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

December 19, 2013

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

Attention: Mr. Perry Buckberg

Docket No. 52-021
MHI Ref: UAP-HF-13314

**Subject:** **MHI's Second Supplemental Response to US-APWR DCD RAI No. 1034-7055 (SRP 03.11)**

**Reference:** 1) "Request for Additional Information No. 1034-7055, SRP Section 03.11 – Environmental Qualification of Mechanical and Electrical Equipment - Application Section: 3.11", dated May 16, 2013, ML13136A176.
2) "MHI's Response to US-APWR DCD RAI No. 1034-7055 (SRP 03.11)", dated June 13, 2013, ML13175A012.
3) "MHI's Supplemental Response to US-APWR DCD RAI No. 1034-7055 (SRP 03.11)", dated December 6, 2013.

With this letter, Mitsubishi Heavy Industries, Ltd. ("MHI") transmits to the U.S. Nuclear Regulatory Commission ("NRC") a document entitled "Second Supplemental Response to US-APWR DCD RAI No. 1034-7055 (SRP 03.11)."

Enclosed is the supplemental response to Question 3.11-66 contained within Reference 1. The initial response to the RAI question was submitted in Reference 2 and a supplemental response to Question 3.11-63 was submitted in Reference 3.

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,

T. Hashimoto for

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

D081
NRO

Enclosure:

1. Second Supplemental Response to US-APWR DCD RAI No. 1034-7055 (SRP 03.11)

CC: P. Buckberg
J. Tapia

Contact Information
Joseph Tapia, General Manager of Licensing Department
Mitsubishi Nuclear Energy Systems, Inc.
11405 North Community House Road, Suite 300
Charlotte, NC 28277
E-mail: joseph_tapia@mnes-us.com
Telephone: (704) 945-2740

Docket No. 52-021
MHI Ref: UAP-HF- 13314

Enclosure 1

UAP-HF-13314
Docket No. 52-021

Second Supplemental Response to US-APWR DCD RAI
No. 1034-7055 (SRP 03.11)

December 2013

## RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

**12/19/2013**

**US-APWR Design Certification**

**Mitsubishi Heavy Industries**

**Docket No. 52-021**

| | |
|---|---|
| **RAI NO.:** | **NO. 1034-7055** |
| **SRP SECTION:** | **03.11 - ENVIRONMENTAL QUALIFICATION OF MECHANICAL AND ELECTRICAL EQUIPMENT** |
| **APPLICATION SECTION:** | **3.11, APPENDIX 3D** |
| **DATE OF RAI ISSUE:** | **05/16/2013** |

**QUESTION NO. 03.11-66:**

In the response to RAI 805-5915, Question 3.11-41, dated September 10, 2012, the applicant provided a markup of DCD Tier 2, Section 3.11. The applicant added a new sentence at the bottom of page 3.11-1.

> This Technical Report [MUAP-08015] addresses the environmental qualification required by 10 CFR 50.49 ...

However, the staff understands that the equipment qualification program (MUAP-08015) also includes the environmental qualification requirements for electrical, I&C, and mechanical equipment. The applicant is requested to clarify that the above equipment is capable of performing design safety functions under normal environmental conditions, containment test conditions, anticipated operational occurrences, accident, and post-accident environmental conditions by satisfying with the requirements of 10 CFR 50.49, 10 CFR 50 Appendix A (GDC 1, 2, 4, and 23), and 10 CFR 50 Appendix B, (Quality Assurance Criteria III, XI, and XVII) in both DCD and MUAP-08015.

**ANSWER:**

MHI will revise the referenced sentence in DCD Section 3.11 to read as follows:

> Technical report MUAP-08015 addresses the relevant environmental design and qualification requirements of 10 CFR 50.49; 10 CFR Part 50, Appendix A, General Design Criteria 1, 2, 4, and 23; and 10 CFR Part 50, Appendix B, Quality Assurance Criteria III, XI, and XVII; with respect to systems and components being designed to withstand the effects of, and being capable of performing their safety function, in the environmental conditions associated with normal operation, maintenance, testing, and accident conditions.

