MITSUBISHI HEAVY INDUSTRIES, LTD.
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TOKYO, JAPAN

March 31, 2009

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-09131

Subject: MHI's Responses to US-APWR DCD RAI No. 263-2072

Reference: [1] "Request for Additional Information No. 263-2072 PROP Revision 0, 06.02.02 - Containment Heat Removal Systems Application Section: 6.2.2 - Design Certification and New License Applicants, Application Section: 6.2.2," dated December 18, 2008.
[2] "Request for Additional Information No. 263-2072 Revision 1, 06.02.02 - Containment Heat Removal Systems Application Section: 6.2.2 - Design Certification and New License Applicants, Application Section: 6.2.2," dated December 18, 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. 263-2072".

Enclosure 2 and 3 are the responses to 4 questions that are contained within Reference [1] and [2].

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

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.

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NRO

Enclosures:

1. Affidavit of Yoshiki Ogata

2. Responses to Request for Additional Information No. 263-2072 Prop Revision 0 & Revision 1
   (Proprietary Version)

3. Responses to Request for Additional Information No. 263-2072 Prop Revision 0 & Revision 1
   (Non-proprietary Version)

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

Contact Information
C. Keith Paulson, Senior Technical Manager
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ENCLOSURE 1

Docket No. 52-021
MHI Ref: UAP-HF-09131

MITSUBISHI HEAVY INDUSTRIES, LTD.

AFFIDAVIT

I, Yoshiki Ogata, state as follows:

1. I am General Manager, 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 Responses to US-APWR DCD RAI No. 263-2072" dated March 2009, and have determined that portions of the document contain 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 all information identified as "Proprietary" should be withheld from public disclosure pursuant to 10 C.F.R. § 2.390 (a)(4).

3. The information identified as proprietary in the enclosed document has in the past been, and will continue to be, held in confidence by MHI and its disclosure outside the company is limited to regulatory bodies, customers and potential customers, and their agents, suppliers, and licensees, and others with a legitimate need for the information, and is always subject to suitable measures to protect it from unauthorized use or disclosure.

4. The basis for holding the referenced information confidential is that it describes the unique design of the sump strainer system related to the US-APWR specific design and tests results, developed by MHI and involved vendors and 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 the performance of detailed hardware design and software development extending over several years.

5. The referenced information is being furnished to the Nuclear Regulatory Commission ("NRC") in confidence and solely for the purpose of information to the NRC staff.

6. The referenced information is not available in public sources and could not be gathered readily from other publicly available information. Other than through the provisions in paragraph 3 above, MHI knows of no way the information could be lawfully acquired by organizations or individuals outside of MHI.

7. Public disclosure of the referenced information would assist competitors of MHI in their design of new nuclear power plants without incurring the costs or risks associated with the design of the subject systems. Therefore, disclosure of the information contained in the referenced document would have the following negative impacts on the competitive position of MHI in the U.S. nuclear plant market:

A. Loss of competitive advantage due to the costs associated with development of the unique plant design of the strainer system. Providing public access to such information permits competitors to duplicate or mimic the methodology without incurring the associated costs.

B. Loss of competitive advantage of the US-APWR created by benefits of enhanced plant safety, and reduced operation and maintenance costs.

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 31st day of March, 2009.

Y. Ogata

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

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Enclosure 3

UAP-HF-09131
Docket No. 52-021

Responses to Request for Additional Information
No. 263-2072 PROP Revision 0
No. 263-2072 Revision 1

March 2009

(Non Proprietary)

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

03/31/2009

US-APWR Design Certification

Mitsubishi Heavy Industries, Ltd.

Docket No. 52-021

RAI NO.: NO. 263-2072 PROP REVISION 0 / NO. 263-2072 REVISION 1

SRP SECTION: 6.2.2 – Containment Heat Removal System

APPLICATION SECTION: 6.2.2

DATE OF RAI ISSUE: 03/05/2009

QUESTION NO.: 06.02.02-12

Background

RAI 45-1145 Item e) requested the following:

Because the DCD specifies that all coatings inside containment will be DBA-qualified, what recommendations can MHI make to the COL applicants to ensure that vendor supplied components, such as pump and valve bodies, actuators, etc. are supplied with DBA-qualified coatings? Should the possibility of a certain amount of unqualified coatings be accounted for in the chemical effects testing or the head loss evaluation, since it may be difficult for the COL holders to procure all components with DBA qualified coatings?

The applicant's response stated, "If the COL applicant cannot procure components with qualified coatings from supplier, it is recommended that the components shall be procured without coating and apply a qualified coating system, or remove the unqualified coating and repaint with a qualified coating system."

The staff finds this response acceptable, since if the recommendation is implemented by the COL holder, this would ensure that all components have DBA-qualified coatings. However, since the recommendation addresses actions that would be implemented by the COL holder, it is the staff's opinion that the applicant should identify this recommendation as a COL information item and included in a future revision of the DCD.

