present information on radionuclide

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concentrations expected to be contained in SG Blow Down process equipment. The applicant is requested to provide a listing of the expected inventories of radioactive materials in the major components of SG Blow Down system and SG Blow Down treatment system and provide an assignment of a radwaste safety classification in accordance with RG 1.143.

