


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

April 16, 2010

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-10107

Subject: MHI's Responses to US-APWR DCD RAI No.552-4358 Revision 2

References: 1) "REQUEST FOR ADDITIONAL INFORMATION 552-4358 REVISION 2, SRP Section: 06.02.06 – Containment Leakage Testing Application Section: 6.2.6, QUESTIONS for Containment and Ventilation Branch 1 (AP1000/EPR Projects) (SPCV)" dated March 16, 2010.

With this letter, Mitsubishi Heavy Industries, Ltd. ("MHI") transmits to the U.S. Nuclear Regulatory Commission ("NRC") a document as listed in Enclosures.

Enclosed are the responses to questions 6.2.6-28, 29 and 30 of the RAI (Reference 1). This completes the response for this RAI.

As indicated in the enclosed materials, this submittal 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 this submittal. His contact information is provided below.

Sincerely,



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

DOB
NRC

Enclosures:

1. Affidavit of Yoshiki Ogata
2. Response to Request for Additional Information No. 552-4358, Revision 2
(Proprietary Version)
3. Response to Request for Additional Information No. 552-4358, Revision 2
(Non-Proprietary Version)

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

Contact Information

C. Keith Paulson, Senior Technical Manager
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Monroeville, PA 15146
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Telephone: (412) 373-6466

Enclosure 1

Docket No. 52-021
MHI Ref: UAP-HF-10107

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 "Response to Request for Additional Information No. 552-4358, Revision 2", and have determined that portions of the document contain proprietary information that should be withheld from public disclosure. Those pages contain 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 thermal analysis results related to the US-APWR PCCV penetration systems developed by MHI.
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 the development of the unique design parameters.
- B. Loss of competitive advantage of the US-APWR created by the benefits of the steel concrete module design.

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 April 2010.

A handwritten signature in black ink, appearing to read "Y. Ogata". The signature is written in a cursive style with a large initial "Y" and a stylized "Ogata".

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

Docket No. 52-021
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Enclosure 3

**UAP-HF-10107
Docket No. 52-021**

**Response to Request for Additional Information No. 552-4358,
Revision 2**

**April 2010
(Non-Proprietary)**

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

4/16/2010

**US-APWR Design Certification
Mitsubishi Heavy Industries
Docket No. 52-021**

RAI NO.: NO. 552-4358 REVISION 2
SRP SECTION: 06.02.06 - CONTAINMENT LEAKAGE TESTING
APPLICATION SECTION: 6.2.6 CONTAINMENT LEAKAGE TESTING
DATE OF RAI ISSUE: 3/16/2010

QUESTION NO. : 06.02.06-28

In RAI 2016 question 6.2.6-17 and RAI 3794 question 6.2.6-26, The staff requested the applicant clarify the exceptions to venting and draining pathways which are to be Type A tested, for both the Operational and Preoperational Integrated Leakage Rate Tests.

In a letter dated November 27, 2009, Mitsubishi responded to RAI 6.2.6-26 with proposed revision to the DCD Section 6.2.6. The staff has reviewed the proposed changes and the following information is requested:

- 1) The RAI requested the DCD section 6.2.6 be revised to make it clear that exceptions to venting and draining for the Type A test (ILRT) do not apply to the pre-operational leak rate testing. The response stated that 6.2.6 would be changed and provided a bullet list of nine vent and drain conditions for the DCD. The 7th bullet notes "except for the Pre-operational ILRT." This phrase should also be added on the 8th bullet, but was not. In addition to the proposed changes in the RAI response, please add "except for the Preoperational ILRT" to the 8th bullet for the DCD
-

ANSWER:

MHI answered that "except for the Preoperational ILRT" will be added to the 7th bullet of 4th paragraph in the subsection 6.2.6.1 as follows;

Pathways which are Type B or C tested within the previous 24 calendar months need not be vented or drained **except for the Pre-operational ILRT.**

This reason is that it is inapplicable for Pre-operational ILRT because there is no data of Type B and C tests within the previous 24 calendar months at Pre-operational ILRT.