Requested information:

Please discuss your plans concerning whether the recommendation to the COL from the response to RAI 45-1145, Item e) should become a COL information item and included in the next revision of the DCD.

ANSWER:

The use of DBA-qualified coating in containment will be assured in ITAAC. The coating systems in containment will be subject to ITAAC item 7.b.v in Table 2.4.4-5 that requires inspection of the as-built coatings in containment to verify conformance with Design Commitment.

Similar statements are needed for the use of insulations in containment. MHI will revise in future associated Subsections in the DCD Tier 1 and/or Tier 2, to comply with design assumptions discussed in MUAP-08001 "US-APWR Sump Strainer Performance".

Impact on DCD

Tier 1 Table 2.4.4-5 Emergency Core Cooing System Inspections, Tests, Analyses, and Acceptance Criteria, will be revised as follows:

Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
7.b The ECCS provides RCS makeup, boration, and safety injection during design basis events.	7.b.v Inspections will be conducted of the as-build coatings used in the containment.	7.b.v A report exists and concludes that the coatings used in the containment are DBA-qualified.

Impact on COLA

There is no impact on the COLA

Impact on PRA

There is no impact on the PRA

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

03/31/2009

US-APWR Design Certification

Mitsubishi Heavy Industries, Ltd.

Docket No. 52-021

RAI NO.: NO. 263-2072 PROP REVISION 0 / NO. 263-2072 REVISION 1

SRP SECTION: 6.2.2 – Containment Heat Removal System

APPLICATION SECTION: 6.2.2

DATE OF RAI ISSUE: 03/05/2009

QUESTION NO.: 06.02.02-13

Reference

1. MUAP-08011-P(R0), US-APWR Sump Debris Chemical Effects Test Results, November 2008, Mitsubishi Heavy Industries, Inc.

ANSWER:

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.

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

03/31/2009

US-APWR Design Certification

Mitsubishi Heavy Industries, Ltd.

Docket No. 52-021

RAI NO.: NO. 263-2072 PROP REVISION 0 / NO. 263-2072 REVISION 1

SRP SECTION: 6.2.2 – Containment Heat Removal System

APPLICATION SECTION: 6.2.2

DATE OF RAI ISSUE: 03/05/2009

QUESTION NO.: 06.02.02-14

Background

MHI provided the NRC staff with results of chemical effects testing to support the containment sump strainer performance evaluation in Reference 1. The autoclave tests were intended to represent the first 100 hours after a loss-of-coolant accident (LOCA) when the temperature and pH conditions are changing rapidly, while the recirculation test represents the entire 30-day mission time after a LOCA. The different autoclave test runs (Reference 1 Table 3.3-3b) were conducted at three different pH levels. However, the pH of each test run (other than the acidic condition test) is constant. Further, autoclave test runs A-2, A-3, and A-7 were conducted at a constant temperature of 65°C (149°F). Based on Appendix C of Reference 2, the results from the constant temperature autoclave tests were used as a baseline to determine the additional concentration of dissolved elements that can be attributed to the higher temperatures during the transient conditions. However, the results for tests A-2, A-3, and A-7, in terms of dissolved elemental concentrations, were not provided in the test results report. Further, it is not clear to the staff why the applicant did not use the elemental concentrations measured after the first 100 hours of the recirculation test as the baseline for the concentration increase from the temperature transient. Finally, it is not clear how the acidic and alkaline condition autoclave tests (temperature transient and constant temperature) were used in predicting the amount of precipitate that will form, if at all.

Requested Information:

a) Provide the results (using the same format as Tables A.1.2-1, A.1.2-2 and A.1.2-3 of Reference 1) for the constant temperature autoclave tests.

b) Why were the results from the first 100 hours of the recirculation test not used as a baseline for determining the increase in the concentration of dissolved elements that can be attributed to the temperature transient condition?

c) Describe how the results of the acidic and alkaline autoclave tests (both temperature transient and constant temperature) are used in the prediction of the amount of precipitates to form.

References

1. MUAP-08011-P(R0), US-APWR Sump Debris Chemical Effects Test Results, November 2008, Mitsubishi Heavy Industries, Inc.

2. US -APWR Sump Strainer Performance, MUAP-080001-P (R2), December 2008

ANSWER:

[

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Reference

1. MUAP-08013-P(R0), US-APWR Sump Downstream Effects, December 2008, Mitsubishi Heavy Industries, Inc.

Table B-1 Chemical Concentration for Standard condition (A-2) with temperature constant in Autoclave Test Solution

Table B-2 Chemical Concentration for Acidic condition (A-7) with temperature constant in Autoclave Test Solution

