REQUEST FOR ADDITIONAL INFORMATION 250-2143 REVISION 1

3/2/2009

US-APWR Design Certification

Mitsubishi Heavy Industries

Docket No. 52-021

SRP Section: 10.03.06 - Steam and Feedwater System Materials
Application Section: 10.3.6

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

10.03.06-1

FSAR Tier 2, Tables 10.3.2-3 and 10.3.2-4, list material specifications and grades for ASME Code Classes 2 and 3 and non-Code MSS and CFS piping. The applicant did not, however, include material specifications and grades for components such as valves and fittings. In addition, the applicant did not list weld-filler material specifications and classifications. In order for the staff to determine that MSS and CFS materials meet the requirements of GDC 1 and 10 CFR 50.55a, the staff requests the following:

1. Modify Tables 10.3.2-3 and 10.3.2-4 to include materials specifications and grades for components such as valves and fittings used in the ASME Code Class 2 and 3 portions of the MSS and CFS. In addition, identify which components in the Tables are ASME Code Class 2 and 3 and non-Code.

2. Modify Tables 10.3.2-3 and 10.3.2-4 to include weld-filler material specifications and classifications that will be used in the ASME Code Class 2 and 3 portions of the MSS and CFS.

10.03.06-2

FSAR Tier 2, Section 10.3.6.2 states that the welding of low-alloy steel is implemented at preheat temperatures specified in Regulatory Guide 1.50, “Control of Preheat Temperature for Welding of Low-Alloy Steel.” The applicant further states that the preheat temperatures for carbon steel materials conform with Section III, Appendix D, Article D-1000, of the ASME Code. FSAR Table 1.9.1-1 does not reference FSAR Section 10.3.6.2 in the line item for RG 1.50.

The staff notes that RG 1.50 does not provide specified minimum preheat temperatures but provides guidance on preheat control. In order to provide clarity, the staff requests that the applicant modify FSAR Section 10.3.6.2 and Table 1.9.1-1 to clarify that welding of low-alloy materials will conform to the guidance provided in RG 1.50 for the MSS and CFS. If the applicant does not intend to conform to the guidance in RG 1.50 for the MSS and CFS in its entirety, the applicant should provide its alternative including a basis for its alternative. In addition, the applicant should state, in Section 10.3.6.2, that the minimum preheat temperatures for carbon-steel and low-alloy-steel materials conforms to the recommendations in ASME Code, Section III, Appendix D, Article D-1000.

10.03.06-3

The guidelines listed in RG 1.71 ensure the integrity of welds in locations of restricted direct physical and visual accessibility. The applicant states in FSAR Section 10.3.6.2 that for welds made in areas of limited accessibility, the qualification procedure is specified in conformance with the guidance of Regulatory Guide 1.71. Although the staff finds this acceptable, the staff notes that FSAR Table 1.9.1-1 under the line item for RG 1.71 does not reference FSAR Section 10.3.6.2 as a corresponding subsection where RG 1.71 is applicable. The staff requests that the applicant modify Table 1.9.1-1, accordingly.

10.03.06-4

RG 1.37 provides procedures acceptable to the staff for cleaning and handling Class 2 and 3 components in the MSS and the CFS. FSAR Section 10.3.6 does not reference RG 1.37. In addition, Table 1.9.1-1 under the line item for RG 1.37 does not reference FSAR Section 10.3.6. The staff requests that the applicant modify the FSAR to reference RG 1.37 or provide an alternative.

10.03.06-5

FSAR Section 10.3.6.2 states that austenitic stainless steels conform with RG 1.36 and 1.44; but, the staff was unable to locate any stainless steel specifications in Table 10.3.2-3 or Table 10.3.2-4. The staff requests that the applicant explain this inconsistency.

10.03.06-6

COL Information Item 10.3(1) states, " The Combined License Applicant is to address preparation of a FAC monitoring program for carbon steel portions of the steam and power conversion systems that contain water or wet steam." The applicant's COL Information Item is not clear as to what is to be provided by the applicant or a timetable for the implementation of the FAC program. For example, the COL Information Item should be clear that the COL applicant will provide a description of its FAC program and a schedule for its implementation. In addition, it should be clear that the FAC program will be consistent with Generic Letter 89-08 and an industry program guidance document such as NSAC-202L-R3. The staff requests that the applicant modify COL 10.3(1) and Table 1.8-2, accordingly.

10.03.06-7

In order for the staff to determine that the applicant has designed the MSS and CFS to mitigate the effects of FAC and other flow induced degradation mechanisms, the staff requests that the applicant modify the FSAR to include a detailed discussion regarding the US-APWR design to mitigate FAC and other flow-induced degradation

mechanisms. The applicant should address flow rates, fluid temperatures (including flash points), pressure, and other contributing factors that are taken into consideration in order to establish the design life of safety-related systems susceptible to FAC or other flow-induced degradation mechanisms. The staff requests that the applicant's response encompass all ASME Code Class 2 and 3 systems as well as high-energy, non-safety systems that could adversely impact safety-related systems susceptible to FAC and other flow-induced degradation mechanisms. In addition, the staff requests that the applicant identify the computer program (e.g., CHECKWORKS) utilized to design systems in order to minimize the effects of FAC for the design life of the plant.