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

December 9, 2009

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-09554

Subject: MHI's Response to US-APWR DCD RAI No.484-3850 Revision 1

References: 1) "Request for Additional Information No.484-3850 Revision 1, SRP Section: 09.04.01 – Control Room Area Ventilation System, Application Section: DCD Section 9.4.1" dated November 9, 2009.

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.484-3850 Revision 1".

Enclosed is the response to one RAI 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,

Y. Ogata

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

Enclosure:

1. Response to Request for Additional Information No. 484-3850, Revision 1

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

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

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Docket No. 52-021
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Enclosure 1

UAP-HF-09554
Docket Number 52-021

Response to Request for Additional Information
No. 484-3850, Revision 1

December, 2009

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

12/09/2009

US-APWR Design Certification

Mitsubishi Heavy Industries

Docket No. 52-021

RAI NO.:	**NO.484-3850 REVISION 1**
SRP SECTION:	**09.04.01 –CONTROL ROOM AREA VENTILATION SYSTEM**
APPLICATION SECTION:	**DCD SECTION 9.4.1**
DATE OF RAI ISSUE:	**11/09/2009**

QUESTION NO. : 09.04.01-15

FOLLOW-UP RAI

The staff finds the applicant's response to Question 09.04.01-10 for RAI No. 442-3378, Revision 1 dated September 18, 2009 (MHI Ref. UAP-HF-09456, ML092650173) as incomplete.

The staff has reviewed the applicant's response to Question 09.04.01-10 and performed a summarily review of the differences between ASME AG-1-2003 and ASME AG-1- 1997.

The staff notes that the applicant in its response did not include a review of the changes incorporated into ASME AG-1-2003 by the Addenda of AG-1a-2000. This addenda, added to the standard Section HA which pertains to the Housings of the ESF filter trains and air handling units of the MCR HVAC system. The effects of using Section HA in the design of the components that comprise the MCR HVAC system are comprehensive in scope. The applicant noted and the staff concurs that "...ASME AG-1a-2000 addenda added Section HA..." and applies and is suitable for use in the design Non-ESF filter trains per Revision 2 of RG 1.140. However, this staff endorsement is not applicable to ESF filter trains and other components that comprise the MCR HVAC system.

Substantive changes were made to Section FB "Medium Efficiency Filters" in ASME AG- 1-2003 from Section FB of AG-1-1997. Section FB impacts the design pre-filters of both ESF and Non-ESF filter trains and the MCR air handling units. In its response to Question 09.04.01-10 the applicant summarily described these changes with the Comment, "Errata to the 2003 edition re-instated the 1997 edition version of this section". These changes are substantive and can not be considered errata. The RAI response comment is a confusing statement that provides no technical justification as to why Section FB is suitable for use in the design of the US-APWR.

In addition, as the applicant noted in its RAI response, ASTM A90 and ASTM A653 have superseded the ASTM standards of AG-1-1997 for the zinc coated (galvanized) materials of Tables CA-3230, CA-3310 and CA-3410. Again, the applicant failed to provide technical justification as to why these newer ASTM standards are suitable for use in the design of the US-APWR.

To date, the staff has not endorsed the use of AG-1-2003. The SRP acceptance criteria includes the following words:

"The SRP is not a substitute for the NRC's regulations, and compliance with it is not required. However, an applicant is required to identify differences between the design features, analytical techniques, and procedural measures proposed for its facility and the SRP acceptance criteria and evaluate how the proposed alternatives to the SRP acceptance criteria provide acceptable methods of compliance with the NRC regulations." (from page 6.4-4 of SRP 6.4).

The staff notes that in its review of the DCD, that Chapters 6 and 9 invoke AG-1-2003 directly or by reference in the following subsections and tables 6.4.5, 6.5.1.5, 6.5.1.5.1, Table 6.4-2, Table 6.5-3, 9.4.1, 9.4.1.1.1, 9.4.1.4, 9.4.3.4.4, 9.4.5.1.1.1, 9.4.5.4.1, 9.4.6.4.4.1 and 9.4.6.4.4.2.

Consistent with the above SRP excerpt, the staff requests that the applicant provide a comprehensive technical justification (as applicable) for the use of AG-1-2003 and AG- 1a-2000, in lieu of AG-1-1997, in the design of the US-APWR for the above DCD subsections and Tables. In addition, the staff requests that the applicant amend (as necessary) the relevant DCD subsections and Tables to bring closure to these issues identified.