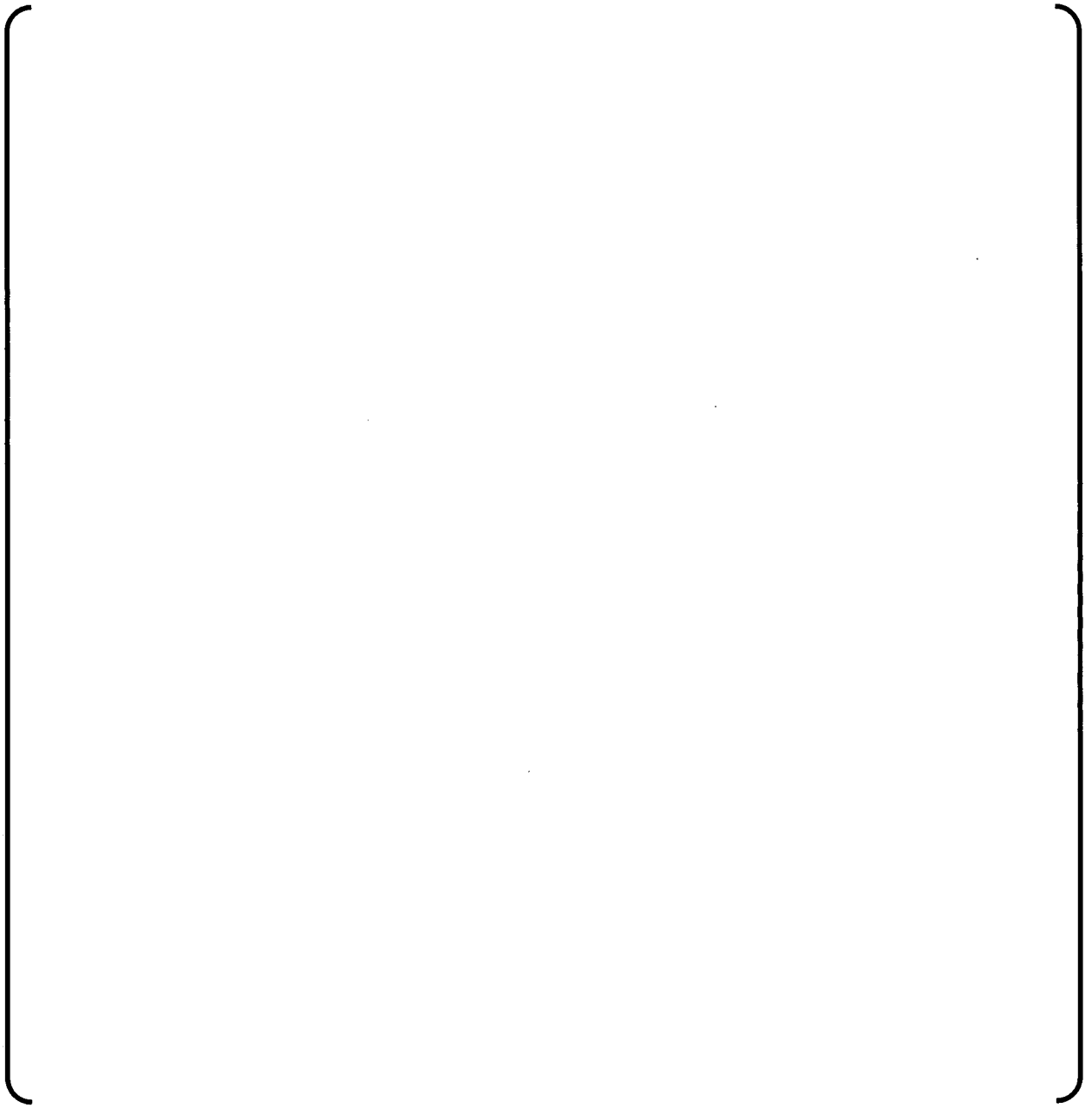

Table B-3 Chemical Concentration for Alkaline condition (A-3) with temperature constant in Autoclave Test Solution

Figure B-1 Total chemical concentration method

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.

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

03/31/2009

US-APWR Design Certification

Mitsubishi Heavy Industries, Ltd.

Docket No. 52-021

RAI NO.: NO. 263-2072 PROP REVISION 0 / NO. 263-2072 REVISION 1

SRP SECTION: 6.2.2 – Containment Heat Removal System

APPLICATION SECTION: 6.2.2

DATE OF RAI ISSUE: 03/05/2009

QUESTION NO.: 06.02.02-15

ANSWER:

The unit given for the amount of precipitate per liter (μg/liter) described in Table-C-1 of the report "US-APWR Sump Strainer Performance," MUAP-08001-P (R2) was incorrect, and will be corrected to be "mg/Liter". Table C-1 will be revised as follows:

Table C-1 Chemical debris of the US-APWR

[ ]

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.