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TOKYO, JAPAN

March 25, 2014

Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Attention: Mr. Perry Buckberg

Docket No. 52-021
MHI Ref: UAP-HF-14027

Subject: **Transmittal of Revised US-APWR New and Spent Fuel Racks Technical Reports (MUAP-07032, MUAP-07033, and MUAP-09014) and Related RAI 1032-7098 Response Revision**

References:
1) MHI letter UAP-HF-09551, "Transmittal of the Technical Report Entitled 'Criticality Analysis for US-APWR New and Spent Fuel Storage Racks' Revision 1", dated December 10, 2009. (ML093510484)
2) MHI letter UAP-HF-09135, "Transmittal of the Technical Report Entitled 'Mechanical Analysis for US-APWR New and Spent Fuel Racks' (MUAP-07033)", dated March 31, 2009. (ML090970179)
3) MHI letter UAP-HF-09283, "Transmittal of the Technical Report Entitled 'Thermal-Hydraulic Analysis for US-APWR Spent Fuel Racks' (MUAP-09014)", dated June 5, 2009. (ML091620299)
4) MHI letter UAP-HF-13034, "Updated Closure Plan for US-APWR Seismic and Structural Analyses – Schedule Improvement", dated February 15, 2013. (ML13050A601)
5) MHI letter UAP-HF-13162, "MHI's Response to US-APWR DCD RAI No. 1032-7098 (SRP 9.1.2)", dated June 27, 2013. (ML13182A467)
6) MHI letter UAP-HF-13263, "MHI's Response to US-APWR DCD RAI No. 1054-7235 (SRP 09.01.02)", dated November 6, 2013. (ML13316A368)

With this letter, Mitsubishi Heavy Industries, Ltd. ("MHI") transmits to the U.S. Nuclear Regulatory Commission ("NRC") three revised technical reports regarding the new and spent fuel racks for the US-APWR. The technical reports are MUAP-07032 Revision 2 "Criticality Analysis for US-APWR New and Spent Fuel Storage Racks", MUAP-07033 Revision 1 "Mechanical Analysis for US-APWR New and Fuel Racks", and MUAP-09014 Revision 1 "Thermal-Hydraulic Analysis for US-APWR Spent Fuel Racks". These three technical reports were previously submitted in References 1, 2, and 3, respectively. The reports are being submitted electronically on compact discs (CDs).

MHI originally committed to revising the technical reports as part of the seismic closure plan (Reference 4). MHI later committed to additional revisions to the technical reports as part of the responses to RAIs 1032-7098 and 1054-7235 (References 5 and 6). Enclosed are the revised technical reports that fulfill these commitments. In addition, MHI has revised the response to RAI 1032-7098 (Reference 5) to more accurately reflect the changes that were made to the technical reports. MHI has also prepared Design Control Document ("DCD") markups that indicate how the updated technical report revision numbers and dates will be incorporated into the DCD. Therefore, the revised RAI 1032-7098 response and DCD markups are also enclosed.

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As indicated in the enclosed materials, these reports contain 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. The information that is proprietary is identified in brackets. Accordingly, the technical reports are being submitted in two versions, on separate CDs. In the non-proprietary versions of the reports, the proprietary information is redacted and replaced by the designation "[ ]".

In addition, the DCD markups include certain information, designated pursuant to the Commission guidance as sensitive unclassified non-safeguards information, referred to as security-related information ("SRI"), that is to be withheld from public disclosure under 10 C.F.R § 2.390. The information that is SRI is identified in brackets. Accordingly, the DCD markups are being submitted in two versions, on separate CDs. In the non-SRI versions, the SRI is redacted and replaced by the designation "[Security-Related Information – Withheld under 10 CFR 2.390]".

This letter includes a copy of the non-proprietary version of the revised RAI 1032-7098 response (Enclosure 2), the DCD markups and technical reports containing proprietary and/or SRI content on CD 1 (Enclosure 3), the DCD markups and technical reports <u>not</u> containing proprietary or SRI content on CD 2 (Enclosure 4), and the Affidavit of Katsuhisa Takaura (Enclosure 1) which identifies the reasons MHI respectfully requests that all materials designated as "Proprietary" in Enclosure 3 be withheld from public 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,

K. Takaura for

Yoshiki Ogata,
Executive Vice President
Mitsubishi Nuclear Energy Systems, Inc.
On behalf of Mitsubishi Heavy Industries, Ltd.

Enclosures:

1. Affidavit of Katsuhisa Takaura
2. Revised Response to Request for Additional Information No. 1032-7098 Question 09.01.02-30 (Non-proprietary)
3. CD 1: US-APWR New and Spent Fuel Racks Technical Reports MUAP-07032 R2, MUAP-07033 R1, and MUAP-09014 R1, and DCD Markups, dated March 2014 (Versions containing Proprietary and/or SRI content)
4. CD 2: US-APWR New and Spent Fuel Racks Technical Reports MUAP-07032 R2, MUAP-07033 R1, and MUAP-09014 R1, and DCD Markups, dated March 2014 (Versions not containing Proprietary or SRI content)

The files contained on the CDs are listed in Attachments 1 and 2 hereto.

CC: P. Buckberg
J. Tapia

Contact Information
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Enclosure 1

MITSUBISHI HEAVY INDUSTRIES, LTD.

