REQUEST FOR ADDITIONAL INFORMATION NO. 191-2048 REVISION 0

2/9/2009

US-APWR Design Certification

Mitsubishi Heavy Industries

Docket No. 52-021

SRP Section: 14.03.04 - Reactor Systems - Inspections, Tests, Analyses, and Acceptance Criteria
Application Section: DCD Section 2.7.1

QUESTIONS for Construction Inspection and Allegations Branch (CCIB)

14.03.04-1

Editorial, grammatical, or typographical errors

1. Page 2.7-3, Table 2.7.1.1-1, Items 2 and 3, Inspections, Tests, Analyses description: "as-build" should be "as-built."

2 Page 2.7-4, Section 2.7.1.2.1, Design Description-System Purpose and Functions, First Paragraph, First Sentence: "bypass isolation valve" should be "bypass isolation valves."

3. Page 2.7-4, Section 2.7.1.2.1, Design Description-System Purpose and Functions, Second Paragraph: "valve wide open" should be "valves wide open."

4. Page 2.7-6, Section 2.7.1.2.1, Design Description-Class 1E Electrical Power Sources and Divisions, First Sentence: "Table 2.7.1.2-1" should be "Table 2.7.1.2-2."

5. Page 2.7-15, Table 2.7.1.2-5, Item 8.b, Acceptance Criteria description: "8.b" should be "8.b.i" and "8.c" should be "8.b.ii."

6. Page 2.7-15, Table 2.7.1.2-5, Item 9.a, Design Commitment description: "motor-operated," should be "motor-operated valves."

7. Page 2.7-15, Table 2.7.1.2-5, Items 9.a.i and 9.a.ii, Acceptance Criteria descriptions: "valves change" should be "valve changes."

8. Page 2.7-16, Table 2.7.1.2-5, Items 9.b.i, 9.b.ii, and 9.c, Acceptance Criteria descriptions: "valves change" should be "valve changes."

9. Page 2.7-16, Table 2.7.1.2-5, Item 9.c, Inspections, Tests, Analyses and Acceptance Criteria descriptions: "9.c.iii" should be "9.c."

10. Page 2.7-16, Table 2.7.1.2-5, Item 9d, Inspections, Tests, Analyses and Acceptance Criteria descriptions: "9.b" should be "9.d."

11. Page 2.7.17, Table 2.7.1.2-5, Item 13.a.ii, Acceptance Criteria description: "The result of test and analysis conforms" should be "The results of the tests and analyses conform."

12. Page 2.7-18, Figure 2.7.1.2-1, Lower Right Corner, "TRUBINE BUILDING" should be "TURBINE BUILDING."

13. Page 2.7-31, Section 2.7.1.9.1, Design Description-Alarms, Displays, and Controls, First Sentence; "Table 2.7.1.9-3 identifies alarms" should be "Table 2.7.1.9-4 identifies alarms."

14. Page 2.7-39, Table 2.7.1.9-5, Item 8.b, Inspections, Tests, Analyses and Acceptance Criteria descriptions: "8.b" should be "8.b.i" and "8.c" should be "8.b.ii."

15. Page 2.7-39, Table 2.7.1.9-5, Items 9.a.i and 9.a.ii, Acceptance Criteria descriptions: "valves change" should be "valve changes."

` 16. Page 2.7-39, Table 2.7.1.9-5, Item 9.b, Inspections, Tests, Analyses and Acceptance Criteria descriptions: "9." should be "9.b."

17. Page 2.7-41, Section 2.7.1.10.1, Design Description-System Purpose and Functions, First paragraph, First Sentence: "SG)" should be "SG."

18. Page 2.7-41, Section 2.7.1.10.1, Design Description-Key Design Features, Third Paragraph, Second Sentence: "demineralizers includes" should be "demineralizers include."

19. Page 2.7-49, Section 2.7.1.11.1, Design Description-Key Design Features, Second Paragraph, First Sentence: "with tie line" should be "to a tie line."

20. Page 2.7-49, Section 2.7.1.11.1, Design Description-Key Design Features, Second Paragraph, Second Sentence: "separation of four trains" should be "separation of the four trains."

21. Page 2.7-49, Section 2.7.1.11.1, Design Description-Key Design Features, Second Paragraph, Third Sentence: "When the one of the EFW pump is not" should be "When one of the EFW pumps is not." and "of an outage of maintenance" should be "of an outage or maintenance."

22. Page 2.7-49, Section 2.7.1.11.1, Design Description-Key Design Features, Fourth Paragraph, First Sentence: "sensible heat of reactor" should be "sensible heat of the reactor."

23. Page 2.7-50, Section 2.7.1.11.1, Design Description-Key Design Features, Seventh Paragraph, First Sentence: "EFW pump is designed" should be "Each EFW pump is designed."

24. Page 2.7-50, Section 2.7.1.11.1, Design Description-System Operation, Second Paragraph, First Sentence: "signal and provided with" should be "signal and is provided with."

25. Page 2.7-50, Section 2.7.1.11.1, Design Description-Logic, First Paragraph, First Sentence: "EFWS is automatically initiating flow upon receipt of EFW actuation signal" should be "EFWS automatically initiates flow upon receipt of an EFW actuation signal."

