MITSUBISHI HEAVY INDUSTRIES, LTD.
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TOKYO, JAPAN

March 16, 2012

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-12074

Subject: MHI's Response to US-APWR DCD RAI No. 903-6325 Revision 3 (SRP 15.4.4)

Reference: 1) "Request for Additional Information No. 903-6325 Revision 3, SRP Section: 15.04.04-15.04.05 – Startup of an Inactive Loop or Recirculation Loop at an Incorrect Temperature, and Flow Controller Malfunction Causing an Increase in BWR Core Flow Rate - Application Section: 15.4.4", dated February 27, 2012.

With this letter, Mitsubishi Heavy Industries, Ltd. ("MHI") transmits to the U.S. Nuclear Regulatory Commission ("NRC") the document entitled "MHI's Response to US-APWR DCD RAI No. 903-6325 Revision 3 (SRP 15.4.4)".

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

As indicated in the enclosed materials, this document contains information that MHI considers proprietary, and therefore should be withheld from public disclosure pursuant to 10 C.F.R. § 2.390 (a)(4) as trade secrets and commercial or financial information which is privileged or confidential. A non-proprietary version of the document is also being submitted with the information identified as proprietary redacted and replaced by the designation "[ ]".

This letter includes a copy of the proprietary version of the RAI response (Enclosure 2), a copy of the non-proprietary version of the RAI response (Enclosure 3), and the Affidavit of Yoshiki Ogata (Enclosure 1) which identifies the reasons MHI respectfully requests that all material designated as "Proprietary" in Enclosure 2 be withheld from disclosure pursuant to 10 C.F.R. § 2.390 (a)(4).

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
Director - APWR Promoting Department
Mitsubishi Heavy Industries, Ltd.

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NRO

Enclosures:

1. Affidavit of Yoshiki Ogata
2. MHI's Response to US-APWR DCD RAI No. 903-6325 Revision 3 (SRP 15.4.4) (proprietary)
3. MHI's Response to US-APWR DCD RAI No. 903-6325 Revision 3 (SRP 15.4.4) (non-proprietary)

CC: J. A. Ciocco
J. Tapia

Contact Information

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ENCLOSURE 1

Docket No. 52-021
MHI Ref: UAP-HF-12074

MITSUBISHI HEAVY INDUSTRIES, LTD.

AFFIDAVIT

I, Yoshiki Ogata, being duly sworn according to law, depose and state as follows:

1. I am Director, APWR Promoting Department, of Mitsubishi Heavy Industries, Ltd. ("MHI"), and have been delegated the function of reviewing MHI's US-APWR documentation to determine whether it contains information that should be withheld from public disclosure pursuant to 10 C.F.R. § 2.390 (a)(4) as trade secrets and commercial or financial information which is privileged or confidential.

2. In accordance with my responsibilities, I have reviewed the enclosed document entitled "MHI's Response to US-APWR DCD RAI No. 903-6325 Revision 3 (SRP 15.4.4)", dated March 16, 2012, and have determined that the document contains proprietary information that should be withheld from public disclosure. Those pages containing proprietary information are identified with the label "Proprietary" on the top of the page and the proprietary information has been bracketed with an open and closed bracket as shown here "[ ]". The first page of the document indicates that information identified as "Proprietary" should be withheld from public disclosure pursuant to 10 C.F.R. § 2.390 (a)(4).

3. The basis for holding the referenced information confidential is that it describes the unique design of the safety analysis, developed by MHI (the "MHI Information").

4. The MHI Information is not used in the exact form by any of MHI's competitors. This information was developed at significant cost to MHI, since it required the performance of research and development and detailed design for its software and hardware extending over several years. Therefore public disclosure of the materials would adversely affect MHI's competitive position.

5. The referenced information has in the past been, and will continue to be, held in confidence by MHI and is always subject to suitable measures to protect it from unauthorized use or disclosure.

6. The referenced information is not available in public sources and could not be gathered readily from other publicly available information.

7. The referenced information is being furnished to the Nuclear Regulatory Commission ("NRC") in confidence and solely for the purpose of supporting the NRC staff's review of MHI's application for certification of its US-APWR Standard Plant Design.

8. Public disclosure of the referenced information would assist competitors of MHI in their design of new nuclear power plants without the costs or risks associated with the design and testing of new systems and components. Disclosure of the information identified as proprietary would therefore have negative impacts on the competitive position of MHI in the U.S. nuclear plant market.

I declare under penalty of perjury that the foregoing affidavit and the matters stated therein are true and correct to the best of my knowledge, information, and belief.

Executed on this 16th day of March, 2012.

Y. Ogata

Yoshiki Ogata
Director - APWR Promoting Department
Mitsubishi Heavy Industries, Ltd.

ENCLOSURE 3

UAP-HF-12074
Docket No. 52-021

MHI's Response to US-APWR DCD RAI No. 903-6325 Revision 3
(SRP 15.4.4)

March 2012

(Non-Proprietary)

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

03/16/2012

US-APWR Design Certification

Mitsubishi Heavy Industries

Docket No. 52-021

RAI NO.:	**NO. 903-6325 REVISION 3**
SRP SECTION:	**15.04.04-15.04.05 – STARTUP OF AN INACTIVE LOOP OR RECIRCULATION LOOP AT AN INCORRECT TEMPERATURE, AND FLOW CONTROLLER MALFUNCTION CAUSING AN INCREASE IN BWR CORE FLOW RATE**
APPLICATION SECTION:	**15.4.4**
DATE OF RAI ISSUE:	**02/27/2012**

QUESTION NO.: 15.04.04-15.04.05-1

Applicant did not address Modes 3 through 5 startup of an inactive loop when only one or two RCPs can be in operation. Per SRP 15.4.4, please address lower mode (Modes 3-5) startup of an inactive loop.

ANSWER:

The RCS and secondary system is at equilibrium condition in MODEs 3, 4 and 5. The RCS boron concentration at the lower modes (i.e., MODEs 3, 4 and 5) is always very high to maintain the Shutdown Margin (SDM) which is required by the Technical Specifications. Therefore the core does not reach criticality due to RCP startup regardless of the ITC value.

Figure 15.04.04-15.04.05-1.1 shows an example of the critical boron concentration as a function of the RCS temperature for the US-APWR first cycle core, BOC, all rods in (ARI) with one rod stuck.

[ ]

It is true that the ITC could be positive under high boron concentration conditions. However, the high boron concentration also results in the core being more subcritical, which corresponds to moving the initial RCS boron concentration line upwards on the y-axis in Figure 15.04.04-15.04.05-1.1. Therefore, RCP restart from the lower modes will not result in criticality and does not need to be addressed in the DCD.

Figure 15.04.04-15.04.05-1.1: Critical Boron Concentration vs RCS Temperature

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.

Impact on Technical/Topical Report

There is no impact on a Technical/Topical Report.

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