

REQUEST FOR ADDITIONAL INFORMATION 517-4088 REVISION 2

1/11/2010

US-APWR Design Certification

Mitsubishi Heavy Industries

Docket No. 52-021

SRP Section: 06.05.02 - Containment Spray as a Fission Product Cleanup System
Application Section: 6.5.2

QUESTIONS for Component Integrity, Performance, and Testing Branch 1 (AP1000/EPR Projects)
(CIB1)

06.05.02-8

Background

RAI 06.05.02-1 (Reference 1) and RAI 06.05.02-5 (Reference 2) requested that the applicant explain the rise in pH of the RWSP water under accident conditions. The importance of such a calculation is to ensure that iodine dissolved in RWSP water does not revolatilize, which may occur if the pH is not maintained above 7. In fact, acceptance criterion II.1.G of SRP 6.5.2 recommends that a pH of 7 should be achieved before the onset of containment sprays.

The staff's concern was motivated by disparities between the applicant's pH calculations and the confirmatory calculations of the staff. In RAI 06.05.02-7 (Reference 3), the staff noted that the applicant was not accounting for the buffering effect of polyborate species. In response, the applicant acknowledged this deficiency and presented a revised calculation in which RWSP water and spray did not reach a pH equal to 7 until 15 hours after accident initiation. (Reference 4)

Because of the delay in reaching a pH equal to 7, no credit can be taken for iodine removal before 15 hours. The applicant has offered no explanation regarding the impact of this delay on accident analyses. In addition, this delay is inconsistent with the SRP acceptance criterion that RSWP water should have a pH greater than 7 prior to activation of containment sprays. The applicant has offered no alternative for meeting the requirements of GDC 41.

As a result, the staff requests that the applicant describe how the requirements of GDC 41 will be met regarding mitigation of radionuclide release during an accident if the containment sprays are not effective in removing iodine for 15 hours after the transient begins. Describe the revised accident consequences if this is the case.

References

1. "Request for Additional Information No. 234-2040 Revision 1, SRP Section: 06.05.02 - Containment Spray as a Fission Product Cleanup System, Application Section: Section 6.5.2" dated February 26, 2009. (ADAMS Accession No. ML0906102970)

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2. "Request for Additional Information No. 416-2912 Revision 0, SRP Section: 06.05.02 - Containment Spray as a Fission Product Cleanup System, Application Section: 6.5.2" dated June 29, 2009. (ADAMS Accession No. ML091830408)
3. "Request for Additional Information No. 460-3484 Revision 1, SRP Section: 06.05.02 - Containment Spray as a Fission Product Cleanup System, Application Section: 6.5.2" dated September 16, 2009. (ADAMS Accession No. ML092810504)
4. Letter from Yoshiki Ogata, MHI, to NRC dated November 13, 2009; Docket No. 52-021 MHI Ref: UAP-HF-09519; Subject: MHI's Response to US-APWR DCD RAI No. 460-3484 Rev. 0 (ADAMS Accession No. ML093210469)