

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

April 28, 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-09200

**Subject: Supplemental Information to US-APWR DCD RAI No. 92-1237 Revision 0**

- References:**
- 1) "Request for Additional Information No. 92-1237 Revision 0, SRP Section: 19 – Probabilistic Risk Assessment and Severe Accident Evaluation," dated November 5, 2008
  - 2) Letter MHI Ref: UAP-HF-08275 from Y. Ogata (MHI) to the U.S. NRC, "MHI's Responses to US-APWR DCD RAI No. 92-1237," dated December 5, 2008.
  - 3) "Summary of February 17-19, 2009, Public Meeting with Mitsubishi Heavy Industries, On Design Control Document, Chapter 19 - Probabilistic Risk Assessment (Level 2 and Low Power/Shutdown) And Severe Accident Evaluation," dated March 16, 2009 (ML090570848)
  - 4) Letter MHI Ref: UAP-HF-09137 from Y. Ogata (MHI) to the U.S. NRC, "Supplemental Information to US-APWR DCD RAI No. 92-1237 Revision 0," dated April 24, 2009

The U.S. Nuclear Regulatory Commission ("NRC") and representatives of Mitsubishi Heavy Industries, Ltd. ("MHI") held a Category 1 public meeting on 17 to 19 February 2009. One of the topics discussed in this meeting was on the technical contents corresponded in References 1 and 2. As the conclusion of the meeting, MHI proposed to the NRC to provide supplemental information for the action items summarized in Reference 3, especially items #1 to 10 except for #5. In the initial response to these action items submitted within the Reference 4, MHI committed to submit second responses to items #1 to #3 and #7 by 28<sup>th</sup> of April 2009.

With this letter, MHI transmits to the NRC a document as listed in Enclosures.

Enclosed includes the supplemental information on an action item #3. Rest of the action items are treated combined with RAI#19-303 because the topics of discussion are the same; and the RAI answer is separately submitted from this response within the letter MHI reference UAP-HF-09201.

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 "[ ]".

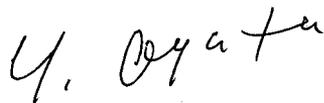
This letter includes a copy of the proprietary version (Enclosure 2), a copy of the

DOB  
MHI

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,



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

Enclosures:

1. Affidavit of Yoshiki Ogata
2. Second Supplemental Information to US-APWR DCD RAI No. 92-1237 Revision 0 (proprietary version)
3. Second Supplemental Information to US-APWR DCD RAI No. 92-1237 Revision 0 (non-proprietary version)

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

Contact Information

C. Keith Paulson, Senior Technical Manager  
Mitsubishi Nuclear Energy Systems, Inc.  
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Monroeville, PA 15146  
E-mail: ck\_paulson@mnes-us.com  
Telephone: (412) 373-6466

**ENCLOSURE 1**

Docket No. 52-021  
MHI Ref: UAP-HF-09200

**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 "Second Supplemental Information to US-APWR DCD RAI No. 92-1237 Revision 0" dated April 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 and methodology developed by MHI for performing the design of the US-APWR reactor.
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 methodology related to the analysis.
- B. Loss of competitive advantage of the US-APWR created by benefits of modeling information.

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 28<sup>th</sup> day of April 2009.

A handwritten signature in black ink, appearing to read "Y. Ogata". The signature is written in a cursive, somewhat stylized font.

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

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Enclosure 3

UAP-HF-09200  
Docket Number 52-021.

Second Supplemental Information to US-APWR DCD  
RAI No. 92-1237  
Revision 0

April 2009  
(Non-proprietary)

