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

November 10, 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-09517

Subject: MHI's Response to US-APWR DCD RAI No.467-3609 Revision 1

References: 1) "Request for Additional Information No. 467-3609 REVISION 1, SRP Section: 09.05.04 - Emergency Diesel Engine Fuel Oil Storage and Transfer System, Application Section: Tier 2 Section 9.5.4," dated October, 6, 2009

With this letter, Mitsubishi Heavy Industries, Ltd. ("MHI") transmits to the U.S. Nuclear Regulatory Commission ("NRC") a document entitled "Responses to Request for Additional Information No. 467-3609 Revision 1."

Enclosed are the responses 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.467 Revision 1

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

D081
NRO

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

Docket No. 52-021
MHI Ref: UAP-HF-09517

Enclosure 1

UAP-HF-09517
Docket No. 52-021

Responses to Request for Additional Information No. 467-3609
Revision 1

November 2009

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

11/10/2009

US-APWR Design Certification

Mitsubishi Heavy Industries

Docket No. 52-021

RAI NO.:	**NO. 467-3609 REVISION 1**
SRP SECTION:	**09.05.04 – Emergency Diesel Engine Fuel Oil Storage and Transfer System**
APPLICATION SECTION:	**9.5.4**
DATE OF RAI ISSUE:	**10/6/2009**

RAI 09.05.04-43

Background

To assure compliance with GDC 17 as it relates to the capability of the diesel engine fuel oil system (in this case, the gas turbine generator) to meet independence and redundancy criteria, SRP Section 9.5.4 references Regulatory Guide 1.137 as acceptable guidance with respect to the fuel oil properties and testing program. In turn, RG 1.137 cites ANSI N195-1976 (ANS-59.51) as a reference. In addition RG 1.137 (C.2.a) mentions ASTM D975 as the definitive standard for this testing both old and new fuel oil. This standard contains reference to many additional standards which contain the details of various procedures and criteria. The procedure distinctly cited in ASTM D975 (Table 1 and Section 5.1.3) for measurement of water and sediment is ASTM D2709, which describes centrifugation of a fuel oil sample and measurement of the water and solids separated from the bulk fuel. In Technical Specification 5.5.13, the applicant mentions a visual inspection of new fuel oil for "...clear and bright appearance," but does not mention the centrifugation test of ASTM D2709. The staff requested clarification of this testing procedure in RAI 317-2061, Question No. 09.05.04- 3 (Reference 1). The applicant's response (Reference 2) indicated that the visual test was based on ASTM D4176, which describes an approximate method for field-testing fuel oil. The applicant claimed that this approximate method was justified in ANSI N195- 1976 as an acceptable alternative to the quantitative centrifugation test of ASTM D2709. However, the staff cannot find any justification in ANSI N195-1976 for this reasoning. Because RG 1.137 specifically references ASTM D975, and the only procedure cited therein is the centrifugation method in ASTM D2709, the staff does not accept the approximate visual method of ASTM D4176 without further justification explaining why it provides an acceptable alternative to the centrifugation test of ASTM D2709.

Requested Information

Describe how the testing of water and sediment in new fuel will satisfy the guidelines of ASTM D975, as recommended in RG 1.137

References

1. "Request for Additional Information No. 317-2061 Revision 1, SRP Section: 09.05.04 – Emergency Diesel Engine Fuel Oil Storage and Transfer System, Application Section: Section 9.5.4" dated April 6, 2009. (ADAMS Accession No. ML090960765)

2. Letter from Yoshiki Ogata, MHI, to NRC dated June 9, 2009; Docket No. 52-021 MHI Ref: UAP-HF-09291; Subject: MHI's Response to US-APWR DCD RAI No. 317 (ADAMS Accession No. ML091660231).

ANSWER:

The tests performed on the new fuel oil described in Technical Specification (TS) 5.5.13 will be revised to be consistent with those recommended by ASTM D975-77 using ASTM D2709-96 (Reapproved 2006) for the new fuel oil verification of water and sediment content within limits and deleting reference to ASTM D4176-04^{E1}. The TS Bases for SR 3.8.3.3.c, will be revised to state "Verify that the new fuel oil has a water and sediment content within limits when tested in accordance with ASTM D2709-96(Reapproved 2006)."

Impact on DCD

DCD Section 9.5.4.4, fifth paragraph will be to read as follows:

9.5.4.4 Inspection and Testing Requirements

Prior to addition of new fuel oil into the storage tanks, samples will be tested for specific gravity, cloud point, ~~and~~ viscosity, and **water and sediment content** ~~will be visually inspected for appearance~~ in accordance with ASTM D975 limits.

DCD Chapter 16, SR 3.8.3.3.c will be revised to read as follows:

c. Verify that the new fuel oil has ~~a clear and bright appearance with proper color when tested in accordance with ASTM D4176-04^{E1} or~~ a water and sediment content within limits when tested in accordance with ASTM D2709-96(Reapproved 2006)(Ref. 6).

Impact on COLA

There are impacts on the COLA to incorporate the DCD change.

Impact on PRA

There is no impact on the PRA

This completes MHI's response to the NRC's question.