

US-APWRRAlSPeM Resource

From: Ciocco, Jeff
Sent: Monday, February 25, 2013 11:08 AM
To: us-apwr-rai@mhi.co.jp; US-APWRRAlSPeM Resource
Cc: Martinez, Erick; Jung, Ian; Taneja, Dinesh; Ward, William
Subject: US-APWR Design Certification Application RAI 996-7040 (7.7)
Attachments: US-APWR DC RAI 996 ICE2 7040.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 the RAI. We will adjust the schedule accordingly.

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

Thank you,

Jeff Ciocco
US-APWR Projects
New Nuclear Reactor Licensing
301.415.6391
jeff.ciocco@nrc.gov



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From: Ciocco, Jeff

Created By: Jeff.Ciocco@nrc.gov

Recipients:

"Martinez, Erick" <Erick.Martinez@nrc.gov>
Tracking Status: None
"Jung, Ian" <Ian.Jung@nrc.gov>
Tracking Status: None
"Taneja, Dinesh" <Dinesh.Taneja@nrc.gov>
Tracking Status: None
"Ward, William" <William.Ward@nrc.gov>
Tracking Status: None
"us-apwr-rai@mhi.co.jp" <us-apwr-rai@mhi.co.jp>
Tracking Status: None
"US-APWRRRAIsPEm Resource" <US-APWRRRAIsPEm.Resource@nrc.gov>
Tracking Status: None

Post Office: HQCLSTR01.nrc.gov

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REQUEST FOR ADDITIONAL INFORMATION 996-7040

Issue Date: 2/25/2013

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

Operating Company: Mitsubishi Heavy Industries

Docket No. 52-021

Review Section: 07.07 - Control Systems

Application Section: DCD Section 7.7

QUESTIONS

07.07-33

The applicant is asked to provide additional information on how the US-APWR design takes into account and bounds the effects of potential Plant Control and Monitoring System (PCMS) failure(s) on the performance of safety functions under all applicable conditions.

IEEE Std. 603-1991, Clause 5.6.3.1(2), "Isolation," as endorsed by 10 CFR 50.55a(h), states in part that no credible failure on the non-safety side of an isolation device shall prevent any portion of a safety system from meeting its minimum performance requirements during and following any design basis event requiring that safety function. The failure of any control system component or any auxiliary supporting system for control systems should not cause plant conditions more severe than those described in the analysis of anticipated operational occurrences (AOO) in Chapter 15 of the DCD. This evaluation should address failure modes that can be associated with digital systems such as software design errors as well as random hardware failures.

The applicant should demonstrate how the plant is adequately protected from each credible PCMS failure, including common cause software and random hardware failures that could prevent or delay a safety function. The applicant should demonstrate that the safety functions and their corresponding response times are sufficient to protect the plant if a PCMS failure occurs. If certain failures of the PCMS are not credible, the applicant should provide clear justification on why those specific failures are not credible.

In addition, the applicant should provide additional information on how the US-APWR design takes into account the effects of potential PCMS failure(s) caused by design basis events. The consequential effects of AOOs and postulated accidents should not lead to control system failures that would result in consequences more severe than those described in the analysis in Chapter 15 of the DCD.

The applicant should also demonstrate how the plant would be adequately protected from each PCMS failure, including common cause software and random hardware failures, which could be caused by a design basis event. If certain failures of the PCMS that are caused by design basis events are not credible, the applicant should provide justification on why those failures are not credible, or why a PCMS failure as a result of a design basis event would not result in consequences more severe than those described in the analysis in Chapter 15 of the DCD.

