

## US-APWRRRAIsPEm Resource

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**From:** Ciocco, Jeff  
**Sent:** Monday, March 04, 2013 10:14 AM  
**To:** us-apwr-rai@mhi.co.jp; US-APWRRRAIsPEm Resource  
**Cc:** Pieringer, Paul; Junge, Michael; Ward, William; Hamzehee, Hossein  
**Subject:** US-APWR Design Certification Application RAI 1003-6911 (18.1)  
**Attachments:** US-APWR DC RAI 1003 COLP 6911.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 is currently working to provide the NRC with a schedule of ongoing HFE work. The schedule will include dates for the submission of this RAI response. 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 1003-6911

Issue Date: 3/4/2013

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

Operating Company: Mitsubishi Heavy Industries

Docket No. 52-021

Review Section: 18 - Human Factors Engineering  
Application Section: 18.1 Program Management

## QUESTIONS

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RAI 728-4534, Question 18-111 was inappropriately closed by the staff. The RAI response did NOT address the question asked. The question is reproduced below:

NUREG-0711 Criterion 2.4.3(1) states: "General Process Procedures - The process through which the team will execute their responsibilities should be identified. **The process should include procedures for:**

- assigning HFE activities to individual team members
- governing the internal management of the team
- making management decisions regarding HFE
- making HFE design decisions
- governing equipment design changes
- design team review of HFE products"

From the MHI response to RAI 295-2341, Questions 18-12 and 18-16, and DCD section 18.1.3.1, the staff understands that the QA Program describes generic quality standards applicable to the above activities.

**Please provide the title of the working level documents that control these activities and a summary of what each document requires relative to the areas listed in the NUREG-0711 criterion above.**

18-240

This is a followup question from RAI 728-4534 Question 18-112. The response to Question 18-112 provided two figures that would be added to MUAP-09019. In the response, Figure 2 contained arrows that the staff thought indicated critical checkpoints. These arrows have not been included in MUAP-09019 Rev 2. The paragraphs describing figures 5 and 6 in MUAP-09019 rev 2 both refer to critical checkpoints but it is not clear when these critical checkpoints occur.

Clarify in the paragraphs and figures where the critical check points occur.

18-241

The responses to RAI 728-4534, question 18-108 and RAI 780-5888, Question 18-129 did not resolve the confusion on DCD scope for the EOF HFE design. There is also confusion associated with the HPM program. The following paragraphs from MUAP-09019 are quoted

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below to help illustrate this confusion.

### **“2.3 Excluded Human Factor Engineering Elements**

This HFE Program Plan is applicable to all HFE program elements, as defined in DCD Chapter 18, with the exception of Human Performance Monitoring (HPM). HPM is the responsibility of the license holder and is, therefore, governed by the license holder’s own HPM implementing procedures. It is noted that most US-APWR COL applicants are expected to reference the US-APWR HPM plan in MUAP-10014 for the development of their HPM implementation plans but this is not required.

The license holder shall also create Implementation Plans for any HFE program elements that must be re-evaluated due to facility design changes. The communication and information requirements of the EOF and the communication interface with the CAS/SAS, are within the scope of the US-APWR HFE program. However, because the EOF and CAS/SAS facilities themselves are outside the scope of the US-APWR HFE Implementation Plans, this HFE Program Plan is not applicable to EOF activities other than communication and information.”

The first paragraph raises the following concerns:

- If the HPM is the responsibility of the license holder then there should be a COL action item in the DCD.
- 10 CFR 52 is not structured to allow a choice between a COL program or the DCD. If the DCD specifies a program then the COL must follow it (because it becomes part of the rule when the design is certified) or describe the departure in the COL application (see RG 1.206, section C.III.4). Currently the DCD appears to provide a program while the MUAP is allowing a choice. The application needs to be changed to either specify a COL action item or provide a HPM program. If the former option is chosen then the associated Tier 1 ITAAC should be deleted.
- If an HPM program is retained in the DCD, then MUAP-10014, Section 4.2.2 and DCD, Section 18.12.2 contain references to INPO documents that should be adjusted. It is undesirable to incorporate industry good practices into regulation and subsequently the licensing basis of the COL applicants.

The second paragraph raises the following concerns:

- The first sentence is inconsistent with regulation. Facility design changes made by COL holders are subject to 10CFR 52.63(b) and Section VIII, “Processes for Changes and Departures” in the respective Part 52 Appendix.
- The second paragraph quoted above states, “HFE Program Plan is not applicable to EOF activities other than communication and information.” From the staff’s perspective this is inconsistent with the DCD paragraph quoted below from Section 18.1.1.2.

“The communications and information requirements of the EOF will be designed in accordance with the US-APWR HFE program. The US-APWR HFE team determines what EOF information must be transmitted from the plant to the EOF, in accordance with regulatory requirements and guidance, and based on the task analysis process described in Section 18.4. The EOF itself, including the detailed design of EOF displays and corresponding V&V, training and procedures, is outside the scope of the US-APWR HFE Implementation Plans. The EOF facility is designed in accordance with NUREG-0696. The EOF design process specifies the complete EOF facility design, including the method of incorporating the communications and information requirements established by the US-APWR HFE program.”

First – The “detailed design of EOF displays and corresponding V&V,” in the staff’s opinion, clearly falls within the scope of the HFE design related to information yet the DCD appears to be exempting this element.

Second – The EOF layout (desks, displays) to support work functions and the layout of HSIs

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within consoles, panels and workstations are “typical” HFE design topics which appear to be excluded from the DCD scope because of the limitation to communications and information. Therefore the third concern arises.

Third – COL applicants appear to have some responsibility for parts of the EOF HFE design but there is no COL information item to clearly communicate this responsibility.

Fourth – The reference to NUREG-0696 should be limited to the EOF HFE design. It currently could be interpreted to apply to other elements of the EOF that would be pertinent to Chapter 13. The staff is concerned that inconsistencies between Chapters 13 and 18 could occur if Chapter 18 contains commitments associate with emergency planning that go beyond HFE design.

Relative to this fourth concern the staff would like to clarify how the reference to NUREG-0696 is typically used. In previous applications we have accepted DCD statement saying that the EOF HFE design is a COL information item. In this case the applicant identified the data requirements that needed to be transmitted from the plant to the EOF (similar to the way the DCD, Section 18.1.1.2 does) but did not take responsibility for the actual HFE design.

Subsequently the RCOL submitted their FSAR and addressed the COL information item by stating the HFE design would conform to NUREG-0696. The staff accepted this position as explained in the VOGTLE SER which is a public document. A second DCD applicant addressed the EOF HFE design directly by stating that the HFE design would conform to the relevant parts of NUREG-0696. The staff accepted this position for the same reasons outlined in the VOGTLE SER. So in summary, a statement that the EOF HFE design will conform to NUREG-0696 is satisfactory. It simplifies how the EOF HFE design is accomplished and uses existing EOF guidance that already contains HFE related principles (although they are not called out as such).

