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

Attention: Mr. Jeffrey A. Ciocco

Docket No. 52-021
MHI Ref: UAP-HF-11251

Subject: MHI's Responses to US-APWR DCD RAI No.782-5910 (SRP 14.03.07)

Reference:
1) "Request for Additional Information No.782-5910 Revision 3, SRP Section: 14.03.07 - Plant System - Inspections, Tests, Analyses, and Acceptance Criteria, Application section: SRP 10.2 and 14.3.7, Turbine-Generator," dated July 20, 2011
2) "MHI's Response to US-APWR DCD RAI No. 599-4756 Revision 2, UAP-HF-10212" dated July 20, 2010

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. 782-5910 Revision 3"

Enclosed is the response to 1 RAIs contained within Reference 1.

Please contact Dr. C. Keith Paulson, Senior Technical Manager, Mitsubishi Nuclear Energy Systems, Inc. if the NRC has questions concerning any aspect of the submittals. His contact information is below.

Sincerely,

Y. Ogata

Yoshiki Ogata,
General Manager- APWR Promoting Department
Mitsubishi Heavy Industries, LTD.

Enclosure:

1. Responses to Request for Additional Information No. 782-5910 Revision 3

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NRD

CC: J. A. Ciocco
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Enclosure 1

UAP-HF-11251
Docket Number 52-021

Responses to Request for Additional Information
No. 782-5910 Revision 3

August 2011

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

8/8/2011

US-APWR Design Certification

Mitsubishi Heavy Industries

Docket No. 52-021

RAI NO.:	**NO. 782-5910 REVISION 3**
SRP SECTION:	**14.03.07 - PLANT SYSTEMS – INSPECTIONS, TESTS, ANALYSES, AND ACCEPTANCE CRRITERIA**
APPLICATION SECTION:	**SRP 10.2 AND SRP 14.3.7, TURBINE-GENERATOR**
DATE OF RAI ISSUE:	**7/20/2011**

QUESTION NO. 14.03.07-58

Follow-up to RAI No. 599-4756, Questions 14.03.07-51 and 52

The response dated July 20, 2010, to RAI No. 599-4756, Questions 14.03.07-51 and -52 is not acceptable, since the key design features and the turbine missile probability acceptance criteria have been deleted from the Section 2.7.1.1.1 and the ITAAC in Table 2.7.1.1-1 of the DCD, Tier 1. Specifically, the response to RAI No. 599-4756, Question 14.03.07-51 deleted from Section 2.7.1.1.1, the orientation of the turbine generator with respect to low trajectory missile strike zones by modifying the response to RAI No. 323-2071, Question 03.05.01.03-3 via a letter dated May 24, 2010. Since, Table 2.7.1.1-1, ITAAC Design Commitment No. 1 specifies that the acceptance criteria for the turbine generator arrangement are in Section 2.7.1.1.1, the acceptance criteria is no longer valid as the information from this section was deleted. Also, in the response to RAI No. 599-4756, Question 14.03.07-52, ITAAC Design Commitment No. 2, in Table 2.7.1.1-1, was modified to delete the acceptance criteria of less than 10^{-5} per year for the probability of a turbine missile. Therefore, the acceptance criteria for the turbine generator arrangement and for the turbine missile probability should be included in the ITAAC.

The staff notes that the Revision 2 information for ITAAC Design Commitment Nos. 1 and 2, along with the wording in the first three paragraphs under "Key Design Features," in Section 2.7.1.1.1 concerning the orientation and the missile strike zones were previously found acceptable.

Therefore, revise DCD Tier 1 Table 2.7.1.1-1 to include the following:

- Design commitment similar to "The probability of a strike by a turbine missile is sufficiently low to prevent equipment damage to essential systems"
- Inspections, Test, and Analyses specifies that a turbine missile probability analysis will be performed to demonstrate the probability of turbine missile is less than the regulatory limiting value,
- Acceptance criteria stating that the turbine missile probability analysis exists and concludes that the probability of a turbine missile is less than 10^{-5} per year.

Also, revise DCD Tier 1 Section 2.7.1.1.1 to put back the Key Design Features information regarding missile probability and turbine orientation that was removed in Revision 2 of the DC

ANSWER:

MHI recently conducted a project under NRC staff oversight to improve US-APWR DCD Tier 1 by implementing RIS 2008-05. Drafts were presented to the NRC staff in multiple public meetings and their comments were incorporated. The final product was submitted as US-APWR DCD Revision 3 Tier 1 and properly implements regulatory requirements in accordance with SRP 14.3 and RIS 2008-05 Revision 1 guidance. Subsequently, MHI submitted UAP-HF-11175, which transmitted revisions to RAI responses that were materially changed by this Tier 1 revision.

US-APWR DCD Revision 3 Tier 2 Sections 3.5.1.3 and 10.2 and referenced technical reports provide the information requested by this question and is available for NRC review.

Information cited by this question was removed from Tier 1 because it represents content and a level of detail that is inconsistent with SRP 14.3 selection criteria and stated intent for Tier 1 to represent "top-level information [that includes] principal performance characteristics and safety functions of the SSCs ... based on a graded approach commensurate with [their] safety significance."

MHI provided Technical Report MUAP-07028, Probability of Missile Generation from Low Pressure Turbines, for NRC review. Thus, verification of an acceptable turbine missile analysis as requested by this RAI has been completed and no ITAAC is necessary.

MUAP-07028 describes the turbine missile generation probability of 1×10^{-5}, which is an order of magnitude better than the limiting value provided by regulatory guidance. This probability value allows COL applicants the option of choosing favorable or unfavorable turbine orientation depending on site specific needs.

Due to this consideration, MHI will not commit to favorable turbine orientation in Tier 1 as this unnecessarily constrains a COL applicant's turbine orientation options. Being changeable also makes turbine orientation an inappropriate subject for description in Tier 1, as explained in SRP 14.3 Appendix A.

Thus, MHI will not revise DCD Tier 1 to incorporate the proposed change.

Impact on DCD

There is no impact on the DCD.

Impact on R-COLA

There is no impact on the R-COLA.

Impact on S-COLA

There is no impact on the S-COLA.

Impact on PRA

There is no impact on the PRA.