Supplemental Information to Question 19-181 of RAI#92-1237

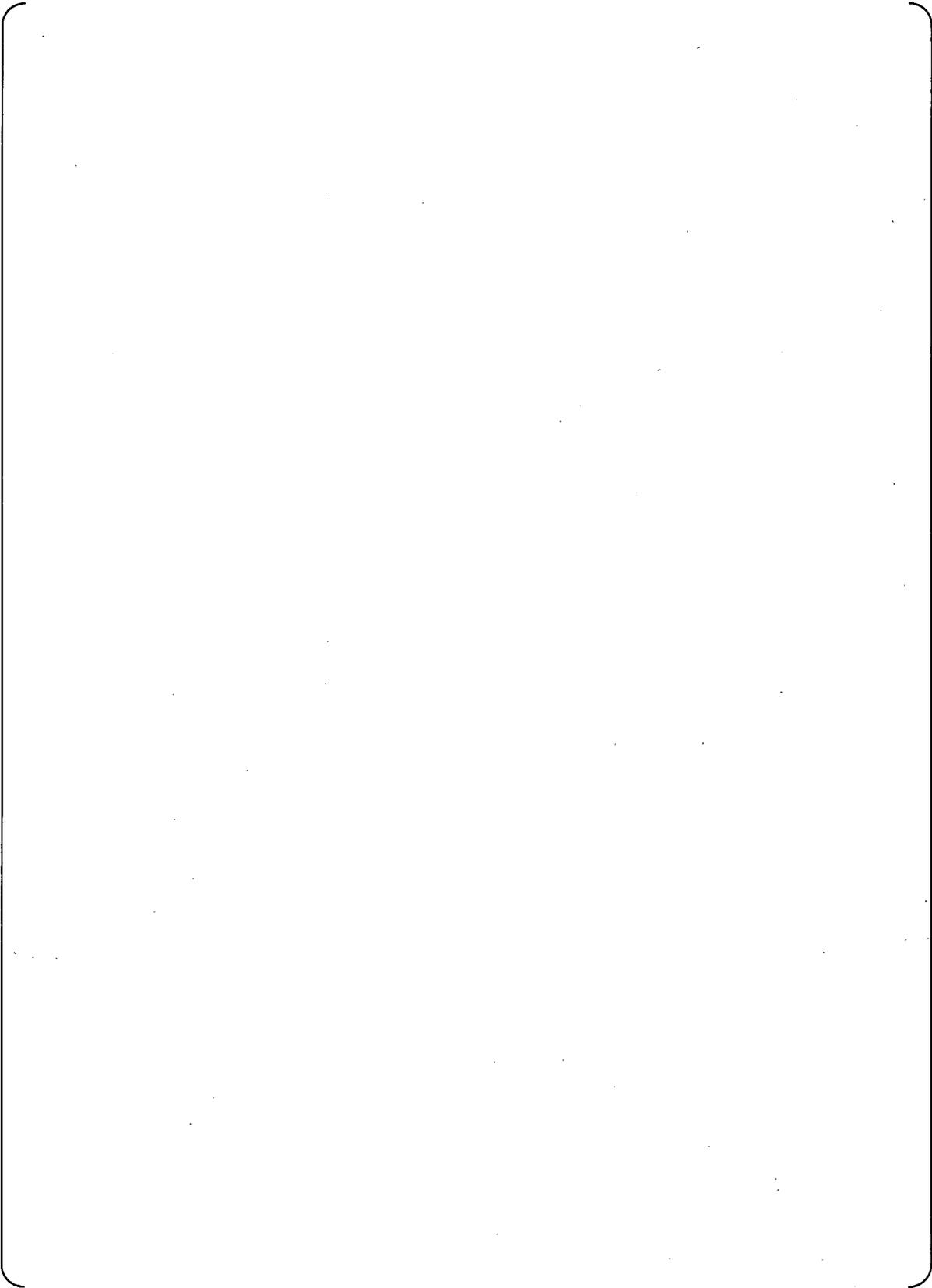
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