MITSUBISHI HEAVY INDUSTRIES, LTD.
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TOKYO, JAPAN

December 11, 2013

Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Attention: Mr. Perry Buckberg

Docket No. 52-021
MHI Ref: UAP-HF-13295

Subject: MHI's Responses to US-APWR DCD RAI No.1006-6998 (SRP 18.3)

Reference: 1) "Request for Additional Information No. 1006-6998, SRP Section: 18 - Human Factors Engineering, Application Section: 18.3" dated March 4, 2013.

With this letter, Mitsubishi Heavy Industries, Ltd. (MHI) transmits to the U.S. Nuclear Regulatory Commission (NRC) a document entitled "Responses to Request for Additional Information No. 1006-6998."

Enclosed are the responses to the RAIs contained within Reference 1.

Please contact Mr. Joseph Tapia, General Manager of Licensing Department, Mitsubishi Nuclear Energy Systems, Inc. if the NRC has questions concerning any aspect of this submittal. His contact information is provided below.

Sincerely,

Y. Ogata

Yoshiki Ogata,
Executive Vice President
Mitsubishi Nuclear Energy Systems, Inc.
On behalf of Mitsubishi Heavy Industries, Ltd.

Enclosures:

1. Responses to Request for Additional Information No. 1006-6998

D081
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CC: P. Buckberg
J. Tapia

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Enclosure 1

UAP-HF-13295
Docket No. 52-021

Responses to Request for Additional Information No. 1006-6998

December 2013

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

12/11/2013

US-APWR Design Certification

Mitsubishi Heavy Industries

Docket No. 52-021

RAI NO.:	**NO. 1006 COLP 6998**
SRP SECTION:	**18. - HUMAN FACTORS ENGINEERING**
APPLICATION SECTION:	
DATE OF RAI ISSUE:	**3/4/2013**

QUESTION NO. : 18-245

DCD R-3 (redline/strikeout version provided after the September 6, 2012 public meeting) P.18.3-1, section 18.3.1, Objectives and Scope.

This first paragraph still does not describe the objectives and scope for both the FRA and FA activities. It emphasizes only FA. See MUAP-07007 (R5), section 5.3, first paragraph, and MUAP-09019 (R2), 1.1, for acceptable examples of how the DCD section 18.3.1 should be written. Please reconcile this discrepancy.

ANSWER:

DCD, Rev. 4, Section 18.3.1, Objectives and Scope describe the objectives and scope of both the FRA and FA activities.

The description of the Human Factors Engineering program for the US-APWR has been revised and reorganized to align with the DCD related individual HFE program elements described in NUREG-0711, Revision 2. Implementation Plans addressing each of the program elements have been submitted, which supersede the previous HFE descriptions in their entirety. DCD, Rev. 4, Section 18.3.1, Objectives and Scope will be revised to describe the objectives and scope for both the FRA and FA activities using descriptions which align with those descriptions given in Section 1.0, Purpose of "Functional Requirements Analysis and Function Allocation Implementation Plan," MUAP-13007, Rev. 0.

Impact on DCD

The DCD will be revised as described above. The revised pages of DCD Rev. 4 will be provided to the NRC in MHI's DCD Tracking Report, to be provided March 31, 2014.

Impact on R-COLA

There is no impact on the R-COLA

Impact on PRA

There is no impact on the PRA

Impact on Technical /Topical Report

There is no impact on the /Topical Report

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

12/11/2013

US-APWR Design Certification

Mitsubishi Heavy Industries

Docket No. 52-021

RAI NO.:	**NO. 1006 COLP 6998**
SRP SECTION:	**18. - HUMAN FACTORS ENGINEERING**
APPLICATION SECTION:	
DATE OF RAI ISSUE:	**3/4/2013**

QUESTION NO. : 18-246

DCD R-3 (redline/strikeout version provided after the September 6, 2012 public meeting) P.18.3-2; 18.3-7: MHI refers to IEC 964 (and Appendix A.3). MUAP-09019, R2, p. 2-12, references IEC 60964, with a 1989 date. MUAP-09019, R2, p. 2-13, references IEC 60964, with a 2009 date. This is confusing and seemingly inaccurate.

Please explain, did MHI use one or both documents to develop the US APWR FRA/FA and clarify how each document was used.

ANSWER:

The description of the Human Factors Engineering program for the US-APWR has been revised and reorganized to align with the DCD related individual HFE program elements described in NUREG-0711, Revision 2. Implementation Plans addressing each of the program elements have been submitted, which supersede the previous HFE descriptions in their entirety.

"Functional Requirements Analysis and Function Allocation Implementation Plan," MUAP-13007, Rev. 0 has been submitted to the Staff and references "Design for Control Rooms of Nuclear Power Plants," IEC 60964, Edition 2, International Electrotechnical Commission, 2009 and "Nuclear Power Plants – Design of Control Rooms – Functional Analysis and Assignment," IEC 61839, Edition 1, International Electrotechnical Commission, 2000. The document contains no reference to IEC 964.

DCD Rev. 4 will be revised to accurately reflect the reorganized Human Factors Engineering program for the US-APWR and references used therein.

Impact on DCD

DCD Rev. 4 will be revised as described above; there will be no reference to IEC 964. The revised pages of DCD Rev. 4 will be provided to the NRC in MHI's DCD Tracking Report, to be provided March 31, 2014.

Impact on R-COLA

There is no impact on the R-COLA

Impact on PRA

There is no impact on the PRA

Impact on Technical /Topical Report

There is no impact on the /Topical Report

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

12/11/2013

US-APWR Design Certification

Mitsubishi Heavy Industries

Docket No. 52-021

RAI NO.:	**NO. 1006 COLP 6998**
SRP SECTION:	**18. - HUMAN FACTORS ENGINEERING**
APPLICATION SECTION:	**18**
DATE OF RAI ISSUE:	**3/4/2013**

QUESTION NO. : 18-247

MUAP-07007 (R5), p. 109, section 5.3 states: "Other detailed allocation changes are described in the Plant Licensing Documents."

Please explain what these "other detailed allocation changes" are, providing examples. Also, why are these changes described in other documents and not in the FRA/FA results report?

ANSWER:

MUAP-07007 is being revised to eliminate Human Factors Engineering program descriptions. The specified section of the MUAP-07007 has been deleted. The description of the Human Factors Engineering program for the US-APWR has been revised and reorganized to align with the DCD related individual HFE program elements described in NUREG-0711, Revision 2. Implementation Plans addressing each of the program elements have been submitted, which supersede the previous HFE descriptions in their entirety. All descriptions of allocations are contained within "Functional Requirements Analysis and Function Allocation Implementation Plan," MUAP-13007, Rev. 0.

Impact on DCD

There is no impact on the DCD

Impact on R-COLA

There is no impact on the R-COLA

Impact on PRA

There is no impact on the PRA

Impact on Technical /Topical Report

MUAP-07007 Rev. 6 will contain no Human Factors Engineering program descriptions. The revised report is to be submitted to the NRC by February 28, 2014.
This completes MHI's response to the NRC's questions.