US-APWRRAIsPEm Resource

From: Ciocco, Jeff
Sent: Monday, December 10, 2012 9:55 AM
To: us-apwr-rai@mhi.co.jp; US-APWRRAIsPEm Resource
Cc: Schmidt, Jeffrey; Donoghue, Joseph; Kallan, Paul; Hamzehee, Hossein
Subject: US-APWR Design Certification Application RAI 979-6936 (5.4.7)
Attachments: US-APWR DC RAI 979 SRSB 6936.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 this RAI. We will the adjust the schedule accordingly.

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

Thank you,

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United States Nuclear Regulatory Commission
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From: Ciocco, Jeff

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MESSAGE	611	12/10/2012 9:55:02 AM
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Options
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REQUEST FOR ADDITIONAL INFORMATION 979-6936

Issue Date: 12/10/2012

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

Operating Company: Mitsubishi Heavy Industries

Docket No. 52-021

Review Section: 05.04.07 - Residual Heat Removal (RHR) System
Application Section:

QUESTIONS

05.04.07-15

1. Based on the air ingestion tests, the report indicated that other pipe choices such as 12Bx12B and 12BX10B (step nozzle) were superior to the chosen 10X10B design. Why was the 10BX10B design chosen instead of the other designs?
2. What hot leg level is required to work/inspect on the reactor coolant pumps components (e.g. the RCP seals)? How does this level compare to the SG nozzle dam installation level?
3. What is the basis for the nominal 0.47ft above the main coolant pipe (MCP) centerline water level? Can the mid-loop water level be raised higher than the 0.47 ft above MCP centerline? If not, explain in detail why the nominal water value cannot be raised (increased).
4. Regarding the test data:

a. What were the various test times? Justify that the test times were run long enough to ensure no pump damage/degradation. Were tests performed to determine possible pump degradation (i.e., repeatability tests)?
b. Following the tests, did MHI dismantle the pump and check for damage? If so, explain the inspections performed and results.
c. Was pump inlet void fraction versa time recorded? If not, justify how the integrated air volume is an acceptable measure of vortexing?
d. The report indicated that vortexing was observed during some of the tests. Provide detailed descriptions of the vortexing and which tests (e.g., pipe type, flow rates) vortexing was observed.
e. The testing measured integrated air volume. Justify that the measured integrated air volume represents actual air volume. For example, were there locations where air bubbles could be trapped which were not measured? Was sufficient time allowed before measuring to ensure that all bubbles reached the measuring location? What other uncertainties (e.g., instrumentation) were included in determining the integrated air volume?
f. Was the water saturated with air?


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