REQUEST FOR ADDITIONAL INFORMATION NO. 192-1847 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 2.4.4

QUESTIONS for Construction Inspection and Allegations Branch (CCIB)

14.03.04-10

Explain how the acceptance criteria for item 1.b identified in US-APWR DCD Tier 1 Table 2.4.4-5 meets the design commitment for item 1.b. The design commitment calls for each ECCS mechanical division to be physically separated. The acceptance criteria states that the physical separation can be structural or by a fire barrier.

A fire barrier does not necessarily infer physical separation between components of different ECCS divisions as required by the design commitment. The design commitment statement only appears in US-APWR DCD Tier 1 Table 2.4.4-5 and is not expanded or amplified in Tier 1 Section 2.4.4 in a text discussion or a tabular form.

Also applicable to ITAAC:

ITAAC Item 1.b in Table 2.4.5-5
ITAAC Item 1.b in Table 2.7.1.9-5
ITAAC Item 9 in Table 2.7.1.10-5
ITAAC Item 1.b in Table 2.7.1.11-5 - In addition, the design commitment is different from the AC.
ITAAC Item 1.b in Table 2.7.3.1-5
ITAAC Item 1.b in Table 2.7.3.3-5
ITAAC Item 1.b in Table 2.7.3.5-5

14.03.04-11

Clarify whether the injection test identified in US-APWR DCD Tier 1 Table 2.4.4-5, item 7.b.i will be conducted with the RCS at normal operating pressure.

Explain whether the RCS pressure during the injection test impacts the test results. If the RCS pressure does impact the injection test results, discuss the analyses to verify the water volumes injected during the large flow stage and the small flow stage.

Clarify the water volume to be established in the accumulators prior to the injection test identified in US-APWR DCD Tier 1 Table 2.4.4-5, item 7.b.i.

The test description notes that each as-built accumulator will be “partially” filled with water. Explain if each accumulator will be filled with water to within the normal operating band or if analyses will be used to establish the water volumes injected during the large flow stage and the small flow stage.

The design commitment discusses makeup, do any of the AC address that function?

Also applicable to following ITAAC:

ITAAC Item 7.d in Table 2.4.4-5

Clarify the aspects of the analysis to verify adequate net positive suction head (NPSH) for the safety injection pumps identified in US-APWR DCD Tier 1 Table 2.4.4-5, item 7.d. NUREG-0800, “Standard Review Plan,” Chapter 14.3, “Inspections, Tests, Analyses, and Acceptance Criteria,” Appendix D, ITAAC Entries – Examples,” item 3 indicates some of the aspects that should be considered in an analysis of pump NPSH.

Assumptions regarding the effects of inlet piping and component pressure losses, supply tank water level, suction strainer blockage, fluid temperature, containment pressure, and vendor test results establishing minimum NPSH should be clearly identified in the Inspections, tests, Analyses column.

The question for ITAAC 7.d directly above is also applicable to ITAAC Item 8.f in Table 2.4.5-5

14.03.04-12

Clarify or define the phrase “nuclear island” in the Inspections, Tests, Analyses column for item 5.i identified in US-APWR DCD Tier 1 Table 2.4.6-5. This phrase is not defined in the US-APWR Tier 1 list of definitions.

The Acceptance Criteria column for item 5.i in US-APWR DCD Tier 1 Table 2.4.6-5 specifically identifies the expected seismic locations as the containment and/or the reactor building. The acceptance criteria should readily relate to the identified inspection.

14.03.04-13

Identify the seismic piping verification ITAAC for the CVCS system components identified in Table 2.4.6-3 under Seismic Category I. Numerous CVCS lines are listed in Table 2.4.6-3 with Seismic Category I requirements.

Seismic code classification is discussed under Seismic and ASME Code Classifications in Tier 1 Section 2.4.6.1 on page 2.4-72. This section notes that seismic classifications for CVCS piping are noted in US-APWR DCD Tier 1 Table 2.4.6-3. No CVCS piping seismic design commitments referencing Table 2.4.6-3 and subsequent piping inspection were identified in US-APWR DCD Tier 1 Table

2.4.6-5.

This is also applicable to other systems which have seismic piping.

14.03.04-14

The following typographical or editorial errors were noted in US-APWR Tier 2, Chapter 14, Section 14.3.4.7 and Tier 1, Chapter 2, Section 2.7.3:

1. Page 2.7-73, Logic: The phrase “continue to operation” is improper grammar.
2. Page 2.7-97, Item 7.b should just be labeled as item 7.
3. Page 2.7-99, Figure 2.7.3.3-1: Auxiliary Building component box above the Excess Letdown HX should be labeled “Non Safety-Related Components” instead of “Non Safety-elated Components.”

14.03.04-15

Define the term “adequate” such that an inspector can evaluate ESWS cooling capacity in the Acceptance Column for item 7 in US-APWR DCD Tier 1 Table 2.7.3.1-5

Without a definition for the word “adequate,” an inspector will be unable to provide an acceptable verification of the design commitment. The range of tests in the Inspections, Tests, Analyses column should also be provided for clarity.

Also applicable to following ITAAC:

ITAAC Item 7.b in Table 2.7.3.3-5 - Also why is this ITAAC numbered with a b suffix?

ITAAC Item 7 in Table 2.7.3.5-5 - For word 'required'.

14.03.04-16

Clarify the design commitment in US-APWR DCD Tier 1 Table 2.7.3.1-5, 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.

In addition, the design commitment is more definitive on the type of valves than the AC. The design commitment for above and following ITAAC refers to valves that perform an active safety function or have RPS control, whereas the AC refers to just valves identified in the respective table.

This is applicable to following ITAAC:

- US-APWR DCD Tier 1 Table 2.7.3.3-5, item 9.a
- US-APWR DCD Tier 1 Table 2.7.3.5-5, item 9.a
- US-APWR DCD Tier 1 Table 2.7.1.2-5, items 8.b, 9.a, and 9.b
- US-APWR DCD Tier 1 Table 2.7.1.9-5, items 8.b and 9.a
- US-APWR DCD Tier 1 Table 2.7.1.11-5, items 8.b and 9.a

14.03.04-17

ITAAC Item 9.b in Table 2.7.3.1-5

The design commitment is more definitive than the AC. The AC should be at least as definitive as the design commitment.

14.03.04-18

Identify the source of the pump start signal in all columns for item 10.b in US-APWR DCD Tier 1 Table 2.7.3.1-5.

The Logic section in Tier 1 Section 2.7.3.1.1 on page 2.7-73 indicates that the ESWS pumps start upon receipt of an ECCS actuation signal. The specific pump start signal should be identified for clarity to fully evaluate the pump start function.

Also applicable to following ITAAC:

ITAAC Item 10.b in Table 2.7.3.3-5

ITAAC Item 10.b in Table 2.7.3.5-5