ANSWER:

ASME AG-1a-2000, Addenda to ASME AG-1-1997 *Code on Nuclear Air and Gas Treatment*, added Section HA "Housings" to ASME AG-1. This section provides requirements for the design, construction, performance, fabrication, inspection, acceptance testing, and quality assurance for housings and housing supports in nuclear safety-related air treatment systems. Section HA was subsequently incorporated into ASME AG-1-2003 *Code on Nuclear Air and Gas Treatment* without change from Addenda AG-1a-2000.

As stated in the response to RAI Question 09.04.01-10, and concurred with by NRC staff in Question 09.04.01-15, ASME AG-1a-2000 is endorsed in Regulatory Guide 1.140, Revision 2, *Design, Inspection, and Testing Criteria for Air Filtration and Adsorption Units of Normal Atmosphere Cleanup Systems in Light-Water-Cooled Nuclear Power Plants,* for use in the design, inspection and testing of non-ESF filter trains.

For ESF filter trains, the US-APWR DCD references Regulatory Guide 1.52, Revision 3, *Design, Inspection, and Testing Criteria for Air Filtration and Adsorption Units of Post-Accident Engineered-Safety-Feature Atmosphere Cleanup Systems in Light-Water-Cooled Nuclear Power Plants.* RG 1.52 endorses the use of ASME AG-1a-2000, specifically Section HA "Housings," in Regulatory Position C.4 (4.6, 4.7, and 4.8) related to the arrangement of filter and adsorber banks, construction and design of filter housings, and design of water drains from housings. RG 1.52 also endorses the use of AG-1a-2000 (Section HA) in Regulatory Position C.5 for maintainability criteria and accessibility considerations related to design of ESF atmosphere cleanup systems.

Since ASME AG-1a-2000 was incorporated into AG-1-2003 without change, the use of the 2003 edition of the Code in the US-APWR DCD is consistent with the RG 1.52 and RG 1.140 endorsement of the use of AG-1a-2000.

Although changes were made to Section FB "Medium Efficiency Filters" in the 2003 edition of the Code, the Errata issued against ASME AG-1-2003 in February 2004 directed that Section FB of the 1997 edition (pgs. 367-382) be reinstated and replace Section FB as it appeared on pgs. 338-350 in the 2003 edition. As a result, AG-1-2003 Section FB is identical to AG-1-1997 Section FB. Therefore, the requirements for prefilters in the 2003 edition are consistent with the ASME AG-1-1997 requirements as endorsed by RG 1.52 and RG 1.140.

ASME AG-1-1997 Section CA "Conditioning Equipment" identifies ASTM A525[Note1], ASTM A526 [Note2], and ASTM A527 [Note3] as acceptable specifications for hot-dip process zinc-coated steel sheet materials. These specifications were withdrawn by ASTM in 1994 and replaced by ASTM A653 [Note4]. ASTM A653 consolidates the requirements of ASTM A525, A526, and A527 into a single specification and provides

identical requirements for coating designations and associated coating thickness (in terms of mass) requirements, and provides enhanced requirements for chemical and mechanical properties for the steel sheet, compared to the superseded specifications. In addition, material can no longer be procured using the withdrawn specifications. ASME AG-1-2003 was updated to cite ASTM A653 in Section CA in lieu of the withdrawn specifications.

ASTM A90 [Note5] provides the standard test method for zinc-coatings and was cited in the Code beginning with the 2003 edition. ASTM A90 was not cited in the Code in the 1997 edition, but was referenced in the listed ASTM specifications for zinc-coated materials. This was an editorial change to cite ASTM A90 directly in the Code.

Based on the above evaluation, and the response to RAI Question 09.04.01-10, the changes to the Code from the 1997 edition to the 2003 edition have been determined to be either endorsed in RG 1.52 and RG 1.140 (i.e., Section HA), or consisted of corrections, clarifications, and updates that do not affect the technical or administrative requirements of the Code. Therefore, the use of the 2003 edition of the Code, rather than the 1997 edition referenced in the NRC guidance documents, is justified.

Note1: ASTM A525-93, *Specification for General Requirements for Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process* (Withdrawn 1994)

Note2: ASTM A526/A526M-90, *Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process, Commercial Quality* (Withdrawn 1994)

Note3: ASTM A527/A527M-90E01, *Specification for Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process, Lock-Forming Quality* (Withdrawn 1994)

Note4: ASTM A653/A653M-03, *Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process*

Note5: ASTM A90/A90M-01, *Standard Test Method for Weight [Mass] of Coating on Iron and Steel Articles with Zinc or Zinc-Alloy Coatings*

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.