AFFIDAVIT

I, Katsuhisa Takaura, state as follows:

1. I am Manager, APWR Project of Global Nuclear Project 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 documents entitled MUAP-07032 Revision 2 "Criticality Analysis for US-APWR New and Spent Fuel Storage Racks", MUAP-07033 Revision 1 "Mechanical Analysis for US-APWR New and Spent Fuel Racks", and MUAP-09014 Revision 1 "Thermal-Hydraulic Analysis for US-APWR Spent Fuel Racks", all dated March 2014, and have determined that portions of the documents 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 information and analysis methodology, developed by MHI 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 detailed design for its software and hardware 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 methodology related to the analysis.

B. Loss of competitive advantage of the US-APWR created by benefits of the analysis methodology.

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 25th day of March, 2014.

K. Takaura

Katsuhisa Takaura,
Manager- APWR Project
Of Global Nuclear Project Department
Mitsubishi Heavy Industries, Ltd.

Enclosure 2

UAP-HF-14027
Docket Number 52-021

Revised Response to Request for Additional Information
No. 1032-7098 Question 09.01.02-30

March 2014

(Non-Proprietary)

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

03/25/2014

US-APWR Design Certification

Mitsubishi Heavy Industries

Docket No. 52-021

RAI NO.:	**NO. 1032-7098**
SRP SECTION:	**09.01.02 - New and Spent Fuel Storage**
APPLICATION SECTION:	**9.1.2**
DATE OF RAI ISSUE:	**5/13/2013**

QUESTION NO.: 09.01.02-30:

In MUAP-07033P (R0), Section 3.1.1, "Acceleration Time Histories," (Page 2) the first paragraph states, in part, that "The synthetic time-histories must meet the criteria of statistical independence, envelope the target design response spectra, and envelope the target Power Spectral Density function associated with the target response spectra." Based on the above sentence, the staff assumes that the target design response spectra is located at the pit level, and then the synthetic time-histories are generated to envelope them. The applicant is requested to provide the following information:

- Provide the target response spectra at the pit slab location that were used to generate the synthetic time histories
- Were the target response spectra derived from the soil-structure-interaction analysis? If not, provide justification for not including the soil-structure-interaction effect.
- What are the seeds of earthquake ground motions used to generate the synthetic time histories?
- What are the record length and the time increment of the synthetic time histories?

ANSWER:

For the first and second bulleted items, the current target response spectra for the fuel storage racks in MUAP-07033-P (R0) did not take into consideration the soil-structure-interaction effect. The target response spectra derived from the soil-structure-interaction analysis is provided in the enclosed revision of MUAP-07033-P.

For the third bulleted item, the seeds used to generate the synthetic time histories in the calculation for the current technical report MUAP-07033-P (R0) are random phase seeds. Seeds based on real recorded time histories are used in the enclosed revision of MUAP-07033-P.

For the fourth bulleted item, the record length and time increment of the synthetic time histories are at least 20 seconds and 0.005 seconds, respectively.

Impact on DCD

There is no impact on the DCD.

Impact on R-COLA

There is no impact on the R-COLA.

Impact on PRA

There is no impact on the PRA.

Impact on Topical Report / Technical Report

The target response spectra are provided in the enclosed revision of MUAP-07033-P.

The information of seeds based on real recorded time histories are added in the enclosed revision of MUAP-07033-P.

The information for the record length and time increment of the synthetic time histories are added in the enclosed revision of MUAP-07033-P.

The revision of technical report MUAP-07033-P is enclosed as committed to in the seismic closure plan (UAP-HF-13034).

ATTACHMENT 1

Docket No. 52-021
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FILES CONTAINED ON CD 1

CD 1: US-APWR New and Spent Fuel Racks Technical Reports MUAP-07032 R2, MUAP-07033 R1, and MUAP-09014 R1, and DCD Markups (Versions containing Proprietary and/or SRI content)

Contents of CD

	File Name	Size	Sensitivity Level
1.	MUAP-07032-P(R2).pdf	1,379 KB	Proprietary, Non-SRI
2.	MUAP-07033-P(R1).pdf	44,102 KB	Proprietary, Non-SRI
3.	MUAP-09014-P(R1).pdf	3,257 KB	Proprietary, Non-SRI
4.	SRI_DCD Markups.pdf	199 KB	Non-Proprietary, SRI

ATTACHMENT 2

Docket No. 52-021
MHI Ref: UAP-HF-14027

FILES CONTAINED ON CD 2

CD 2: **US-APWR New and Spent Fuel Racks Technical Reports MUAP-07032 R2, MUAP-07033 R1, and MUAP-09014 R1, and DCD Markups (Versions not containing Proprietary or SRI content)**

Contents of CD

	File Name	Size	Sensitivity Level
1.	MUAP-07032-NP(R2).pdf	1,244 KB	Non-Proprietary, Non-SRI
2.	MUAP-07033-NP(R1).pdf	43,861 KB	Non-Proprietary, Non-SRI
3.	MUAP-09014-NP(R1).pdf	3,175 KB	Non-Proprietary, Non-SRI
4.	NonSRI_DCD Markups.pdf	176 KB	Non-Proprietary, Non-SRI