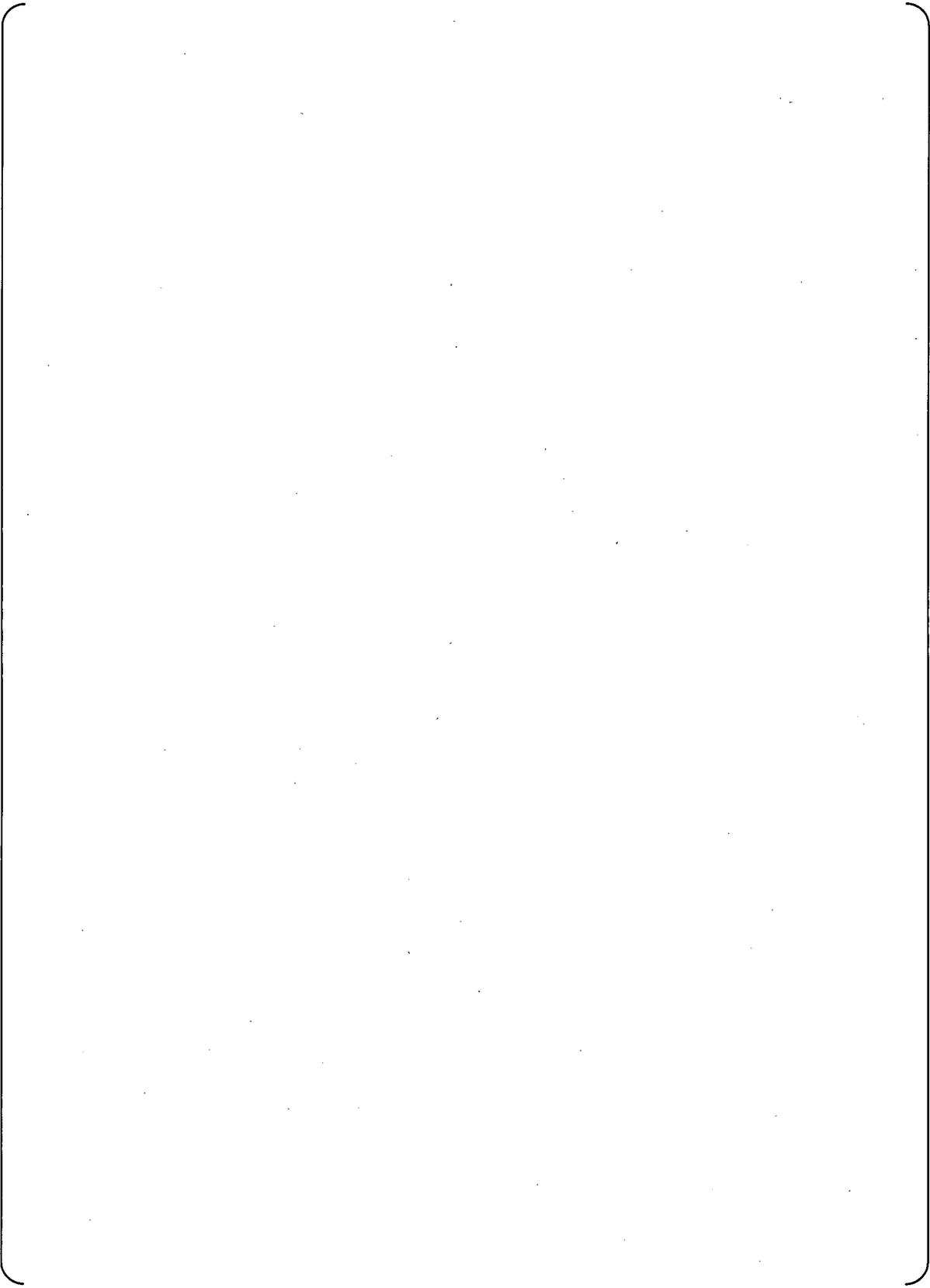
The NRC staff requested MHI to address the potential for instrument tube release under severe core damage.

