


MITSUBISHI HEAVY INDUSTRIES, LTD.
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TOKYO, JAPAN

March 19, 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-09101

Subject: MHI's Second Response to US-APWR DCD No.161-1812 Revision 0

Reference: 1) "REQUEST FOR ADDITIONAL INFORMATION NO. 161-1812 REVISION 0, SRP Section: 16 - Technical Specifications Application Section: 16, QUESTIONS for Technical Specification Branch (CTSB)" dated January 21, 2009
2) Letter MHI Ref: UAP-HF-09059 from Y. Ogata (MHI) to U.S. NRC, "MHI's Responses to US-APWR DCD RAI No.161-1812 Revision 0" dated February 20, 2009

With this letter, Mitsubishi Heavy Industries, Ltd. ("MHI") transmits to the U.S. Nuclear Regulatory Commission ("NRC") a document as listed in Enclosure.

Enclosed are the second responses to the RAIs contained within Reference 1. In the initial responses submitted with Reference 2, MHI committed to submit response to 16-117 within 30 days.

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

Sincerely,



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

Enclosure:

1. "Response to Request for Additional Information No. 161-1812 Revision 0"

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

*DO81
NRC*

Contact Information

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Docket No. 52-021
MHI Ref: UAP-HF-09101

Enclosure 1

UAP-HF-09101
Docket No. 52-021

Responses to Request for Additional Information
No.161-1812 Revision 0

March 2009

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

3/19/2009

US-APWR Design Certification

Mitsubishi Heavy Industries

Docket No.52-021

RAI NO.: NO.161-1812 REVISION 0
SRP SECTION: 16 – Technical Specifications
APPLICATION SECTION: TS SECTIONS 1.0, 3.0, 4.0, AND 5.0
DATE OF RAI ISSUE: 1/21/2009

QUESTION NO. : 16-117

Describe the process used and the results of applying the Criterion 4 of 10 CFR 50.36 (d)(2)(ii) to identify the structures, systems, components, and parameters for which LCOs were include in US-APWR TS.

The application of Criterion 4 of 10 CFR 50.36 (d)(2)(ii) is not discussed in the FSAR. The US-APWR FSAR states that the identification of the structures, systems, components, and parameters for which LCOs have been included in the US-APWR TS was based on screening criteria of 10 CFR 50.36 (d)(2)(ii). The criterion 4 of 10 CFR 50.36 (d)(2)(ii) is as follows: "structures, systems, and components which operating experience or probabilistic safety assessment has shown to be important to public health and safety." A few instances in the Bases section identify criterion 4 as the basis for the inclusion of the LCO. However, no additional analysis or discussion is provided regarding the application of this criterion. Additional discussion is needed regarding the process used and the results of the evaluations conducted to ensure that all structures, systems, and components which operating experience or probabilistic risk assessment has shown to be important to public health and safety have been included in the LCOs. The response to this information request should include the PRA evaluations used, criteria used to define structures, systems, and components important to public health and safety, and the list of structures, systems, and components identified by the PRA for inclusion in the TS LCO.

ANSWER:

Exhaustive review of risk important system structure and components (SSCs) identified by the PRA has been performed in accordance with Criterion 4 of 10 CFR 50.36 (d)(2)(ii). No additional SSCs to be included in the TS LCO have been identified from the PRA perspective, and it has been confirmed that the US-APWR TS LCO cover all risk important SSCs that need be controlled by the TS.

The process used to apply Criterion 4 is described below.

1) Risk important SSCs were chosen based on the criteria of risk importance criteria in accordance with NEI 00-04, that are Fussell Vesely (FV) importance equal or larger than 0.005 and risk achievement worth (RAW) equal or larger than 2. These criteria were applied to results of level 1 and level 2 PRA for both internal and external events.

2) For each of the risk important SSCs, the following criteria were considered to screen out the SSCs that are considered unnecessary to be controlled by the TS LCO.

- SSCs credited as back-up of frontline systems

The operability of SSCs credited as back-up of front-line systems become risk important when the operability of the associated frontline system degrades. For such SSCs, the operability or availability will be controlled by individual administrative controls, or by operating procedures that require to verify its operability when the associated frontline system degrades. Hence this type of SSCs will not necessarily be included in TS LCO.

- SSCs which their operability cannot be controlled by TS LCO

Operability of SSCs, such as stopping function of check valve in a normally operating line, cannot be confirmed during normal operation. In some cases the verification of such SSCs may increase the risk of causing an initiating event. These types of SSCs are excluded from candidates that need to be included in the TS LCO.

- SSCs which their operability is secured when the plant is normally operating

Example of this type of SSCs is ones that potentially cause LCO violation of other systems. Operability of such SSCs is consequentially controlled by LCO of other systems. Additional LCO for such SSCs are not necessary since the operability is already controlled. Another example of this type is SSCs that cause an initiating event when a risk significant failure occurs. The fact that the plant is under operating condition secures the operability of such SSCs, and therefore LCOs are unnecessary. Systems used for normal plant operation are included in this type.

As a result of reviewing risk important SSCs considering the criteria listed above, it has been confirmed that the US-APWR TS LCO covers all risk important SSCs as necessary.

Disposition of each risk important SSCs that will not be included in the TS LCO, will be presented in the face to face meeting scheduled in mid-April 2009.

Management of risk during low power and shutdown (LPSD) can be and is performed by combination of regulation by technical specification and voluntary administrative controls, and has successfully achieved safety operation. Especially, configuration risk management program (CRMP) is effective for adequately managing the risk from outages of risk important SSCs during LPSD. Based on this consideration, US-APWR LPSD risk will be managed by combination of TS and CRMP that is in accordance with NUMARC 91-06 "Guidelines for Industry Actions to Assess Shutdown Management". Risk important SSCs based on LPSD PRA can be managed by CRMP more adequately than TS, and therefore, additional inclusion of risk important SSCs to the TS LCO are considered unnecessary for LPSD.

Impact on DCD

There is no impact on DCD.

Impact on COLA

There is no impact on COLA.

Impact on PRA

There is no impact on PRA.