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January 29, 2010

Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Attention: Mr. Jeffery A. Ciocco

Docket No. 52-021
MHI Ref: UAP-HF-10021

Subject: Amended MHI's Response to US-APWR DCD RAI No. 327-2401 Revision 1

References: 1) "Request for Additional Information No. 327-2401 Revision 1, SRP Section: 09.04.01 – Control Room Area Ventilation System, Application Section: 9.4.1" dated April 8, 2009.
2) MHI's Responses to US-APWR DCD RAI No. 327-2401 Revision 1, UAP-HF-09323, dated June 19, 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. 327-2401 Revision 1."

Enclosed is the response to one question of the RAI (Reference 1).

This response amends the previously transmitted answers submitted under MHI Reference UAP-HF-09323 on June 9, 2009 (Reference 2) in order to correct the distance between the CRE fresh air intake and the exhaust from the emergency gas turbine generators. This amended response is based on the result of conference call with NRC held on January 21, 2010.

Please contact Dr. C. Keith Paulson, Senior Technical Manager, Mitsubishi Nuclear Energy Systems, Inc. if the NRC has questions concerning any aspect of this submittal. His contact information is provided below.

Sincerely,



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

Enclosures:

1. Amended Response to Request for Additional Information No. 327-2401, Revision 1

DOB
NRC

CC: J. A. Ciocco
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Contact Information

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Docket No. 52-021
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Enclosure 1

UAP-HF-10021
Docket Number 52-021

Amended Response to Request for Additional Information
No. 327-2401, Revision 1

January, 2010

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

01/29/2010

US-APWR Design Certification

Mitsubishi Heavy Industries

Docket No. 52-021

RAI NO.: NO.327-2401 REVISION 1
SRP SECTION: 09.04.01 – Control Room Area Ventilation System
APPLICATION SECTION: Tier 2 DCD FSAR Section 9.4.1
DATE OF RAI ISSUE: 04/08/2009

QUESTION NO. : 09.04.01-9

The staff finds the applicant's response for RAI #63-849/Question No.09.04.01-32 as incomplete. The incompleteness of the applicant's response exists in two specific areas as captured in (a) and (b) below.

(a) The applicant in its response to Question No. 09.04.01-32 replied with the words:

“For each GTG, there are two exhaust sources. One is the GTG enclosure ventilation exhaust and the other is the GTG exhaust. There are also two air inlets for each GTG. One is the GTG room's ventilation supply air inlet and the other is a dedicated combustion air supply inlet for the GTG. The closest GTG room ventilation fan exhaust vent is approximately 26 ft. away horizontally from the CRE air inlet. This is well above the minimum of 10 ft. required according to the International Mechanical Code (Section 401.5.1)”

The response fails to provide the distance of the closest GTG exhaust to the CRE fresh air intakes. This exhaust source would contain the products of combustion and would pose more of a threat to Main Control Room habitability than the exhaust source discussed in the applicant's response (i.e. room ventilation fan exhaust vent). The staff requests that the applicant provide the vertical and horizontal distance of the closest GTG exhaust to the CRE fresh air intakes. In addition, since the DCD is using the International Mechanical Code (Section 401.5.1) as its standard for addressing the issue of external threats to main control room habitability and the positioning of the CRE fresh air intakes, then Mechanical Code (Section 401.5.1) should be listed in the references of DCD section 9.4.8 “References”

(b) The staff also notes that the applicant failed to address the issue identified in section 3.11 of Regulatory Guide 1.29 which reads:

“If the atmosphere surrounding the plant could contain significant environmental contaminants, such as dusts and residues from smoke cleanup systems from adjacent coal-burning power plants or industry, or is a salty environment near an ocean, the design of the system should consider these contaminants and prevent them from affecting the operation of any ESF atmosphere cleanup system.”

The staff noted this apparent deficiency in the original Question No.09.04.01-32 when it wrote “... the staff noted that since the sighting of a power plant could impact the positioning of the fresh air intakes due local industry (e.g. coal-burning power plants) the wording of COL 9.4.1 (sic) appears to be too limiting.”

COL 9.4(1) in Revision 0 of the US APWR DCD read "COL 9.4(1) The COL Applicant is to provide proper MCR personnel protection against toxic gases if warranted by a site specific chemical survey."

Revision 1 of the DCD deleted COL 9.4(1) for reasons unknown to the staff.

