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TOKYO, JAPAN

November 22, 2011

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-11407

**Subject: Amended MHI's Response to US-APWR DCD RAI No. 636-4732
Revision 0 (SRP 03.06.02)**

Reference: (1) "Request for Additional Information No. 636-4732 Revision 0, SRP
Section: 03.06.02 – Determination of Rupture Locations and Dynamic
Effects Associated with the Postulated Rupture of Piping, Application
Section: 3.6.2," dated 9/23/2010.
(2) "MHI's Responses to US-APWR DCD RAI No. 636-4732," AP-HF-10335,
dated 12/15/2010.

With this letter, Mitsubishi Heavy Industries, Ltd. ("MHI") transmits to the U.S. Nuclear Regulatory Commission ("NRC") a document entitled "Amended Response to Request for additional Information No. 636-4732 Revision 0". This amended response is submitted to revise a location of description in the DCD.

Enclosure is the amended response to Question 03.06.02-47 of the RAI contained within Reference 1. The initial response was provided in Reference 2. MHI replaces the previous letters (Reference 2) with this amended response letter as for the response to Question 03.06.02-47.

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,

Atsushi Kamaki for

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

DOBI
MPO

Enclosure:

1. Amended Response to Request for Additional Information No. 636-4732 Revision 0

CC: J. A. Ciocco
C. K. Paulson

Contact Information

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Docket No. 52-021
MHI Ref: UAP-HF-11407

Enclosure 1

UAP-HF-11407
Docket No. 52-021

Amended Response to Request for Additional Information
No. 636-4732 Revision 0

November, 2011

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

11/22/2011

US-APWR Design Certification

Mitsubishi Heavy Industries

Docket No.52-021

RAI NO.: NO. 636-4732 REVISION 0

**SRP SECTION: 03.06.02 - DETERMINATION OF RUPTURE LOCATIONS AND
DYNAMIC EFFECTS ASSOCIATED WITH THE POSTULATED
RUPTURE OF PIPING**

APPLICATION SECTION: 3.6.2

DATE OF RAI ISSUE: 09/23/2010

QUESTION NO. : 03.06.02-47

Follow-up RAI 03.06.02-6 S01

This is the supplemental RAI for RAI 71-986, 03.06.02-6

In its response to the staff's RAI, the applicant stated that the BTP 3-4, Part B, Item B(iii)(1)(b) criterion will be added to Revision 2 of USAPWR DCD Subsection 3.6.2.1.2.2. The staff reviewed this subsection of Revision 2 of DCD and found that the information in the DCD is not consistent with the BTP requirement. Specifically, it should state that leakage cracks are postulated for ASME Code, Section III, Class 1 piping systems, where the stress range calculated by Eq. (10) in NB-3653 is more than (as opposed to "less than" as stated in DCD) $1.2 S_m$. The applicant is therefore requested to make this correction in the next revision of the DCD.

References:

MHI's Response to US-APWR DCD RAI No. 71-986; MHI Ref: UAP-HF-08226; dated October 7, 2008; ML082840135.

ANSWER:

The first bullet of the first paragraph of DCD Subsection 3.6.2.1.2.2 will be modified in DCD Rev. 4. (See Attachment 1)

Impact on DCD

See Attachment 1 for the mark-up of DCD Tier 2, Section 3.6, changes to be incorporated:

- Change the first bullet of the first paragraph of DCD Subsection 3.6.2.1.2.2 to:
“For ASME Code, Section III, Class 1 piping, where the stress range calculated by Eq. (10) in NB-3653 is more than or equal to 1.2 S(m)”

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.

Impact on Technical/Topical Report

There is no impact on a Technical/Topical Report.

3. DESIGN OF STRUCTURES, SYSTEMS, COMPONENTS, AND EQUIPMENT US-APWR Design Control Document

- For ASME Code, Section III (Reference 3.6-12), Division 1, Class 1 piping, at axial locations where the calculated stress range by Equation 10 in NB-3653 exceeds $1.2 S_m$.
- For ASME Code, Section III (Reference 3.6-9), Division 1, Class 2 and 3 piping, at axial locations where calculated stress by the sum of Equations 9 and 10 in NC/ND-3653 exceeds 0.4 times the sum of the stress limits given in NC/ND-3653.
- For seismically analyzed non-ASME Class piping at the locations defined in the same way as ASME Code, Section III (Reference 3.6-9), Class 3 piping.
- For non-ASME Class piping, which has not been evaluated to obtain stress information, leakage cracks are postulated at axial locations that produce the most severe environmental effects.

3.6.2.1.2 Moderate-Energy Fluid System Piping Break Locations

Leakage cracks are not postulated in moderate-energy fluid system piping located in an area where a break in the high-energy fluid system is postulated, provided that such a crack does not result in environmental conditions more severe than the high-energy break. If the effects of breaks of moderate-energy fluid system piping are more severe than those of high-energy fluid system piping, then the provision of this Subsection 3.6.2.1.2.2 is applied.

Through-wall leakage cracks instead of breaks may be postulated in the piping of those fluid systems that qualify as high-energy fluid systems for about 2% of the operational period but qualify as moderate-energy fluid systems for the major operational period.

3.6.2.1.2.1 Moderate-Energy Fluid System Piping in PCCV Penetration Areas

Leakage cracks are not postulated in those portion of the piping from PCCV wall to and including the inboard and outboard isolation valves provided that the PCCV penetration meets the requirements of ASME Code, Section III (Reference 3.6-10), Subarticle NE-1120 and the piping is designed so that the maximum stress range based on the sum of Equations (9) and (10) in Subarticle NC/ND-3653 of the ASME Code, Section III (Reference 3.6-9) does not exceed 0.4 times the sum of the stress limits given in NC/ND-3653.

3.6.2.1.2.2 Moderate-Energy Fluid System Piping in Areas Other than PCCV Penetrations

Leakage cracks are postulated in the following piping systems located adjacent to SSCs important to safety.

- For ASME Code, Section III, Class 1 piping, where the stress range calculated by Eq. (10) in NB-3653 is more than or equal to $1.2 S(m)$
- For ASME Code, Section III (Reference 3.6-9), Class 2 and 3 and non-safety class piping, at axial locations where calculated stress by the sum of Equations 9

DCD_03.06.
02-47