MITSUBISHI HEAVY INDUSTRIES, LTD.
16-5, KONAN 2-CHOME, MINATO-KU
TOKYO, JAPAN

December 22, 2008

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-08296

Subject: MHI's Response to US-APWR DCD RAI No. 112-785 Revision 0

Reference: 1) "Request for Additional Information No. 112-785 Revision 0, SRP Section: 06.02.01.04, Application Section: 6.2.1.4" dated December 3, 2008.

With this letter, Mitsubishi Heavy Industries, Ltd. ("MHI") transmits to the U.S. Nuclear Regulatory Commission ("NRC") a document entitled "Response to Request for Additional Information No. 112-785 Revision 0."

Enclosed is the response to one RAI 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. Response to Request for Additional Information No. 112-785 Revision 0

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

Contact Information
C. Keith Paulson, Senior Technical Manager
Mitsubishi Nuclear Energy Systems, Inc.
300 Oxford Drive, Suite 301
Monroeville, PA 15146
E-mail: ck_paulson@mnes-us.com
Telephone: (412) 373-6466

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Enclosure 1

UAP-HF-08296
Docket Number 52-021

Response to Request for Additional Information
No. 112-785 Revision 0

December 2008

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

12/22/2008

US-APWR Design Certification

Mitsubishi Heavy Industries

Docket No.52-021

RAI NO.:	**NO. 112-785 REVISION 0**
SRP SECTION:	**06.02.01.04 – Mass and Energy Release Analysis for Postulated Secondary System Pipe Ruptures**
APPLICATION SECTION:	**6.2.1.4**
DATE OF RAI ISSUE:	**12/03/2008**

QUESTION NO. : 06.02.01.04-1

6.2.1.4: In Tables 6.2.1-26 and 6.2.1-27, describing mass and energy release for secondary system pipe ruptures worst accidents, the break flow decreases by a factor of 0.4 at 4.2 s. No explanation of such an event at that event [*sic - this should be time*] is given in Tables 6.2.1-15 and 6.2.1-16. Please, explain.

ANSWER:

In DCD Tables 6.2.1-26 and 6.2.1-27, there is a large decrease in break flow that occurs in the time step from 4.0 to 4.2 seconds. For both tables, this decrease in break flow occurs only in the reverse break flow that is downstream of the break (from the intact steam generators). As described in DCD Section 6.2.1.4, the analysis assumes that the intact steam generators blow down through the break until the main steam isolation valves (MSIVs) are closed. As indicated in Table 6.2.1-15 and 6.2.1-16, the MSIVs are assumed to close at 10.0 and 11.0 seconds, respectively. This is also confirmed in Tables 6.2.1-26 and 6.2.1-27 when the break flow from the intact steam generators decreases to zero at the respective times of 10.0 and 11.0 seconds.

As indicated in Figure 06.02.01.04-1.1, there are two distinct phases of the reverse flow from the intact steam generators prior to steam line isolation. The first phase considers the downstream break flow from the steam already in the steam system piping. The break area of the affected steam line shared by the intact steam generators is greater than the sum of the flow area of the three intact steam generator integral flow restrictors. The duration of this phase of break flow is determined by the steam line area at the break, the total volume of the steam lines, and the initial steam line pressure. For the US-APWR, this initial steam release in the steam system piping is calculated to last 4 seconds. In addition, MHI assumes the additional flow that is limited by the three intact steam generator integral flow restrictors. Therefore, the downstream break flow in the first phase is the sum of the flow limited by the three intact steam generator integral flow restrictors and the flow of the initial steam in the

steam system piping. The second phase is that the 1.4 ft^2 integral flow restrictors will limit the flow from each intact steam generator. The reduction of flow by a factor of approximately 0.4 between 4.0 and 4.2 seconds is caused by the transition to flow only controlled by the flow restrictors after the complete release of the initial steam in the steam system line.

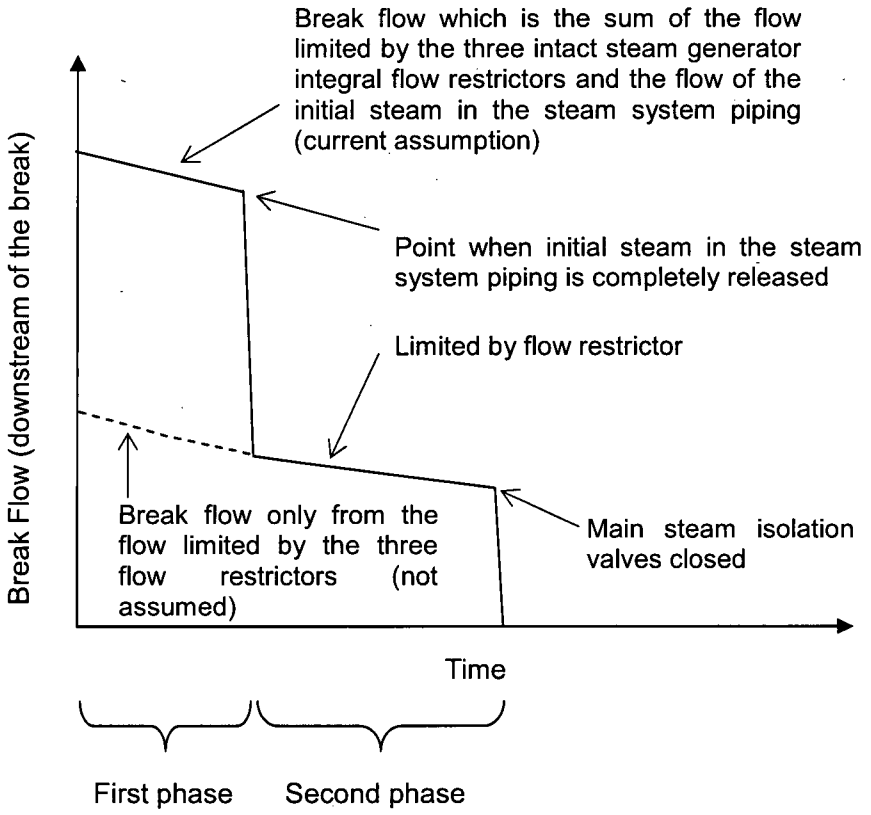

Figure 06.02.01.04-1.1 Break Flow from the Intact Steam Generators (downstream of the break)

Impact on DCD

There is no impact on the DCD.

Impact on COLA

There is no impact on the COLA.

Impact on PRA

There is no impact on the PRA.

This completes MHI's response to the NRC's question.