The staff requests that the applicant address the original concern (i.e. the design of the system should consider these contaminants) of section 3.11 of Regulatory Guide 1.29 as captured in Question No. 09.04.01-32. The staff also requests information as to why the applicant deleted COL 9.4(1) from Revision 1 of the US-APWR DCD.

ANSWER:

(a) The CRE air inlets are located on the east and west wall at elevation in between 50'-2" & 65'-0" in the reactor building (R/B). For reference, see Figure 6.4-5 and 6.4-6 of DCD Section 6.4. There are no potential sources of stored hazardous materials, which can enter the CRE through the two air inlet locations. As recommended by RG 1.78, the storage areas of hazardous chemicals (that include ammonia or organic amines, and hydrazine) are sited at a distance greater than 330 ft. from the air inlets of the CRE (Refer to DCD Subsection 6.4.4.2.).

The closest potential source of fresh air contamination is the exhaust from the Emergency Gas Turbine Generators (GTGs) in the power source buildings (PS/Bs) located adjacent to the R/B along the east and west walls. There are three GTGs in each PS/B. The roofs of the PS/Bs are at elevation 39'-6". For each GTG, there are two exhaust sources. One is the GTG room ventilation exhaust and the other is the exhaust from the GTG. There are also two air inlets for each GTG. One is the GTG room's ventilation supply air inlet and the other is a dedicated combustion air supply inlet for the GTG. ~~The GTG room ventilation exhaust vent is the closest to the CRE air inlet. The GTG exhaust is further away.~~ The horizontal distance of the closest GTG exhaust to the CRE fresh air intakes is 2672 feet and the vertical distance is 1 foot below. And the horizontal distance of the closest GTG room ventilation fan exhaust vent to the CRE fresh air intakes is 7265 feet and the vertical distance is 42 feet. This is well above the minimum of 10 ft. required according to the International Mechanical Code (Section 401.5.1). This is sufficient to prevent any GTG room ventilation exhaust air and GTG exhaust from entering the supply air inlet for the CRE. The appropriate distances will be maintained between the exhausts discharge points and supply air inlets for the GTG and GTG room to prevent short circuiting of the exhaust into the supply air inlet.

(b) Regulatory Guide 1.52 (not RG 1.29) "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" recommends that the air intakes for all ESF atmosphere cleanup systems be designed such as to prevent adverse effects from any environmental contaminants. As stated in Section 9.4.1, the Main Control Room HVAC System is compliant with Regulatory Guide 1.52. A full compliance matrix of US-APWR design features which meet RG 1.52 is presented in Section 6.4, Table 6.4-2 "Main Control Room Emergency Filtration System." Included in the safety design bases for the MCR HVAC system is the capacity to withstand the effects of adverse environmental conditions. However, this design requirement will be made more specific in order to encompass the requirements for air intake placement according to RG 1.52. A COL item 6.4(1) addresses, the design and location of air intakes for the MCR HVAC System in case the presence of any potential environmental contaminants following a site-specific survey of local industry and environmental conditions.

In order to avoid duplication of COL 9.4(1) with COL 6.4(1), COL 9.4(1) is deleted from DCD Revision 1. COL 9.4.(1) & COL 6.4.(1) are same or have similar meaning.

COL 6.4(1) in Revision 1 of the USAPWR DCD read "The COL Applicant is responsible to provide details of specific toxic chemicals of mobile and stationary sources within the requirements of RG 1.78 (Ref 6.4-4) and evaluate the control room habitability based on the recommendation of RG 1.78 (Ref 6.4-4).

Impact on DCD

International Mechanical Code (Section 401.5.1) will be listed in the reference DCD section 9.4.8 as following:

"9.4.8-236 International Mechanical Code, 2003 Edition."

The following description will be added after the last paragraph of DCD Subsection 9.4.1.3.

"The closest potential source of fresh air contamination is the exhaust from the Emergency Gas Turbine Generators (GTGs). For each GTGs, there are two exhaust sources which are the GTG room ventilation exhaust and the exhaust from the GTG. The minimum horizontal distance from the GTG exhausts to the MCR HVAC system's outside air intakes is approximately 72 feet. And the minimum horizontal distance from the GTG room ventilation fan exhaust vents to the outside air intakes is approximately 65 feet. These are well above the minimum of 10 ft. required according to the International Mechanical Code (Ref. 9.4.8-26)."

Impact on COLA

There is no impact on the COLA.

Impact on PRA

There is no impact on the PRA.