

## US-APWRRRAIsPEm Resource

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**From:** Buckberg, Perry  
**Sent:** Friday, March 14, 2014 8:28 AM  
**To:** 'us-apwr-rai@mhi.co.jp'; US-APWRRRAIsPEm Resource  
**Cc:** Foster, Rocky; Lee, Samuel; McKenna, Eileen; Stubbs, Angelo  
**Subject:** US-APWR Design Certification Application RAI 1089-7460 (01.05 - Other Regulatory Considerations)  
**Attachments:** US-APWR DC RAI 1089 BPFP 7460.pdf

MHI,

The attachment contains a Fukushima related request for additional information (RAI). This RAI was sent to you in draft form on March 13, 2014 resulting in no need for clarification. A technically correct and complete response will be expected when your staff is again active in this technical area.

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

Thanks,

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U.S. Nuclear Regulatory Commission

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# REQUEST FOR ADDITIONAL INFORMATION 1089- 7460

Issue Date: 3/14/2014

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

Operating Company: Mitsubishi Heavy Industries

Docket No. 52-021

## 01.05 - Other Regulatory Considerations

### **QUESTION:**

**01.05-18**

Spent Fuel Cooling - Follow-up to RAI 1043-7175, Question 01.05-4

1. In Response to RAI 1043-7175 Question 01.05-4(1.c) the applicant states that purification portion of the spent fuel pool cooling system (SFPCS) is non-seismic, the applicant also acknowledge that after an ELAP event, the isolation valves between the seismic and non-seismic portions of the cooling and purification system may not close for up to 8 hours after the onset of the ELAP event, and therefore, a failure of the non-seismic portion of the system is capable of siphoning the SFP water down to elevation 830" (which is below the elevation assumed in MUAP-13002). The applicant states that this is an acceptable assumption based on the statement "SFP cooling system is intact, including attached piping." described as item (3) in Section 3.2.1.6 of NEI 12-06 Revision 0.

The staff finds the applicant's justification for the initial water level assumed in MUAP-13002 insufficient. Section 3.2.1.3, of NEI 12-06 Revision 0 and 1, clearly states that "cooling and makeup water inventories contained in systems or structures with designs that are robust with respect to seismic events, floods, and high winds, and associated missiles are available." The staff finds it acceptable to assume that the seismic Category I cooling portion of the SFPCS and the attached piping (up to the isolation valves) remain intact following a seismic event. However, the staff finds that the applicant has not provided sufficient design information that justifies the assumption that the non-seismic portions of the purification portion of the cooling system are going to remain intact and prevent SFP drain down following a seismic event.

Therefore, the staff requests that the applicant re-evaluate MUAP-13002 (R1) with the new, initial water level resulting from an un-isolated failure of non-seismic components connected to the SFPCS, or provide design information that would justify the previous assumption that a failure of non-seismic components would not result in a drop in water level on the SFP.

2. In RAI 1043-7175 Question 01.05-4(2) the applicant was requested to discuss the inconsistency between the SFP time to boil between the US-APWR FSAR Section 9.1.3.3.2 and the Evaluation Results in Section 5.1.2.4.2 of US-APWR MAUP-13002. The applicant's response states that these two calculations represent two different scenarios with different initial conditions. The FSAR calculation takes into account an initial single active failure prior to losing the cooling capability. MUAP-13002 assumes normal operation before the station black-out (SBO) occurs, and assumes that the SFP will retain its normal water level following a seismic event. The applicant's response makes reference to Section 3.2.1.6 of NEI 12-06 Revision 0.

The staff finds this response insufficient to address all of the staff's concerns. In question 1 above, the staff is suggesting that the applicant is mis-understanding Section 3.2.1.6 of NEI 12-06, and requesting that the applicant re-evaluate the initial water level of the SFP following a seismic event. This new water level will have an impact on the calculated time to boil. Therefore, the staff requests that the applicant re-evaluate the SFP time to boil calculation and properly justify any inconsistency between the US-APWR FSAR Section 9.1.3.3.2 and the Evaluation Results in Section 5.1.2.4.2 of US-APWR MAUP-1 3002 (R1).