16-5, KONAN 2-CHOME, MINATO-KU TOKYO, JAPAN

January 21, 2010

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-10014

Subject: Amended MHI's Response to US-APWR DCD RAI No.502-3979

References: 1) "Request for Additional Information No. 502-3979 Revision 2, SRP Section: 04.05.02 — Reactor Internal and Core Support Structure Materials", dated December 1, 2009

- 2) "MHI's Response to US-APWR DCD RAI No.502-3979 Revision 2, UAP-HF-10009", dated January 18, 2010
- 3) "MHI's Response to US-APWR DCD RAI No.414-3102 Revision 1, UAP-HF-09421", dated August 7, 2009

With this letter, Mitsubishi Heavy Industries, Ltd. ("MHI") transmits to the U.S. Nuclear Regulatory Commission ("NRC") a document entitled "Amended Response to Request for Additional Information No.502-3979 Revision 2."

Enclosed is the amended response to the Question No.4.5.2-18 of the RAI (Reference 1).

This response amends the previously transmitted answers submitted under MHI Reference UAP-HF-10009 on January 18, 2010 (Reference 2). "Table 1 Core barrel welding locations and methods" is corrected by deletion of the row of "Radial key to LCSP", because the shrink-fit process and threaded fasteners are applied for this part as stated in the previous response to the RAI No.414-3102 Question 04.05.02-10 (Reference 3).

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

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Mitsubishi Heavy Industries, LTD.

Enclosure:

1. Amended Response to Request for Additional Information No.502-3979 Revision 2

CC: J. A. Ciocco

C. K. Paulson

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Contact Information
C. Keith Paulson, Senior Technical Manager
Mitsubishi Nuclear Energy Systems, Inc.
300 Oxford Drive, Suite 301 Monroeville, PA 15146 E-mail: ck_paulson@mnes-us.com Telephone: (412) 373-6466

Enclosure 1

UAP-HF-10014 Docket No. 52-021

Amended Response to Request for Additional Information No.502-3979 Revision 2

January 2010

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

1/21/2010

US-APWR Design Certification

Mitsubishi Heavy Industries

Docket No. 52-021

RAI NO .:

NO. 502-3979R2

SRP SECTION:

04.05.02 - Reactor Internal and Core Support Structure

Materials

APPLICATION SECTION:

4.5.2

DATE OF RAI ISSUE:

12/01/2009

QUESTION NO.: RAI 4.5.2-18

In its response to US-APWR DCD RAI 414-3102 Question 04.05.02-13, MHI stated that the electron-beam welding process is used for the core-barrel welding, and that this welding is performed without adding weld materials. The staff needs additional information to determine compliance with GDC 1 as it relates to structures, systems, and components being designed, fabricated, erected, constructed, tested, and inspected to quality standards commensurate with its importance to safety.

Please specify the codes and standards that will be used to qualify the welding procedures and welders/welding operators for the core-barrel welds?

ANSWER:

Welding locations on the core barrel and welding methods are summarized in Table 1.

Electron Beam Welding (EBW) process is applied for the weld of the core barrel flange to the upper barrel, axial welding of upper core barrel and welds for lower barrel segments.

Gas Tungsten Arc Weld (GTAW) (= Tungsten Inert Gas (TIG) weld) is applied for the weld of core barrel to LCSP. GTAW process is also applied for fix of attachments to the core barrel such as base pads for the Irradiation specimen guides.

The codes and standards that will be used to qualify the welding procedures and welders/welding operators for the core-barrel welds are as follows.

-ASME BOILER & PRESSURE VESSEL CODE Section III, Division 1- Subsection NG, NG-2400 for Welding material and NG-4300 for Welding procedure and Welders/Welding operators.

-ASME BOILER & PRESSURE VESSEL CODE Section IX, Part QW-200 for welding procedure and Part QW-300 for Welders/Welding operators.

Refer to QW-256 for GTAW and QW-260 for EBW.

Table 1 Core Barrel welding locations and methods

Locations or Parts	Welding method
CB flange to upper core barrel	EBW
upper core barrel axial	EBW
upper core barrel to lower core barrel	GTAW(TIG)
lower core barrel segments axial / circumferential	EBW
lower core barrel to LCSP	GTAW(TIG)
outlet nozzle to upper core barrel	GTAW(TIG)
UCP alignment pins or NR alignment pins to CB	GTAW(TIG)
protection guides / pads for irradiation specimen guides to CB	GTAW(TIG)
safety Injection pad to CB	GTAW(TIG)

• Impact on DCD

There is no impact on the DCD.

• Impact on COLA

There is no impact on the COLA.

• Impact on PRA

There is no impact on the PRA.