US-APWRRAIsPEm Resource

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Sent: Monday, January 14, 2013 1:50 PM
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Subject: US-APWR Design Certification Application RAI 986-6979 (9.2.2 & Chapter 16)
Attachments: US-APWR DC RAI 986 BPFP 6979.pdf

MHI,

The attachment contains the subject Request for Additional Information (RAI). This RAI was sent to you in draft form. Your licensing review schedule assumes technically correct and complete responses within 30 days of receipt of RAIs.

Please submit your RAI response to the NRC Document Control Desk.

Thank you,

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Hearing Identifier: Mitsubishi_USAPWR_DCD_eRAI_Public
Email Number: 51

Mail Envelope Properties (320204600EA7B9408FE833FF15E4FF7DC10020FC88)

Subject: US-APWR Design Certification Application RAI 986-6979 (9.2.2 & Chapter 16)
Sent Date: 1/14/2013 1:50:24 PM
Received Date: 1/14/2013 1:50:26 PM
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MESSAGE	495	1/14/2013 1:50:26 PM
image001.jpg	3989	
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Expiration Date:
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REQUEST FOR ADDITIONAL INFORMATION 986-6979

Issue Date: 1/14/2013

Application Title: US-APWR Design Certification - Docket Number 52-021

Operating Company: Mitsubishi Heavy Industries

Docket No. 52-021

Review Section: 09.02.02 - Reactor Auxiliary Cooling Water Systems
Application Section: 9.2.2 and Chapter 16

QUESTIONS

09.02.02-87

This is a follow-up to RAI 584-4468, Question 09.02.02-75 and RAI 343-2208, Question 09.02.02-18:
Section 10CFR52.47, "Content of Application," states that "the description shall be sufficient to permit understanding of the system design and their relationship to the safety evaluation." Since Tier 2, DCD Section 9.2.7 has missing design bases information related to the importance of the essential chilled water system (ECWS), the staff generated RAI 09.02.02-18. In addition, the RAI requested that the applicant provide justification of why the US-APWR DCD does not have a separate section in the technical specification related to the ECWS. In its response, the applicant proposed to add a statement on design bases to Tier 2 DCD sections 9.2.7.1 and 9.2.7.3 and provided the definition of "OPERABLE – OPERABILITY" with respect to technical specifications to argue that operability of the ECWS in indirectly included under other primary system LCO which ECWS supports.

In regards to the technical specification, the applicant needs to justify how Criterion 3 of 10CFR50.36(c)(2)(ii) is not applicable as a basis for the need for a technical specification for the ECWS.

"(C) *Criterion 3*. A structure, system, or component that is part of the primary success path and which functions or actuates to mitigate a design basis accident or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier."

Operability problems with the ECWS and non-ECWS could result in the failure of systems used to mitigate a design basis accident to perform their safety function. The applicant should also address the need for technical specification surveillance requirements to ensure operability of the ECWS is maintained (i.e. compression tank 7-day supply inventory and required pressure, chiller discharge temperature, system flow rate requirements, etc.)

In the applicant's response to Question 09.02.02-75, dated June 10, 2010, is was stated that Criterion 3 of 10CFR50.36(c)(2)(ii) is not applicable to the ECWS. In addition, NUREG-1431, Rev. 3.1, Standard Technical Specifications Westinghouse Plants, was used as guidance for developing the US-APWR Technical Specifications for consistency with the Technical Specification Improvement Program. The US-APWR Technical Specifications are consistent with NUREG-1431 in that the standard technical specifications do not explicitly include LCO or surveillance testing requirements for the chilled water system.

Due to the complexity of the four trains of the ECWS (DCD Tier 2 Figure 9.2.7-1) and the importance of the safety-related ECWS to provide cooling to various safety related loads (including some safety-related HVAC systems with crosstie capability) and primary systems addressed in Technical Specifications, the staff finds that the Technical Specification Bases should be revised to address ACRS Full Committee (#597th) Meeting (September 6, 2012) concerns. Therefore, the following should be addressed:

1. State specifically if the ECWS (as described in US-APWR DCD Tier 2 Section 9.2.7) and the main control room heating, ventilation and air conditioning system (Tier 2 Section 9.4.1) are support systems/components for TS 3.7.10, Main Control Room HVAC system (MCRVS). See Tier 2 Figure 9.4.1-1 for additional details.

2. State specifically if the ECWS (as described in Tier 2 Section 9.2.7) and the class 1E electrical room HVAC system (Tier 2 Section 9.4.5.1.1.2) are support systems/components for TS 3.8, electrical power systems. See Tier 2 Figure 9.4.5-2 for additional details.

3. State specifically if the ECWS (as described in Tier 2 Section 9.2.7) and the safeguard component area HVAC system (Tier 2 Section 9.4.5.1.1.3) are support systems/components for TS 3.4.6 RCS loops-Mode 4, TS 3.4.7 RCS Loops-Mode 5 loops filler, TS 3.4.8 RCS Loops-Mode 5 loops not filled, TS 3.5.2 safety injections system - operating, and TS 3.5.3 safety injection - shutdown. See Tier 2 Figure 9.4.5-3 for additional details.

4. State specifically if the ESWS (as described in Tier 2 Section 9.2.1) the ECWS (as described in Tier 2 Section 9.2.7) and the emergency feedwater pump area HVAC system (Tier 2 Section 9.4.5.1.1.4) are support systems/components for TS 3.7.5 emergency feedwater system. See Tier 2 Figure 9.4.5-4 for additional details.

5. State specifically if the ECWS (as described in Tier 2 Section 9.2.7) and the safety related component area HVAC system (Tier 2 Section 9.4.5.1.1.5) are support systems/components for TS 3.7.7 component cooling water. See Tier 2 Figure 9.4.5-5 (sheet 1) for additional details.

6. State specifically if the ECWS (as described in Tier 2 Section 9.2.7) and the safety related component area HVAC system (Tier 2 Section 9.4.5.1.1.5) are support systems/components for TS 3.7.11 annulus emergency exhaust system. See Tier 2 Figure 9.4.5-5 (sheet 2) for additional details.

7. State specifically if the ECWS (as described in Tier 2 Section 9.2.7) and the safety related component area HVAC system (Tier 2 Section 9.4.5.1.1.5) are support systems/components for TS associated with the penetration area. See Tier 2 Figure 9.4.5-1 for additional details.

8. State specifically if the ECWS (as described in Tier 2 Section 9.2.7) and the safety related component area HVAC system (Tier 2 Section 9.4.5.1.1.5) are support systems/components for TS associated with the charging pump area. See Tier 2 Figure 9.4.5-5 (sheet 2) for additional details.

9. State specifically if the ECWS (as described in Tier 2 Section 9.2.7) and the safety

related component area HVAC system (Tier 2 Section 9.4.5.1.1.5) are support systems/components for TS associated with the spent fuel pit pump area. See Tier 2 Figure 9.4.5-5 (sheet 3) for additional details.

Please note that in the standard TS Bases for BWR6 (NUREG 1434) B.3.7.4, control room air conditioning AC system, it states that each subsystem consists of components that support air movement with heating and cooling coils.

An example would be to state that primary TS system consists of support components that consists of HVAC systems which include; heating coils, cooling coils (supported by chiller systems), fans, filters, ductwork, dampers, and instrumentation and controls to provide temperature control.