On the other hand, the 8th bullet of 4th paragraph in the subsection 6.2.6.1 is shown as follows;

For planning or scheduling purposes, or ALARA considerations, pathways in systems which are required for proper conduct of the Type A test need not be vented or drained.

This bullet is applicable for both Pre-operational ILRT and In-service ILRT because this bullet is the condition for the pathway in system of Type A test and the previous data of Type A test is not required. Then, "except for the Preoperational ILRT" needs not to be added for the 8th bullet.

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

4/16/2010

**US-APWR Design Certification
Mitsubishi Heavy Industries
Docket No. 52-021**

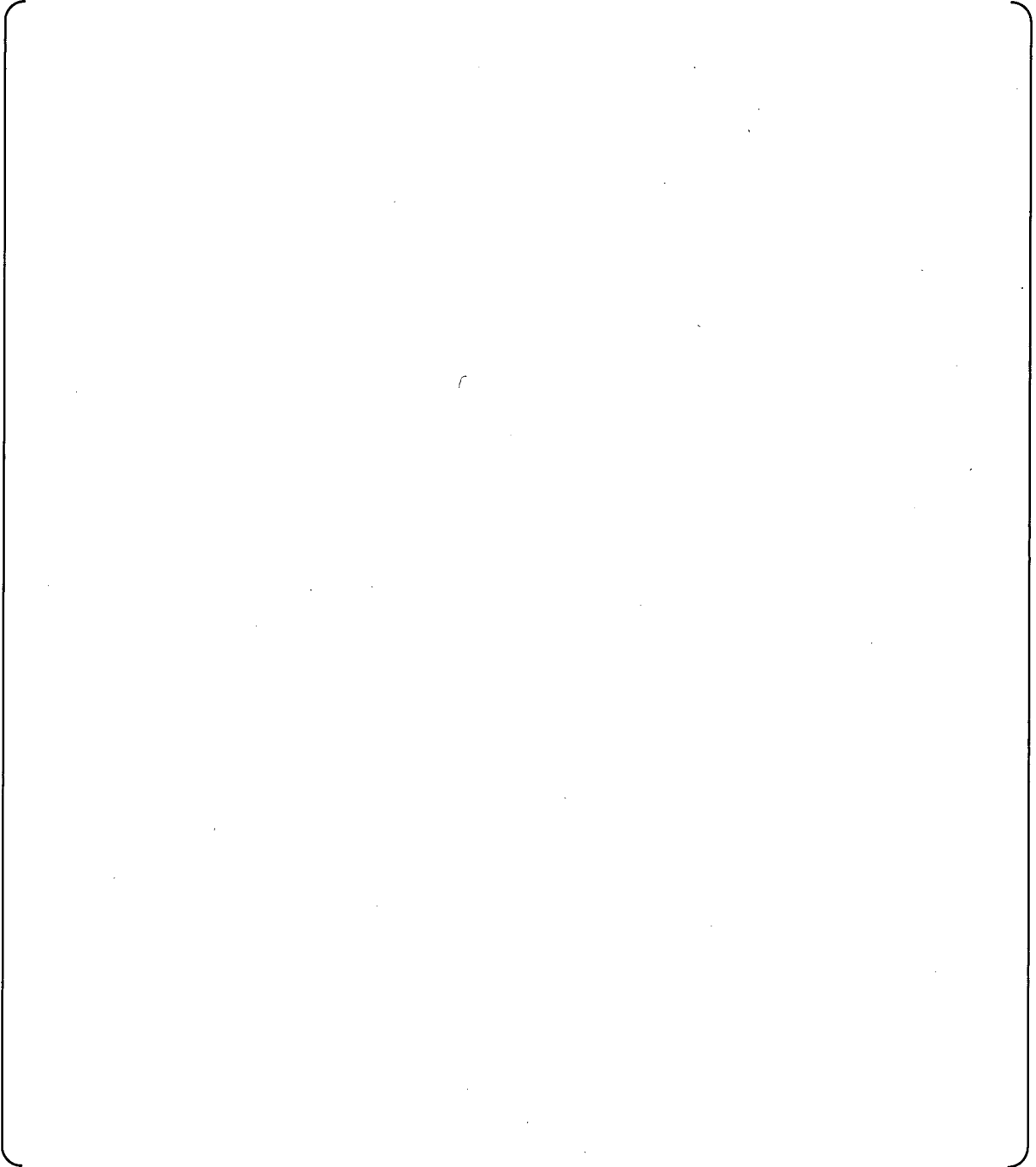
RAI NO.: NO. 552-4358 REVISION 2
SRP SECTION: 06.02.06 - CONTAINMENT LEAKAGE TESTING
APPLICATION SECTION: 6.2.6 CONTAINMENT LEAKAGE TESTING
DATE OF RAI ISSUE: 3/16/2010

