

  
**MITSUBISHI HEAVY INDUSTRIES, LTD.**  
TOKYO, JAPAN

April 25, 2011

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

Attention: Mr. Jeffery A. Ciocco

Docket No. 52-021  
MHI Ref: UAP-HF-11120

**Subject:** Amended MHI's Response to US-APWR DCD RAI No. 679-4985 Revision 0  
(SRP 03.09.04)

**Reference:** 1) "Request for Additional Information No. 679-4985 Revision 0, SRP  
Section: 03.09.04 – Control Rod Drive Systems, Application Section:  
3.9.4," dated 1/11/2011  
2) "MHI's Response to US-APWR DCD RAI No. 679-4985 Revision 0 (SRP  
03.09.04), UAP-HF-09507," dated 2/9/2011

With this letter, Mitsubishi Heavy Industries, Ltd. ("MHI") transmits to the U.S. Nuclear Regulatory Commission ("NRC") documents entitled "Amended Response to Request for Additional Information No. 679-4985, Revision 0"

Enclosed is the response to the Question No. 03.09.04-10 and 03.09.04-11 of the RAI (Reference 1).

This response amends the previously transmitted answers submitted under MHI Reference UAP-HF-11031 on February 9, 2011 (Reference 2) in order to correct description of tests for CRDM.

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 provided below.

Sincerely,



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

Enclosures:

1. Amended Response to Request for Additional Information No. 679-4985, Revision 0



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

Contact Information

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Docket No. 52-021  
MHI Ref: UAP-HF-11120

Enclosure 1

UAP-HF-11120  
Docket No. 52-021

Amended Response to Request for Additional Information No. 679-  
4985, Revision 0

April 2011

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**RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION**

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4/25/2011

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

**RAI NO.:** NO. 679-4985 REVISION 0  
**SRP SECTION:** 03.09.04 - CONTROL ROD DRIVE SYSTEMS  
**APPLICATION SECTION:** 3.9.4  
**DATE OF RAI ISSUE:** 1/11/2011

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**QUESTION NO.: 03.09.04-10**

This question is a follow-up to question 03.09.04-5, RAI 570-4428.

In its response to RAI 570-4428, question 03.09.04-5, MHI identified and showed changes to be made in Subsection 4.6.3 in Revision 3 of DCD. For consistency and completeness, the staff requests that subsection 4.6.3, as it appears in the RAI response, be updated to include "Preoperational tests" as the third bullet, inserted before "Initial startup tests", the fourth bullet. The rest of the response is acceptable.

Reference: MHI's Response to US-APWR DCD RAI No. 570-4428; MHI Ref: UAP-HF-10140; dated May 19, 2010; ML101450199.

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**ANSWER:**

The bullet, "Preoperational tests," will remain, and the bullet, "Initial startup tests," will be inserted after "Preoperational tests."

**Impact on DCD**

Since RAI 570-4428 was incorporated into Revision 3 of DCD, subsection 4.6.3 will be revised from Revision 3 of DCD as follows:

The CRDS is tested in several phases. These tests may be categorized as follows:

- Prototype test of components
- Production tests of components following manufacture in shop
- Preoperational tests of electrical system
- Initial startup tests
- Periodic in-service tests

These tests, which are performed to verify the proper function of CRDS, are described in Subsection 3.9.4.4 and Section 14.2. They include rod insertion and withdrawal tests, scram test, and hydrostatic tests.

**Impact on R-COLA**

There is no impact on the R-COLA.

**Impact on S-COLA**

There is no impact on the S-COLA.

**Impact on PRA**

There is no impact on the PRA.

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**RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION**

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4/25/2011

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

**RAI NO.:** NO. 679-4985 REVISION 0  
**SRP SECTION:** 03.09.04 - CONTROL ROD DRIVE SYSTEMS  
**APPLICATION SECTION:** 3.9.4  
**DATE OF RAI ISSUE:** 1/11/2011

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**QUESTION NO.: 03.09.04-11**

This question is a follow-up to question 03.09.04-8, RAI 604-4775.

In its response, MHI will incorporate in 3.9.4.4, "On-site checks" with summary of inspection and criteria. This is acceptable.

In addition revisions were made for subsections 14.2.12.1.10 and 14.2.12.1.11. However, each of the hundred-plus subsections under subsection 14.2.12.1, Preoperational Tests, has a consistent format. The proposed revisions will be inconsistent with this format. In the interest of consistency for Section 14.2, the staff requests that the proposed revisions for 14.2.12.1.10 and 14.2.12.1.11 not be included in the next revision of the DCD as proposed in the response.

Instead, the staff requests that the applicant use the format of existing 'Lead unit test' description in the section 3.9.4.4, and add to 3.9.4.4, after the "On-site checks (per response to question 03.09.04-8), but before the "Initial Startup Test" (per response to RAI 570-4428, question 03.09.04-5), a similar description for the Preoperational Tests.

**References:**

MHI's Response to US-APWR DCD RAI No.570-4428; MHI Ref: UAP-HF-10140; dated May 19, 2010; ML101450199

MHI's Response to US-APWR DCD RAI No.604-4775; MHI Ref: UAP-HF-10221; dated July 28, 2010; ML102140340

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**ANSWER:**

MHI agrees with the staff's request and therefore Subsections 14.2.12.1.10 and 14.2.12.1.11 will remain unchanged and the prerequisites for those tests will be added to Subsection 3.9.4.4 as "Preoperational tests."

**Impact on DCD**

- Subsection 3.9.4.4 will be revised as follows:

On-site checks

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Preoperational tests

Preoperational tests are performed on electrical systems such as the CRDM Motor Generator Set and the CRDM Control System, which are identified in Subsection 14.2.12.1.10 and 14.2.12.1.11. There are no preoperational test items on the CRDMs themselves.

Initial Startup Test

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- Since RAI 604-4775 was incorporated into Revision 3 of DCD, subsection 14.2.12.1.10 will be revised from Revision 3 of DCD as follows:

14.2.12.1.10 CRDM Motor-Generator Set Preoperational Test

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B. Prerequisites

- ~~1. Required construction testing is completed.  
The construction testing includes installation inspection, generator and motor inspection, control panel inspection, and insulation resistance measurement.~~
- ~~2. Component testing and instrument calibration is completed.  
This includes power incoming circuit inspection, excitation relays test, protection relays test, resistance measurement of relays, automatic voltage regulator test, timer relays test, automatic synchronization device test, and instruments test.~~
- ~~3. Test instrumentation is available and calibrated.~~

- Since RAI 604-4775 was incorporated into Revision 3 of DCD, subsection 14.2.12.1.11 will be revised from Revision 3 of DCD as follows:

14.2.12.1.11 CRDM Initial Timing Preoperational Test

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B. Prerequisites

- ~~1. Required construction testing is completed.  
The construction testing includes installation inspection and wiring continuity check.~~
- ~~2. Component testing and instrument calibration is completed.  
This includes initial energization check of CRDM control system.~~
- ~~3. Test instrumentation is available and calibrated.~~

**Impact on R-COLA**

There is no impact on the R-COLA.

**Impact on S-COLA**

There is no impact on the S-COLA.

**Impact on PRA**

There is no impact on the PRA.