MITSUBISHI HEAVY INDUSTRIES, LTD.
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TOKYO, JAPAN

August 24, 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-09429

Subject: MHI's Responses to US-APWR DCD RAI 435-3275 Revision 1

Reference: 1) "REQUEST FOR ADDITIONAL INFORMATION 435-3275 REVISION 1, SRP Section: 10.02 – Turbine Generator, Application Section: 10.2, dated July 30, 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 435-3275 Revision 1."

Enclosed are the responses to a 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. Responses to Request for Additional Information 435-3275 Revision 1

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

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Docket No. 52-021
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Enclosure 1

UAP-HF-09429
Docket No. 52-021

Responses to Request for Additional Information No. 435-3275
Revision 1

August 2009

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

8/24/2009

US-APWR Design Certification

Mitsubishi Heavy Industries

Docket No. 52-021

RAI NO.: NO. 435-3275 REVISION 1

SRP SECTION: 10.02 TURBINE GENERATOR

APPLICATION SECTION: 10.2

DATE OF RAI ISSUE: 7/30/2009

QUESTION NO.: 10.02-2

Supplemental RAI 10.2 -1
US-APWR_Supplemental RAI 10.2-1:
Item 2.D of the SRP Section 10.2.III, "Review Procedures," specifies that the backup electrical overspeed trip system may use the same sensing techniques as the electrohydraulic (i.e., DEH) control system. However, the SRP specifies that the electrical overspeed emergency system circuitry is reviewed to confirm that the control signals from the two systems are isolated from, and independent of, each other. Therefore, in US-APWR RAI 10.2-2 (No. 237-2141), dated February 26, 2009, the NRC staff requested the applicant to provide additional information: a) regarding sharing of common components or process inputs, b) use of software for the triple processors or performing trip logic actuation, c) diversity and defense-in-depth to defend against a common cause failure (CCF) of the triple processor functions, and d) schematic and logic diagram.

In its response to US-APWR-RAI 10.2-2, in a letter dated March 25, 2009, Mitsubishi provided the following response:

- The DEH control system and the emergency back-up electrical overspeed trip system have dedicated triple redundant speed sensors for each system, and each system has redundant processors and separate input/output (I/O) module.

The staff finds the response acceptable, since Mitsubishi indicated that the two electrical systems do not share common components or process inputs.

However, the staff needs clarity on whether the two electrical systems (i.e., DEH and the emergency overspeed electrical overspeed system) derive their power supplies from the same source. If they have the same source of power supplies and if that power source is not available, this event will eliminate the defense-in-depth of having the two electrical overspeed systems, and also will eliminate the diverse and independent emergency overspeed systems. Therefore, the staff requests Mitsubishi, to provide clarification whether these two electrical systems share the same power source. If so, please explain, with proper justification, how they meet the principles of defense-in-depth and diversity.

ANSWER:

The emergency back-up electrical overspeed trip system and the DEH control system are powered from two non-Class 1E UPSs. Even if one UPS fails, both systems can still work with being powered by another UPS. As described in DCD Subsection 7.1.1.10, these UPSs are backed-up by station batteries and by the alternate ac power source. Therefore, these electric power supply systems meet the principles of defense-in-depth and diversity.

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.