**Impact on DCD**

DCD Section 3.11 will be revised as shown in the attachment-1.

**Impact on R-COLA**

There is no impact on the R-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.

---

## SUPPLEMENTAL RESPONSE

This response supplements the response provided in MHI letter UAP-HF-13130, dated June 13, 2013 (ML13175A012) and UAP-HF-13284, dated December 6, 2013. As a result of subsequent discussions with the NRC staff regarding the scope of equipment to be included in the Environmental Qualification (EQ) Program, an additional change will be made to the referenced sentence of DCD Section 3.11 as follows:

> Technical report MUAP-08015 addresses the relevant environmental design and qualification requirements of 10 CFR 50.49; 10 CFR Part 50, Appendix A, General Design Criteria 1, 2, 4, and 23; and 10 CFR Part 50, Appendix B, Quality Assurance Criteria III, XI, and XVII; with respect to systems and components important to safety within the scope described above that are ~~being~~ designed to withstand the effects of, and are ~~being~~ capable of performing their safety function, in the environmental conditions associated with normal operation, maintenance, testing, and accident conditions.

**Impact on DCD**

DCD Section 3.11 will be revised as shown in Attachment-1.

**Impact on R-COLA**

There is no impact on the R-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.

demonstrated by proper incorporation of relevant environmental conditions into the design process, including the equipment specification.

The general requirements for environmental design and qualification can be summarized as follows: (1) the equipment shall be designed to have the capability of performing its design safety functions under all anticipated operational occurrences and normal, accident, and post-accident environment, and for the length of time for which its function is required; (2) the environmental qualification of equipment located in harsh environment shall be demonstrated by appropriate testing and/or analyses; and (3) a QA program meeting 10 CFR 50, Appendix B, shall be established and implemented to provide the assurance that all requirements have been satisfactorily accomplished. Environmental design and qualification requirements are described in MHI Technical Report MUAP-08015, "US-APWR Equipment Qualification Program," issued as a separate report (Reference 3.11-3).

This equipment is addressed in the EQ Program to verify it is capable of performing its design function(s) under all anticipated service conditions. These service conditions are defined in 10 CFR 50.49(b)(1)(ii), (Reference 3.11-2) and are listed below. There is no nonsafety-related electrical equipment, located in a harsh environment, whose failure under postulated environmental conditions could prevent satisfactory accomplishment of safety functions by the safety-related equipment. The equipment addressed by the EQ Program is identified in Table 3D-2.

The typical design basis events include the following:

1. Normal operating conditions (e.g., refueling, shutdown, startup, operating)
2. AOO (e.g., plant trips, testing)
3. DBA (e.g., LOCA, HELB)
4. Special events (e.g., loss of offsite power)
5. Natural phenomena (e.g., earthquake, tornado, hurricane)

Replace with: "are"

Replace with: "important to safety within the scope described above that are"

Technical report MUAP-08015 addresses the relevant environmental design and qualification requirements of 10 CFR 50.49; 10 CFR Part 50, Appendix A, General Design Criteria 1, 2, 4, and 23; and 10 CFR Part 50, Appendix B, Quality Assurance Criteria III, XI, and XVII; with respect to systems and components ~~being~~ designed to withstand the effects of, and ~~being~~ capable of performing their safety function, in the environmental conditions associated with normal operation, maintenance, testing, and accident conditions. This report also addresses seismic qualification as described in Section 3.10, and functional qualification of active mechanical components described in Section 3.9, as an integrated US-APWR equipment qualification program as described in Appendix 3D. Implementation of the EQ Program is addressed as part of this integrated equipment qualification program.

DCD_03.11-66 S02

The Technical Report describes the EQ Program applicable to each licensed US-APWR. The Report describes the EQ process and its implementation during the design, procurement, construction, startup, and turnover phases of a US-APWR plant project. It