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TOKYO, JAPAN

August 29, 2008

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-08163

Subject: MHI's Response to US-APWR DCD RAI No.31

References: 1) "Request for Additional Information No.31 Revision 0, SRP Section: 14.02 – Initial Plant Test Program – Design Certification and New License Applicants, Application Section: 14.2," dated July 28, 2008.

With this letter, Mitsubishi Heavy Industries, Ltd. ("MHI") transmits to the U.S. Nuclear Regulatory Commission ("NRC") a document entitled "Response to Request for Additional Information No.31 Revision 0."

Enclosed is the response to Questions 14.02-23 and 14.02-24 that are contained within Reference 1.

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. Response to Request for Additional Information No.31 Revision 0

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

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Docket No. 52-021
MHI Ref: UAP-HF-08163

Enclosure 1

UAP-HF-08163
Docket No. 52-021

Response to Request for Additional Information No.31 Rev.0

August 2008

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

8/29/2008

US-APWR Design Certification

Mitsubishi Heavy Industries

Docket No. 52-021

RAI NO.:	**NO. 31 REVISION 0**
SRP SECTION:	**14.02 – Initial Plant Test Program – Design Certification and New License Applicants**
APPLICATION SECTION:	**14.2**
DATE OF RAI ISSUE:	**7/28/2008**

QUESTION NO.: 14.02-23

Section 14.2.8.1 of the US-APWR DCD designates certain tests as first-of-a-kind (FOAK), first-plant-only tests. These FOAK tests are documented in Subsections 14.2.12.1.7, 14.2.12.2.3.9 and 14.2.12.2.4.5 of the DCD.

To be consistent with the NRC staff's past treatment of first-plant-only tests, MHI needs to add a COL information item to Section 14.2.13 of the DCD that requires each COL holder to perform the tests documented in Section 14.2.8.1 of the DCD or provide justification that the results of the first-plant-only tests are applicable to subsequent plants.

ANSWER:

MHI will revise sections 14.2.8.1, 14.2.13 and Table 1.8-2 to add a COL action item that requires each COL holder to perform the tests documented in Section 14.2.8.1 of the DCD or provide justification that the results of the first-plant-only tests are applicable to subsequent plants.

Impact on DCD

This revision impacts revision 1 of the DCD in Subsections 14.2.8.1 on page 14.2-16, 14.2.13 on page 14.2-163 and Table 1.8-2 as follows.

Revise the second paragraph (in bold text here) of Subsection 14.2.8.1:

> These first-plant-only tests are identified in the individual test descriptions in subsection 14.2.12. The following is a listing of the first plant only tests, and the corresponding subsection in which they appear. **The COL holder for the first plant is to perform these tests. For subsequent plants, either these tests are performed, or the COL applicant provides a justification that the results of the first-plant only tests are applicable to the subsequent plant and are not required to be repeated.**

Revise Subsection 14.2.13 (in bold text here) to add the following:

COL 14.2(11) ***The COL holder for the first plant is to perform the first-plant-only tests identified in Subsection 14.2.8.1. For subsequent plants, either these tests are performed, or the COL applicant provides a justification that the results of the first-plant only tests are applicable to the subsequent plant and are not required to be repeated.***

Revise Table 1.8-2 to add the following:

COL ITEM NO.	COL ITEM
14.2(11)	**The COL holder for the first plant is to perform the first-plant-only tests identified in Subsection 14.2.8.1. For subsequent plants, either these tests are performed, or the COL applicant provides a justification that the results of the first-plant only tests are applicable to the subsequent plant and are not required to be repeated.**

Impact on COLA

This revision impacts the COLA when this revision is incorporated into the future revision of the DCD.

Impact on PRA

There is no impact on the PRA.

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

8/29/2008

US-APWR Design Certification

Mitsubishi Heavy Industries

Docket No. 52-021

RAI NO.:	**NO. 31 REVISION 0**
SRP SECTION:	**14.02 – Initial Plant Test Program – Design Certification and New License Applicants**
APPLICATION SECTION:	**14.2**
DATE of RAI issue:	**7/28/2008**

QUESTION NO.: 14.02-24

Section 14.2.8.1 of the US-APWR DCD designates the Rod Cluster Control Assembly (RCCA) Misalignment Measurement and Radial Power Distribution Oscillation Test documented in DCD Section 14.2.12.2.4.5 as a "First-Plant-Only Test."

DCD Section 14.2.8.1.3 indicates that:

"RCCA misalignment measurements and radial power distribution oscillation tests are performed in the power ascension test phase for the first US-APWR. The test is required only for the first plant because the stability of the radial power distribution is dependent upon the core diameter only. This test validates the calculation tools and instrument responses."

The NRC staff notes that, while the stability of the radial power distribution is dependent upon the core diameter only, the instrument responses to the RCCA test may be plant-specific.

Accordingly, MHI is requested to provide additional information in the DCD to justify its basis for concluding (1) that the RCCA Misalignment Measurement and Radial Power Distribution Oscillation Test should be considered as new, unique, or special test for a new design feature, and (2) that a test that validates calculation tools and instrument responses should only be performed on the first plant. Otherwise, Section 14.2.12.2.4.5 needs to be revised to have this test conducted on all plants.

ANSWER:

(1)
The US-APWR has the following new design features:

1) Large diameter core
2) RCCAs configuration
3) Instrument configuration

The stability of the radial power distribution oscillation is dependent upon the core diameter. On the other hand, the RCCA misalignment measurement is dependent upon the combination of

RCCAs and Instrument configurations.
Therefore, MHI concluded that the RCCA Misalignment Measurement and Radial Power Distribution Oscillation Test should be considered as new, unique, or special test for a new design feature.

(2)
The results of these tests can show that calculation tools are applicable to the prediction of power oscillation stability and to the prediction of power distribution during RCCAs misalignment. The result of the RCCA Misalignment Measurement test can also demonstrate the ability to identify RCCAs misalignment with instrument response. MHI believes that RCCAs misalignment can be detected with neutron detectors on a generic basis in the US-APWR, since the design features described above are not plant specific.

Therefore, MHI concludes that the designation of the RCCA Misalignment Measurement and Radial Power Distribution Oscillation Test as a "First-Plant-Only Test" is appropriate.

Moreover, as mentioned in RAI response 14.02-23, subsequent COL applicants will provide a justification that the results of the first-plant only tests are applicable to their plant and are not required to be performed.

MHI will revise the first objective of section 14.2.12.2.4.5 to clarify the scope of the statement.

Impact on DCD

The first objective of section 14.2.12.2.4.5 on page 14.2-148 will be revised as follows:

1. To verify the ~~sensitivity~~ **ability** of the incore and excore nuclear instrumentation systems to **detect** RCCA misalignment.

Impact on COLA

There is no impact on the COLA.

Impact on PRA

There is no impact on the PRA