MITSUBISHI HEAVY INDUSTRIES, LTD.

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

TOKYO, JAPAN

February 1, 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-10025

#### Subject: MHI's Response to US-APWR DCD RAI No. 505-4030 REVISION 2

References: 1) "Request for Additional Information No. 505-4030 REVISION 2, SRP Section: 09.05.08 - Emergency Diesel Engine Combustion Air Intake and Exhaust System, Application Section: 9.5.8," dated December, 15, 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. 505-4030 REVISION 2."

Enclosed are the responses to 3 RAIs 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,

4. agata

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

Enclosure:

1. Responses to Request for Additional Information No. 505-4030 REVISION 2

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

Docket No. 52-021 MHI Ref: UAP-HF-10025

## **Enclosure 1**

## UAP-HF-10025 Docket No. 52-021

# Responses to Request for Additional Information No. 505-4030 REVISION 2

February 2010

#### **RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION**

2/1/2010

US-APWR Design Certification
Mitsubishi Heavy Industries
Docket No. 52-021
NO. 505-4030 REVISION 2

RAI NO.: SRP SECTION:

09.05.08 - EMERGENCY DIESEL ENGINE COMBUSTION AIR INTAKE AND EXHAUST SYSTEM

APPLICATION SECTION: DATE OF RAI ISSUE: SECTION 9.5.8 12/15/2009

### QUESTION NO.: 09.05.08-23

Subsection B.3.3 of the "Qualification and Test Plan of Class 1E Gas Turbine Generator System" (MUAP-07024-P) states that the allowable ambient air conditions for the GTG include a temperature range of -20°C to 50°C, or -4°F to 122°F. According to DCD Table 2.0-1, Key Site Parameters, the ambient design air temperatures for the USAPWR are -10°F (1% exceedance) and -40°F (0% exceedance). These design temperatures should be reconciled.

## ANSWER:

The temperature range in Subsection B.3.3 of the "Qualification and Test Plan of Class 1E Gas Turbine Generator System" (MUAP-07024-P) indicates allowable ambient temperature for GTG package. This temperature is limited to maintain appropriate behavior of GTG component. On the other hand, -40°F condition of the US-APWR is considered in inlet air only, because GTG room temperature is kept by HVAC system. Inlet air accepts -40°F air condition.

## 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.

#### **RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION**

2/1/2010

	US-APWR Design Certification
	Mitsubishi Heavy Industries
	Docket No. 52-021
RAI NO.:	NO. 505-4030 REVISION 2
SRP SECTION:	09.05.08 - EMERGENCY DIESEL ENGINE COMBUSTION AIR INTAKE AND EXHAUST SYSTEM
APPLICATION SECTION:	SECTION 9.5.8
DATE OF RAI ISSUE:	12/15/2009

#### QUESTION NO. : 09.05.08-24

Subsection B.3.3 of the "Qualification and Test Plan of Class 1E Gas Turbine Generator System" (MUAP-07024-P) states that the allowable ambient air conditions for the GTG include a level of "foreign matters in the intake air" of less than 10µm. This size particulate can be contained in windblown dust. RAI 09.05.08-19 requested that the applicant justify the removal of the combustion air intake filter from the GTG design, but did not reference this manufacturer's design requirement. The justification provided for RAI 09.05.08-19 should also address compliance with this design requirement.

#### ANSWER:

The "less than 10µm" itself is not limiting value, and slightly larger matter than 10µm is acceptable. This value is intended to require that GTG is located in general atmospheric environment other than atmospheric pollution, dust-filled air etc.

Subsection B.3.3 of the "Qualification and Test Plan of Class 1E Gas Turbine Generator System" (MUAP-07024-P) will be revised to incorporate above requirement.

In addition, screens are installed at inlet of enclosure and inlet of gas turbine engine to prevent invasion of foreign object.

#### 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.

#### **RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION**

2/1/2010

US-APWR Design Certification
Mitsubishi Heavy Industries
Docket No. 52-021
NO. 505-4030 REVISION 2

RAI NO.: SRP SECTION:

09.05.08 - EMERGENCY DIESEL ENGINE COMBUSTION AIR INTAKE AND EXHAUST SYSTEM

APPLICATION SECTION: DATE OF RAI ISSUE: SECTION 9.5.8 12/15/2009

### QUESTION NO. : 09.05.08-25

The MHI response to RAI 09.05.08-16 included a new statement to be added to DCD Tier 1, Subsection 2.6.4.2, that describes the protection provided for the turbine intake and exhaust openings above the roof of the power source building. There are also roof-top openings for the building/GTG cooling air inlet and exhaust that must also be protected from natural phenomena to ensure their safety function. The description should be revised to include the provisions for the cooling air inlet and exhaust openings against natural phenomena.

Reference: MHI's Response to US-APWR DCD RAI No. 321 (321-2271), MHI Ref: UAP-HF-09295, dated June 9, 2009, ML091630626.

#### **ANSWER:**

The description of DCD Tier 1, Subsection 2.6.4.2, will be revised to include the provisions for the cooling air inlet and exhaust openings against natural phenomena.

#### Impact on DCD

Last paragraph of Subsection 2.6.4.2 of the DCD Tier 1 will be revised as below:

The Class 1E GTG combustion air intake and exhaust system is capable of supplying an adequate quantity of combustion air to the GT and of disposing the exhaust gases without creating an excessive backpressure on the GT when operating at 110% of nameplate rating. <u>The Class 1E GTG ventilation/cooling air intake and exhaust system is capable of cooling for GTG operation.</u> The turbine intake and exhaust <u>and ventilation/cooling air intake and exhaust</u> openings are above the roof of the power source buildings (PS/B), and the portion of the piping/ducts above the roof is protected by a guard structure against precipitation and tornado missiles.

#### Impact on COLA

There is no impact on the COLA.

#### Impact on PRA

There is no impact on the PRA.