

REQUEST FOR ADDITIONAL INFORMATION NO. 136-1819 REVISION 0

12/22/2008

US-APWR Design Certification

Mitsubishi Heavy Industries

Docket No. 52-021

SRP Section: 16 - Technical Specifications

Application Section: TS Section 3.6

QUESTIONS for Technical Specification Branch (CTSB)

16-59

TS Section 3.6 (EDITORIAL).

The following editorial errors were noted in US-APWR TS 3.6:

1. Page B 3.6.2-2, APPLICABILITY, Last Sentence: The phrase "LCO 3.9.3" should be "LCO 3.9.4"
2. Page B 3.6.3-2, Background discussion: Under the High Volume Purge System discussion the Low Volume Purge System discussion should be a new paragraph.
3. Page B 3.6.3-3, APPLICABLE SAFETY ANALYSES, 3rd Paragraph: The phrase "15seconds" should be "15 seconds" at two places.
4. Page B 3.6.3-3, APPLICABLE SAFETY ANALYSES, 3rd Paragraph: Insert a line space at the end of the paragraph.
5. Page B 3.6.3-4, ACTIONS, 1st Paragraph: Delete the sentence "[a] single purge valve in a penetration flow path may be opened to effect repairs to an inoperable valve, as allowed by SR 3.6.3.1." because resilient seals are not used in APWR purge valves.
6. Page B 3.6.3-5, ACTIONS, A.1 and A.2: Second Paragraph: Remove the line space after the phrase "capable of being automatically"
7. Page B 3.6.3-8, SURVEILLANCE REQUIREMENTS, SR 3.6.3.1: Remove the sentence "[i]n the event purge valve leakage requires entry into Condition E, the Surveillance permits opening one purge valve in a penetration flow path to perform repairs." because resilient seals are not used in APWR purge valves.
8. Page B 3.6.5-1, BACKGROUND, Second Paragraph: The phrase "the Containment Spray and Cooling systems" should be "the Containment Spray system"
9. Page B 3.6.5-1, APPLICABLE SAFETY ANALYSES, Second Paragraph: Remove the phrase "and Containment Cooling System"
10. Page B.3.6.6-1, Background discussion: Replace text "The containment Spray System consists of four separate trains of equal capacity, each capable of meeting 50%

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of the design basis." with "The containment Spray System consists of four separate trains of equal capacity, capable of meeting 50% of the design basis heat removal capacity."

11. Page B 3.6.6-1, BACKGROUND, First Paragraph: Remove the phrase "GDC 41, Containment Atmosphere Cleanup"

12. Page B 3.6.6-1, BACKGROUND, Third Paragraph: Remove the underlined "Containment Spray System"

13. Page B 3.6.6-3, APPLICABLE SAFETY ANALYSES, Fifth Paragraph: The phrase "a - 3.8 psig" should be "a -3.9 psig"

14. Page B 3.6.6-6, SURVEILLANCE REQUIREMENTS, SR 3.6.6.3 and SR 3.6.6.4: Remove the paragraph "The surveillance of containment sump isolation valves is also required by SR 3.5.2.5. A single surveillance may be used to satisfy both requirements."

16-60

TS 3.6.3, Containment Isolation Valves.

Justify not including TS requirements and associated discussions in the TS bases regarding the use of resilient seals in APWR containment purge isolation valves.

APWR TS 3.6.3 and the associated bases omitted all requirements as shown in the Westinghouse STS regarding resilient seals being used in the containment purge isolation valves (e.g., STS SR 3.6.3.7 and STS 3.6.3 Condition E). In addition, APWR FSAR Section 9.4.6, Containment Ventilation System, does not provide relevant information to indicate whether resilient seals are or are not being used in the design of APWR containment purge isolation valves.

This information is needed to ensure completeness of APWR TS requirements.

16-61

TS 3.6.3, Containment Isolation Valves.

Provide the additional information to explain inconsistencies between the APWR TS bases and the APWR FSAR regarding the containment isolation valve closing times. Revise the APWR TS bases B 3.6.3, as appropriate.

The APWR bases B 3.6.3, Applicable Safety Analyses section, third paragraph (Page B 3.6.3-3) states "the DBA analysis assumes that, within 15 seconds after the accident, isolation of the containment is complete and leakage terminated except for the design leakage rate, La. The containment isolation total response time of 15 seconds includes signal delay, and containment isolation valve stroke times." This 15-second total closing

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time is not consistent with valve closing times provided in the APWR FSAR Table 6.2.4-3 (e.g. the closing time for CVCS valves CVS-AOV-005 is 20 seconds). In addition, the emergency diesel generator start up (for loss of offsite power) should also be accounted for in the total response time as suggested in the Westinghouse STS bases B 3.6.3.

16-62

TS 3.6.4, Containment Pressure.

Justify not allowing any margin for the minimum pressure inside containment to reach the design load of -3.9 psig during the inadvertent actuation of the Containment Spray System event.

The APWR TS bases B 3.6.4, Applicable Safety Analyses, third paragraph states "the containment was also designed for an external pressure load equivalent to -3.9 psig. The inadvertent actuation of the Containment Spray System was analysed to determine the resulting reduction in containment pressure. The initial pressure condition used in this analysis was -0.3 psig. This resulted in a minimum pressure inside containment of -3.9 psig, which equal to the design load. APWR TS should establish limits for operating parameter such as the containment pressure to ensure some margin is reserved as indicated in a comparable discussion in the Westinghouse STS bases B 3.6.4.

This information is needed to ensure adequacy of APWR TS 3.6.4 requirements.

16-63

TS 3.6.6, Containment Spray (CS) System.

Provide a discussion in the Bases for adding a note just before the Applicability statement in US-APWR LCO 3.6.6, stating "CS train may be considered OPERABLE during alignment and operation for decay heat removal as RHRS if capable of being manually realigned to the CS mode of operation".

16-64

TS 3.6.6, Containment Spray System.

Justify the selected Completion Times of 7 days for Required Actions A.1 and A.2, and 72 hours for Required Action B.1.

APWR Action Statements for LCO 3.6.6 were formulated using descriptive texts and completion times established in the Westinghouse STS 3.6.6B. However, in the

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Westinghouse design, the Containment Spray System together with the Containment Air Cooling System provides more redundant cooling capacity than required to cover a worst case single active failure. There is no safety-grade Containment Air Cooling System in the APWR design. Therefore, for Condition A, with one CS train inoperable, a single failure cannot be afforded to fulfill the system safety function, and a Completion Time of 72 hours would be appropriate. The Condition B, with less than two trains operable, was not analyzed in the plant accident analyses, and LCO 3.0.3 should have been evoked.

This information is needed to ensure adequacy of APWR TS 3.6.6 requirements

16-65

TS B 3.6.6, Containment Spray System.

Clarify the statements in the Bases B 3.6.6, Background section, Fifth Paragraph "heat is removed from the containment sump water by the residual heat removal coolers," and Sixth Paragraph "operation of the Containment Spray System in the recirculation mode is controlled by the operator in accordance with the emergency operating procedures."

These texts are repeats of the texts in STS Bases B 3.6.6B. However, in the Westinghouse design, the suction of the CS pump is switched over from the Refueling Water Storage Tank to the Containment Sump during the recirculating phase. In the APWR design, the RWST is inside the Containment and the CS pump does not take suction from the Containment Sump.

This is needed to ensure accurate information is provided in the TS bases.