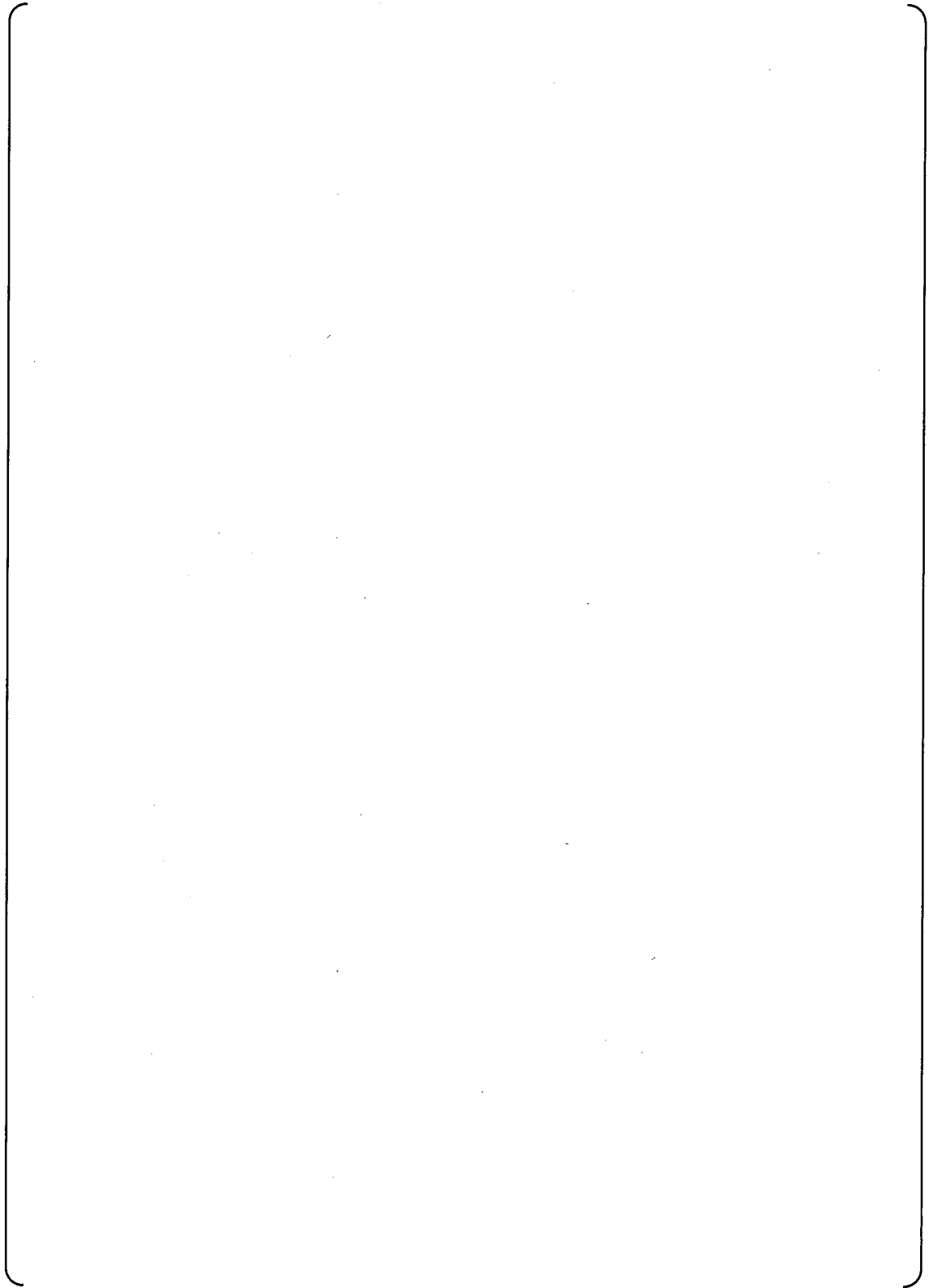
QUESTION NO. : 06.02.06-29

PROVIDE ANALYSIS OF COOLING REQUIREMENTS FOR CONCRETE ADJACENT TO HOT PENETRATIONS

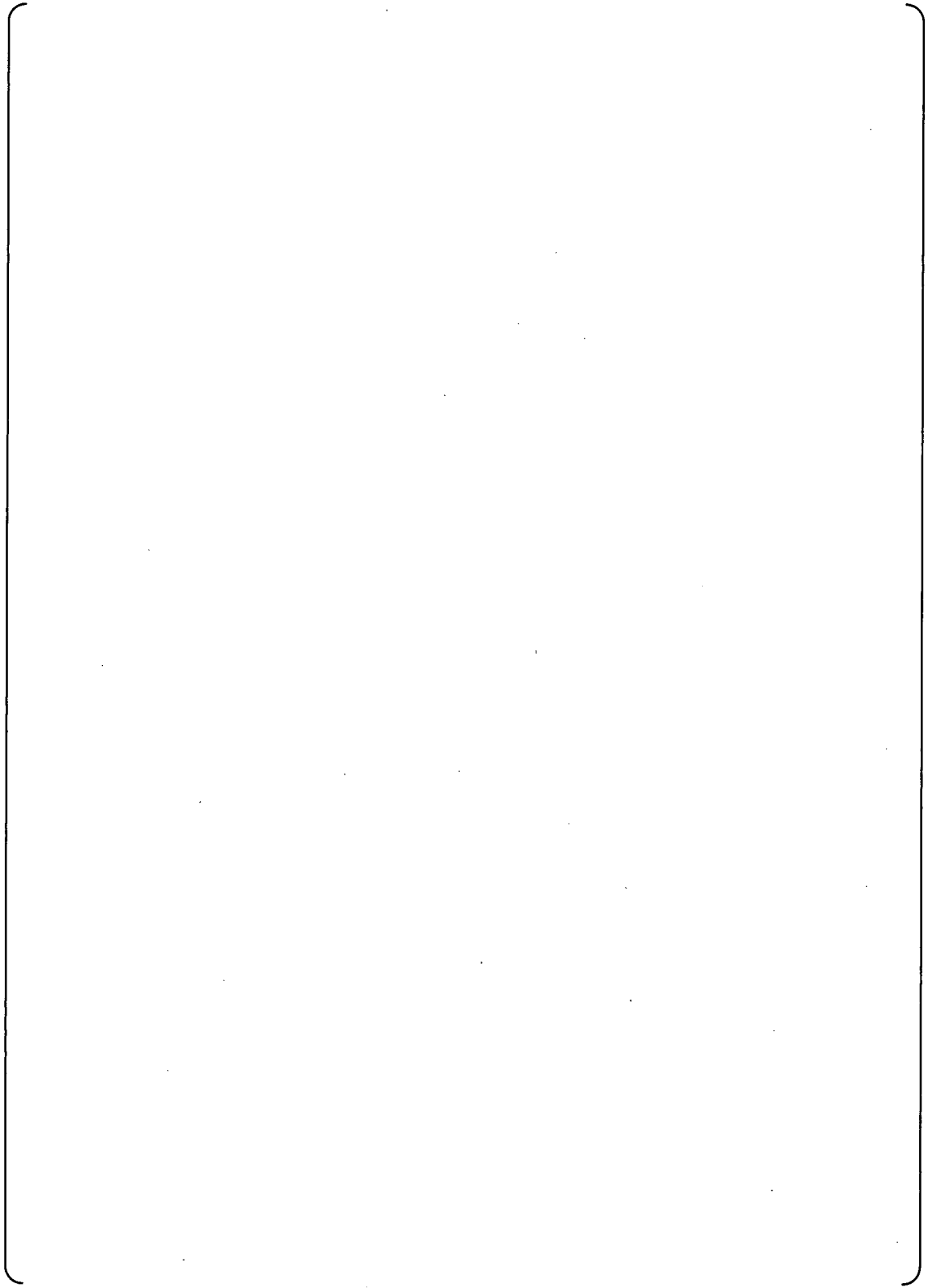
The staff requested the applicant clarify details associated with design features that will provide cooling to the "hot" penetrations of the main steam, blow down, feedwater, RHR, CVCS or any other system piping where the internal temperature exceed 65.5 °C (150°F) In Chapter 3 of the DCD, on Figure 3.8.1-8, Sheets 12, 13, and 14 depict the containment penetrations for main steam, feed water, and blow down piping, respectively. These drawings show insulation around the pipes passing through the respective penetrations. However, the shell of each penetration is welded to the wall of the penetrating pipe and the penetration itself has gussets imbedded in the containment concrete. The staff asked the applicant to demonstrate, by providing a heat transfer calculation, how