

US-APWRRAlSPeM Resource

From: Ciocco, Jeff
Sent: Wednesday, December 19, 2012 10:44 AM
To: us-apwr-rai@mhi.co.jp; US-APWRRAlSPeM Resource
Cc: Pohida, Marie; Mrowca, Lynn; Reyes, Ruth; Hamzehee, Hossein
Subject: US-APWR Design Certification Application RAI 983-6953 (19)
Attachments: US-APWR DC RAI 983 SPRA 6953.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 45 days to respond to the RAI. We will adjust the schedule accordingly.

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

Thank you,

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REQUEST FOR ADDITIONAL INFORMATION 983-6953

Issue Date: 12/19/2012

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

Operating Company: Mitsubishi Heavy Industries

Docket No. 52-021

Review Section: 19 - Probabilistic Risk Assessment and Severe Accident Evaluation
Application Section:

QUESTIONS

19-577

The staff has reviewed the applicant's response to RAI 39-548, question 19-66. This RAI requested that the applicant confirm that the reactor vessel head has no bottom head penetrations that could lead to inadvertent draining of the vessel and add this risk insight to the table of "Key Insights and Assumptions", Table 19.1-119. The applicant responded that the instrumentation piping is installed on the upside of the reactor vessel and there are no bottom head penetrations. However, the applicant did not add the risk insight to Table 19.1-119 as requested. The staff understood this response to mean that the in-core instrumentation system (ICIS) is installed through the top of the reactor vessel head, and there are no bottom head penetrations. The staff is requesting that these key risk insights are documented in Table 19.1-119 with the appropriate disposition to all related FSAR sections.

19-578

The staff has reviewed the applicant's proposed DCD markup in response to RAI 749-5651, question 19-506. This proposed markup is in Section 5.4.7.2.3.6 of the DCD. This markup is not consistent with Generic Letter 88-17, IN 88-36, and the results of the calculations performed in response to RAI 19-506. The staff is requesting the applicant to edit the first two operational considerations in Section 5.4.7.2.3.6. to be consistent with staff guidance as stated in GL 88-17, IN 88-36, and the results of the calculations performed in response to RAI 19-506:

1. Either at least three pressurizer safety valves or the pressurizer manway is required as a RCS vent path while nozzle dams and the reactor vessel head are in place.
2. A hot leg manway will be the first manway to be opened, and a hot leg nozzle dam will be the last dam to be installed.
3. A hot leg manway and its associated hot leg pipe will be kept open to provide an adequate vent path whenever any cold leg openings are made.

19-579

The staff has reviewed the applicant's response to RAI 783-5855, question 19-546. As the staff understands, the applicant plans to drain the RCS with only a 3/4 inch pressurizer spray vent valve as the RCS vent path. From the RAI response, the staff understands that should a vacuum in the RCS develop, the NPSH for the RHR pumps will not be impacted. However, the staff requests the following information:

1. Please document in the Chapter 19.1.6.1 of the DCD how draining the vessel and drawing a vacuum in the RCS will impact the RCS level instrumentation.
2. Should a COL applicant decide to drain the RCS in POS 4-1 with the RCS open such that the SGs cannot be used for decay heat removal, then risk of POS 4-1 could become a significant addition to USAPWR shutdown risk. Please perform a sensitivity study evaluating the CDF should a COL decide to

REQUEST FOR ADDITIONAL INFORMATION 983-6953

open the pressurizer manway and drain the RCS which is consistent with operating PWR licensees. Please discuss the results in Chapter 19.1.6.1 of the DCD.

19-580

The staff has reviewed the applicant's response to RAI 924-6352, question 19-569. In this response, the applicant stated that the hydrogen igniters must be available to manage the resultant hydrogen and prevent a challenge to containment integrity for both at-power and low power, shutdown conditions. Thus, availability of the igniters is necessary to achieve containment closure such that a "barrier to the release of radioactive material is provided" as discussed in Generic Letter 88-17. The staff requests the following information to be documented in 19.1.6.1 of the DCD:

1. What operational program will ensure that the igniters will be available and functional during shutdown conditions unless the refueling cavity is flooded?
2. What type of maintenance is required on the hydrogen igniters?
3. What type of protection do the igniters need during shutdown maintenance activities in containment?
4. Please document in DCD Table 19.1-119, Key Insights and Assumptions that the hydrogen igniters must be available to manage the resultant hydrogen and prevent a challenge to containment integrity for both at-power and low power, shutdown conditions. Please add the disposition of all relevant FSAR Sections.

