

REQUEST FOR ADDITIONAL INFORMATION 293-2173 REVISION 1

3/30/2009

US-APWR Design Certification

Mitsubishi Heavy Industries

Docket No. 52-021

SRP Section: 05.04.02.02 - Steam Generator Program

Application Section: 5.4.2

QUESTIONS for Component Integrity, Performance, and Testing Branch 1 (AP1000/EPR Projects)
(CIB1)

05.04.02.02-1

In Section 3.4.17 of the US APWR technical specifications, the second condition of LCO 3.4.17 contains the bracketed phrase, “[or repaired].” Please discuss your plans to remove this phrase. The repair option is included in the standard technical specifications to address plants with approved tube repair methods, such as installation of tube sleeves. Since the proposed US APWR design does not include tube repair methods, this provision should not be included in the TS. This applies to all occurrences of the phrases, “[or repaired]” and “[or repair]” in TS Sections 3.4.17, 5.5.9 (a and c), 5.6.7, and the TS Bases Section 3.4.17. It also applies to TS 5.5.9.f, “Provisions for SG tube repair methods,” which should be removed in its entirety.

The staff notes that in removing the references to tube repair discussed above, the comma between the words “inspected” and “plugged” in TS 5.5.9.a should be replaced with the word “or” (i.e., “...during which the tubes are inspected or plugged ...”).

05.04.02.02-2

DCD Section 5.4.2.2.2 should refer only to plugging, not repairs, in the paragraph #4 (page 5.4-19). Similarly, on page 5.4-20 in DCD Section 5.4.2.2.2, the next to last paragraph which begins with, "The SG inspection criteria...", should refer to the "tube repair criteria" rather than "tube plugging criteria" to be consistent with the Technical Specifications.

05.04.02.02-3

Please discuss your plans to remove the following from TS Section 5.5.9.b.2:

”[, except for specific types of degradation locations as described in paragraph c of the Steam Generator Program].” This exception refers to tube repair methods, such as installation of tube sleeves. Since the proposed US APWR design does not include tube repair methods, this provision should not be included in the TS. This also applies to the corresponding provision in TS 5.5.9.c (“[The following alternate tube repair criteria may be applied].”

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05.04.02.02-4

Please discuss your plans for making the following changes to the “Steam Generator Tube Inspection Report,” TS 5.6.7:

- Delete “[or repaired]” from TS 5.6.7.e and TS 5.6.7.f
- Delete TS 5.6.7.i
- Remove the brackets from TS 5.6.7.h

The first two items above are related to standard technical specifications for plants with tube repair amendments and are not applicable to the proposed US-APWR design. Since TS 5.6.7.h is appropriate for all plants, it should not be enclosed in brackets.

05.04.02.02-5

TS 5.5.9.d.1 requires inspection of 100% of the steam generator tubes during the first refueling outage, consistent with the Standard Technical Specifications, but it does not include the phrase, “following SG replacement.” Therefore, it is not clear that the TS would require 100% inspection during a refueling outage in which steam generators are replaced. Please discuss your plans to revise this provision (for example, “Inspect 100% of the tubes in each SG during the first refueling outage following SG installation.”)

05.04.02.02-6

Please discuss your plans to modify the “Preservice Inspection” description proposed in DCD Section 5.4.2.2.2 to clarify that PSI is performed after fabrication and before service (e.g., after the field hydrostatic test as suggested in Section 3.2.1 of the EPRI Steam Generator Examination Guidelines.) The DCD states that the PSI will be performed on all tubes before placing the plant into commercial service, making it possible to perform preservice testing before the SGs are fabricated. As stated in SRP 5.4.2.2, preservice inspection enables proper evaluation of indications found during inservice inspections. Preservice inspection after fabrication allows discrimination between service-related degradation and manufacturing imperfections.

05.04.02.02-7

The discussion of preservice inspection in DCD Section 5.4.2.2.2 would allow only eddy current techniques to be used. Please discuss your plans to remove this reference to eddy current to allow for the possibility that other inspection methods may be used. In addition, in order to be consistent with SRP Section 5.4.2.2, discuss your plans to add a statement that the techniques used for preservice inspection will be performed using the techniques expected to be used during inservice inspection.

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05.04.02.02-8

Section 5.4.2.1.8 of the DCD states that the “structural limit for tube wall thinning is generally around 60% through wall based on the US-APWR design conditions.” Please discuss the assumptions used in these structural limit calculations and the basis for those assumptions (e.g., the shape and size of the degradation).