the high temperature of these pipes is dissipated such that the containment concrete does not exceed the 93.3 °C (200°F) limit locally around the penetration as stated in DCD section 3.8.1.5.3, "Acceptance Criteria with respect to concrete temperatures", or specify how cooling is provided to these penetrations and depict the penetration cooling connections on appropriate diagrams of Figure 6.2.4-1, since the location of the penetration cooling connections may have a bearing on testing configurations for the penetrations. In a letter dated September 17, 2008, Mitsubishi responded to RAI 329 question 6.2.6-11 that MHI will prepare analysis to document that the concrete temperature adjacent to penetrations with high temperature process lines meets the limits provided in subsection 3.8.1.5.3 after the detail specification of these penetrations (e.g., insulation) is decided. MHI can demonstrate the containment concrete does not exceed the 93.3 °C (200°F) limit locally around the hot penetrations based on MHI's experience in Japan. The staff has reviewed the response. The staff awaits the submittal of this analysis and the referenced operational experience in Japan . Please provide the information or provide a date when it will be provided to the staff for review.

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

4/16/2010

**US-APWR Design Certification
Mitsubishi Heavy Industries
Docket No. 52-021**

RAI NO.: NO. 552-4358 REVISION 2
SRP SECTION: 06.02.06 – CONTAINMENT LEAKAGE TESTING
APPLICATION SECTION: 6.2.6
DATE OF RAI ISSUE: 3/16/2010

QUESTION NO.: 06.02.06-30

RAI 6.2.6-30:

The staff requested in RAI 329 question 6.2.6-6, RAI 2016 question 6.2.6-14 and RAI 3794 question 6.2.6-24 the applicant provide justification for those lines with CIVs indicated on DCD Table 6.2.4-3 which are not planned to be Type C tested. In a letter dated September 17, 2008 MHI provide a response to RAI 6.2.6-6.