26. Page 2.7-61, Table 2.7.1.11-5, Item 4.a, Acceptance Criteria description: "Table 2.7.1.11" should be "Table 2.7.1.11-2."

27. Page 2.7-63, Table 2.7.1.11-5, Item 8.b, Acceptance Criteria description: "8.b" should be "8.b.i," and "8.c" should be "8.b.ii."

28. Page 2.7-63, Table 2.7.1.11-5, Items 9.a.i and 9.a.ii, Acceptance Criteria descriptions: "motor-operated valves change position" should be "motor-operated valve changes position."

29. Page 2.7-64, Table 2.7.1.11-5, Item 12, Acceptance Criteria description: "705 gpm to the any of the two SGs" should be "705 gpm to either of the two SGs."

14.03.04-2

ITAAC Item 2 in Table 2.7.1.1-1

Resolve the difference in the Design Commitment statement on Page 2.7-3 in Table 2.7.1.1-1, Item 2, to be consistent with the Key Design Features Paragraphs of Section 2.7.1.1, Design Description.

In Table 2.7.1.1-1, Item 2, the design commitment description refers to SRP 3.5.1.3 as the basis for addressing turbine missile generation. However, Section 2.7.1.1.1, Design Description, discusses the turbine missile generation in the Second Paragraph of Key Design Features subsection in terms of probability. The subsection specifically indicates the probability of turbine missile generation is less than 1.0 E -05 per year and does not necessarily reference SRP 3.5.1.3 as the basis for 1.0E-5 per year if it indeed is the basis.

14.03.04-3

ITAAC Item 6 in Table 2.7.1.2-5

The acceptance criterion 6.a.i for this ITAAC should follow more closely to the words stated in the design commitment. This is applicable to this ITAAC and all similar ITAAC for equipment being qualified for a harsh envionment.

Other applicable ITAAC: The following list may not be a complete list of all applicable ITAAC.

ITAAC Item 6 in Table 2.7.1.9-5

14.03.04-4

ITAAC Item 8.b.ii in Table 2.7.1.2-5

The design commitment is concerned with valves in Table 2.7.2.2-2 performing a function for an RPS signal. However, this ITAAC is concerned with the MSIV and MSRVBV valves closing within the required response time. The deficieny needs to be corrected.

14.03.04-5

Determine whether the column labeled "Control Function" in Table 2.7.1.2-4 on Page 2.7-11 refers to a main control room (MCR) function.

Section 2.7.1.2.1, Design Description, Alarms, Displays, and Controls subsection on Page 2.7-5 indicates that Table 2.7.1.2-4 contains information for both the MCR and the remote shutdown console (RSC). Item 10 in Table 2.7.1.2-5 references parameters that can be retrieved in the MCR (with no mention of control capability) as a Design Commitment

while Item 11 in Table 2.7.1.2-5 references parameters and controls as a Design Commitment. Where is the MCR control function evaluated in the ITA for Item 10?

14.03.04-6

Revise the Design Description of Section 2.7.1.2, Main Steam Supply System (MSS) and Table 2.7.1.2-2 to be consistent with Table 2.7.1.2-5 on Page 2.7-15, Item 8 to include information regarding the interface between MSS and the reactor protection system (RPS).

Table 2.7.1.2-5, Item 8 on Page 2.7-15 specifically includes a Design Commitment that MSS valves identified in Table 2.7.1.2-2 as having RPS control also have an ITAAC associated with their active safety function. Further, Table 2.7.1.2-5, Item 8.b.ii, Inspections, Tests, Analyses requires tests to be performed that demonstrate that the as-built remotely operated MSIVs and MSRVBVs close within the required response time, and the Acceptance Criteria for the same item specifies that the MSIVs close within 5 seconds and the MSRVBVs close within 30 seconds. However, none of this information is discussed in Section 2.7.1.2.1, Design Description, nor is this information contained in Table 2.7.1.2-2. The RPS interface for these valves should be discussed in Section 2.7.1.2.1 and their RPS control function should be listed in Table 2.7.1.2-2.

14.03.04-7

Clarify the design commitment in Table 2.7.1.2-5, item 9.a. The sentence fragment before the comma in the design commitment is missing the object for the phrase "active safety-related." The choice of an appropriate object impacts the implementation of the ITAAC for the design commitment.

This same sentence fragment structure exists for:

- Tier 1 Table 2.7.3.1-5, item 9.a
- Tier 1 Table 2.7.3.3-5, item 9.a
- Tier 1 Table 2.7.3.5-5, item 9.a

14.03.04-8

ITAAC Item 1.b in Table Table 2.7.1.11-5

The acceptance criterion for this ITAAC does not contain the exception noted in the design commitment for the EFW pump suction and discharge tie lines. Is the fire barrier able to serve as a suitable barrier for physical separation?

14.03.04-9

ITAAC Item 6.c in Table 2.7.1.2-5

The design commitment is concerned with separation between Class 1 E divisions and between those divisions and non-class 1E cable. The acceptance criterion is concerned only with raceways. But what about inside panels and switchgear, and at the components themselves? This ITAAC is meant to be more generic than just addressing raceways. This is applicable to this ITAAC and all similar ITAAC for the same subject matter.