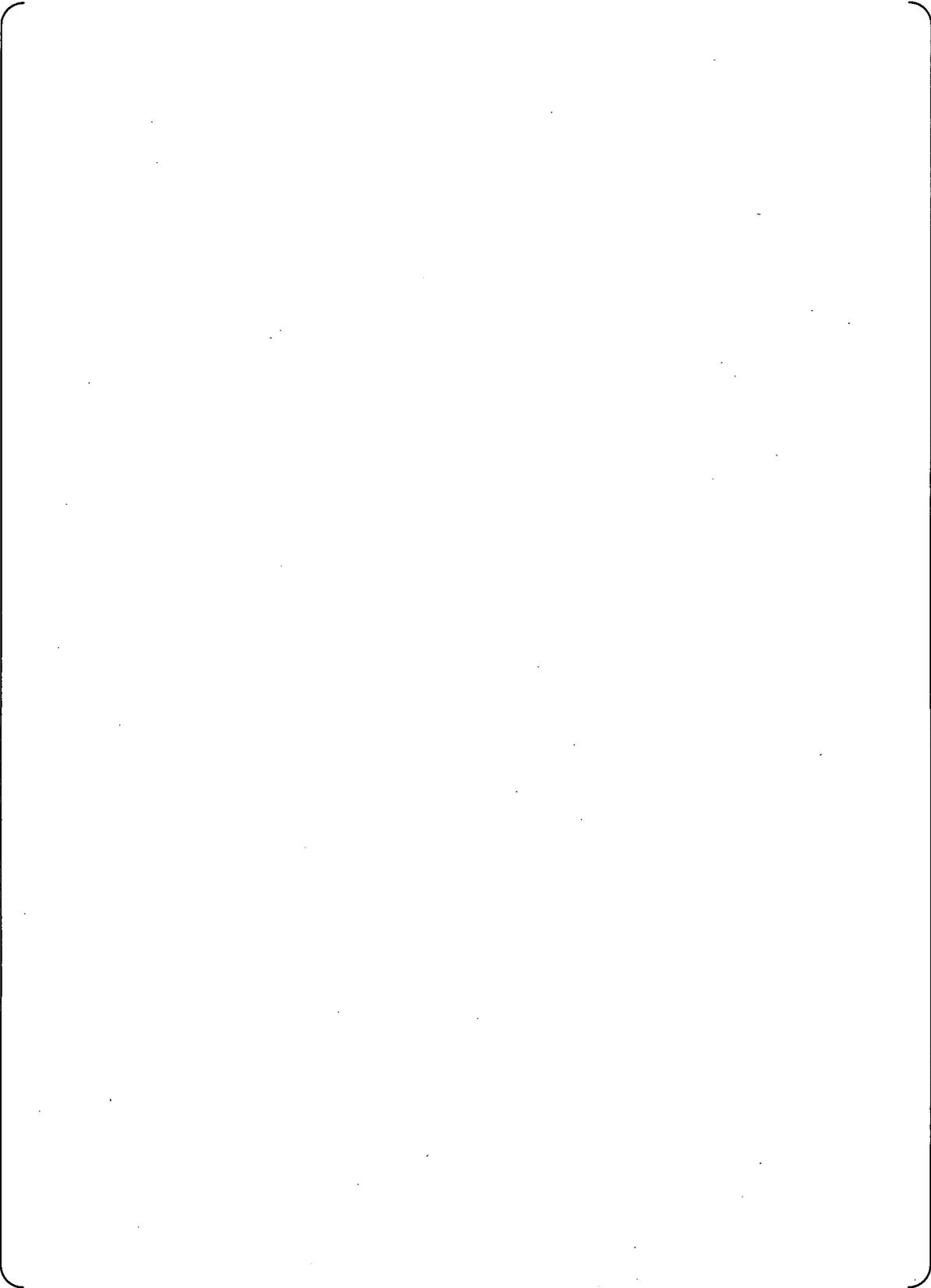
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The NRC's concern concerning this situation is from new information about TMI-2 investigations suggesting that in some scenarios the pressure in the reactor vessel is lowered by release from instrument tube failure; however there is a concern that there may be a potential pathway for hydrogen to be released through the instrument tubes to an area not adequately protected by igniters.

MHI therefore performed MAAP analysis in order to evaluate the hydrogen flow rate released through the instrument tube failure to containment atmosphere. In order to model this flow path in MAAP code, the following assumptions were considered:







**References:**

- [1] Letter from Mitsubishi Heavy Industries to the U.S. Nuclear Regulatory Commission, "MHI's Responses to US-APWR DCD RAI No. 92-1237 Revision 0" dated 5 December 2008 (MHI Ref: UAP-HF-08275)
- [2] US-APWR Probabilistic Risk Assessment, MUAP-07030 Rev.1, Mitsubishi Heavy Industries, September 2008
- [3] Impact of Instrumentation Tube Failure on Natural Circulation during Severe Accident, Presentation material by ERI in a public meeting held on 17 to 19 February 2009 at the U.S. Nuclear Regulatory Commission.
- [4] Letter from Mitsubishi Heavy Industries to the U.S. Nuclear Regulatory Commission, "Supplemental Information to US-APWR DCD RAI No. 92-1237 Revision 0" dated 24 April 2009 (MHI Ref: UAP-HF-09137)