The NRC staff reviewed the response and issued RAI 6.2.6-14 to request that the response to RAI 6.2.6-6 be added to the DCD and to resolve outstanding questions. The response to RAI 6.2.6-6 has been added to DCD revision 2 and is acceptable.

Based on review of DCD Revision 2 against the proposed DCD changes in RAI 6.2.4-14 response the following items remain:

1. On figure 6.2.4-1 sheet 12 of 51, state or indicate somewhere that there are two series 3/4" valves where SIS-VLV-225 (A,B,C,D) are located.
2. The response to question 3 of RAI-14 was not included in DCD Rev. 2. That is, on table 6.2.4-3, the reference to note 5, information on the non-essential CW system, was not included for penetrations 408 and 409.
3. A mistake appeared to have been made in referencing note 4 to Table 6.2.4-3. DCD Rev. 2 added note 4 as reference to Sheet 16 (penetrations 214, 224, 261 & 271) rather than Sheet 18 (penetrations 151, 154, 155 & 158). So that Sheet 16 has a note that is not applicable and Sheet 18 is missing a necessary note.
4. Table 6.2.4-3 has two new notes # 7 & 8, which appear to be identical.
5. The committed change to DCD Section 9.2.7.3.2 was not made in Rev. 2.

ANSWER:

1. Figure 6.2.4-1 sheet 12 of 51 will be revised to indicate there are two series 3/4" valves

where SIS-VLV-225 (A,B,C,D) are located.

2. Containment isolation system configuration of the non-essential CW system was modified in the DCD revision 2 (See Figure 6.2.4-1 sheet 43 of 51), but modification for Table 6.2.4-3 was not completed. Penetration No.408 and 409 are subject to Type C test, so Table 6.2.4-3 will be revised.
3. Note 4 will be added in penetration 151, 154, 155 and 158 of Table 6.2.4-3. In addition, SIS, RHRS and CSS lines are applicable to Note 4, so Table 6.2.4-3 will be revised.
4. Note 8 of Table 6.2.4-3 will be deleted and locations for Note 7 and 8 will be corrected.
5. Containment isolation system configuration of the non-essential CW system was modified in the DCD revision 2 (See Figure 6.2.4-1 sheet 43 of 51). Description of Subsection 9.2.7.3.2 will be revised based on this configuration change.

Impact on DCD

1. Figure 6.2.4-1 sheet 12 of 51 will be revised to indicate there are two series 3/4" valves where SIS-VLV-225 (A,B,C,D) are located.
2. GDC columns in Penetration 408 and 409 of Table 6.2.4-3 will be replaced "57" with "56". Type tests columns in Penetration 408 and 409 of Table 6.2.4-3 will be replaced "A" with "C" respectively. Type C test columns in Penetration 408 and 409 of Table 6.2.4-3 will be replaced "N" with "Y" respectively.
3. Note 4 will be added in remark column, penetration 151, 154, 155, 158, 210, 227, 258, 274, 212, 225, 259 and 272 of Table 6.2.4-3. Type tests columns in Penetration 210, 227, 258, 274, 212, 225, 259 and 272 of Table 6.2.4-3 will be replaced "A" with "C" respectively. Type C test columns in Penetration 210, 227, 258, 274, 212, 225, 259 and 272 of Table 6.2.4-3 will be replaced "N" with "Y" respectively.
4. Note 8 will be deleted in remark column penetration 214, 224, 261 and 271. Note 7 will be added in remark column penetration 151, 154, 155 and 158.
5. The following sentence will be added at the last of the first paragraph of Subsection 9.2.7.3.2.

"The containment isolation valves and the piping between containment isolation valves are designed and constructed to requirements of ASME III, Class 2 and Seismic Category I."

Impact on COLA

There are no impacts on the COLA.

Impact on PRA

There is no impact on the PRA.