

REQUEST FOR ADDITIONAL INFORMATION 725-5408 REVISION 2

3/28/2011

US-APWR Design Certification

Mitsubishi Heavy Industries

Docket No. 52-021

SRP Section: 18 - Human Factors Engineering

Application Section: 18.5

QUESTIONS for Operating Licensing and Human Performance Branch (AP1000/EPR Projects) (COLP)

18-98

NUREG-0711, Criterion 6.4 (2) states " The staffing analysis should determine the number and background of personnel for the full range of plant conditions and tasks ..."

DCD Tier 1 Section 2.9.1.2.4, Staffing & Qualification, states that, "..the space and layout of the MCR is designed to accommodate the foreseen maximum operating staff and temporary staff. " Provide the numbers and basis for the maximum staff. Also note that the addition of just one RO to the staff, in Phase 1a scenarios, and as mentioned in MUAP-07007, R3, Section 5.5, is not a maximum staff that would be expected in the MCR during a significant accident.

18-99

NUREG-0711, Criterion 6.4 (2) states " The staffing analysis should determine the number and background of personnel for the full range of plant conditions and tasks ..."

DCD Tier 1 Section 2.9.1.2.4, page 2.9-3 needs clarification. This section states "Changes to staffing levels or personnel used in the HFE development are documented and analyzed for their potential impact on HSIs." Please clarify the meaning of this sentence and provide a revised sentence for Tier 1.

18-100

NUREG-0711, Criterion 6.4 (2) states " The staffing analysis should determine the number and background of personnel for the full range of plant conditions and tasks ..."

DCD Tier 2, Section 18.5.2, note 1, states:

"Note 1: Staffing analysis of personnel in these positions is limited to those performing the following activities: on-line testing and maintenance required by technical specifications; radiological protection activities supporting technical specifications, required maintenance, and emergency and abnormal response; and required chemical monitoring supporting technical specifications, and abnormal and emergency response."

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This does not appear to agree with the scope of the S&Q IP (MUAP-10008) and is too limiting in its restriction to Tech Spec items. Also, it does not include normal at-power or shutdown operations. Please revise.

18-101

NUREG-0711, Criterion 6.4 (2) states " The staffing analysis should determine the number and background of personnel for the full range of plant conditions and tasks ..."

In the Staffing and Qualifications Implementation Plan (IP) (MUAP-10008), the last paragraph of Section 4.2.2, page 6, contains a discussion of the initial staff levels for non-licensed staff. Please provide these initial numbers.

18-102

NUREG-0711, Criterion 6.4 (2) states, "The staffing analysis should determine the number and background of personnel for the full range of plant conditions and tasks ..."

The Abstract of MUAP-10008 (R0), states that, "The staffing analysis covers both licensed operating staff and non-licensed positions (e.g., maintenance and testing staff) directly related to risk-important plant safety." This sentence is not completely clear, but the restriction to either RI or safety-related items is too restrictive. Also, it does not agree with other parts of the implementation plan (IP) that are broader, more appropriate in scope, and more in agreement with the guidance in NUREG-0711. Further, IP Section 4.4, page 12, 2nd sentence, and the Topical Report, MUAP-07007 (R3), Section 5.5, have similar restrictions. Please clarify.

18-103

NUREG-0711, Criterion 6.4 (4) states in part, "The basis for staffing and qualifications should be modified to address these issues: Operating Experience Review ..."

DCD Tier 2 Section 18.5 does not reference the S&Q Implementation Plan (IP) (MUAP-10008), which addresses the issues identified in Criterion (4) nor any other MHI document. Please provide a commitment to follow the IP in Tier 2 and add the IP as a Tier 2* reference.

18-104

NUREG-0711, Criterion 6.4 (2) states, "The staffing analysis should determine the number and background of personnel for the full range of plant conditions and tasks ..."

The minimum operator staffing levels in the control room are specified in Staffing and Qualifications Implementation Plan (IP), MUAP-10008 (R0), Section 4.2.1.1 as:

- 1 SRO located at the plant fulfilling the role of Shift Supervisor and STA
- 1 SRO located within the MCR fulfilling the role of MCR Supervisor
- 1 RO located at the controls of the plant in the MCR

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- 1 RO located at the plant

This staffing is similar to that in current US NPPs and generally complies with the various subsections 50.54(i) through (m). However, there are two notable differences. First, the staffing numbers for licensed operators only address the single-unit column of the minimum staffing table for 50.54(m)(2). Please explain and provide a commitment (in the DCD and the IP) to the full table as applicable.

Secondly, one notable difference from current plants is the statement in Section 4.4.1 of the IP that there will only be one RO at the main control panels in the MCR and that the plant is designed to be operated by only one operator. However, the MHI documents do not address the responsibilities of the second RO that will be on-shift. Please provide those responsibilities.

Additionally, as a result of the recommendations following the TMI-2 accident (see NUREG-0585), the STA position was created. Further, it is noted that Appendix C of NUREG-0737, Clarification of TMI Action Plan Requirements, states that STA was expected to be an interim position which would be phased out when Shift Supervisor and SRO training and qualification requirements had been upgraded. As discussed in ANSI/ANS-3.1-1993, which has been endorsed by RG 1.8, the STA is the individual who provides advice and counsel to the operations shift. This implies that the Shift Supervisor and STA cannot be the same SRO. Please clarify how MHI intends to apply the lessons of TMI with a single SRO as Shift Supervisor and STA.

18-105

Please address the following typos in the S&Q IP, MUAP-10008 (R0):

- Page 3, Section 4.1, last sentence (7th line from bottom of page), 'describes' not 'descries.'
- Page 4, 3rd line from bottom, 'Shift Supervisor' not 'Shift Manager' to agree with rest of document.
- Page 6, 1st sentence under "Chemistry Technicians." This sentence is not understandable as written.
- Page 6, 1st sentence under "Engineering Support Personnel" states "Engineering support personnel are responsible for the safe and reliable operation of a nuclear power generating plant depends, in part, on engineering personnel who understand the fundamentals of nuclear power plant technology." This sentence is not understandable as written.