

# REQUEST FOR ADDITIONAL INFORMATION 612-4828 REVISION 0

7/21/2010

US-APWR Design Certification

Mitsubishi Heavy Industries

Docket No. 52-021

SRP Section: 06.01.01 - Engineered Safety Features Materials

Application Section: 6.1.1

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

06.01.01-20

In response to RAI 06.01.01-13, the applicant revised Table 6.1-1 and 6.1-2. The staff noticed that the applicant did not list Alloy 52/152 weld filler material. The applicant indicated, in an earlier RAI response, that Alloy 52/152 will be used to join the accumulator to the outlet piping. The staff requests that the applicant modify Tables 6.1-1 and 6.1-2 to include the appropriate specifications and classifications for Alloy 52/152.

06.01.01-21

In response to RAI 06.01.01-14, the applicant provided a proposed revision to Table 10.4.9-7. Although the proposed Table lists austenitic stainless steel components and piping, the applicant did not list the specifications and classifications of the stainless steel weld filler material that will be used. The staff requests that the applicant list stainless steel weld filler materials in Table 10.4.9-7 that will be used in the EFWS.

06.01.01-22

a) In the applicant's amended response to RAI 06.01.01-9 dated March 30, 2010, MHI stated that it will modify DCD Subsection 6.1.1.1 to state "Austenitic stainless steel base metal used for the pressure retaining materials, which conditions are similar to the RCS, has a limited carbon content not exceeding 0.05% (heat analysis) and 0.06% (product analysis) when the standard grade stainless steel is used." In order to provide clarity and make it clear that the carbon content limits will be applied to all ESF components, the staff requests that the applicant delete ", which conditions are similar to the RCS" from its proposed DCD modification.

b) The applicant's amended response to RAI 06.01.01-9 states "If, during the detailed design, MHI determines there are local areas where significant flow stagnation may be present (that could produce locally elevated dissolved oxygen levels), then other parameters, such as temperature will be considered to determine the potential for SCC. MHI determines that the SCC potential is sufficient, then stainless steel with carbon content less than or equal to 0.03% will be applied for portions around that area." In order to provide clarity and ensure that the intent of RG 1.44 is followed, the staff requests that the applicant state the following in DCD Subsection 6.1.1.1.

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During the detailed design, MHI will determine if there are local areas where flow stagnation may be present resulting in dissolved oxygen content greater than 0.10 ppm in piping and components that have a normal operating temperature above 200F. For piping and components where the above conditions exists, stainless steel with a carbon content less than or equal to 0.03% will be used.

### 06.01.01-23

The staff requested, in 06.01.01-17, that the applicant modify DCD Subsection 6.1.1 to reference the preheating guidelines in ASME Code Section III, Appendix D, Article D-1000 for carbon steels and low alloy steels used in ESF systems or provide an alternative including a technical basis for any alternative. The staff also requested that the applicant move its discussion of RG 1.50 from DCD Subsection 6.1.1.2.2 to the appropriate subsection which is 6.1.1.1. The applicant responded to the above RAI and stated that low alloy steels are not applied to ESF components and a description with regard to RG 1.50 application to low alloy steels will not be added in the DCD. The applicant also stated that preheating for carbon steel and low alloy steel is applied in accordance with the qualified welding procedure specification. The applicant provided a proposed revision of DCD Subsection 6.1.1.1 which states that preheating for carbon steel and low alloy steel is applied in accordance with qualified welding procedure specification. The staff expects that minimum preheating temperatures for carbon and low alloy steels will meet or exceed the recommendations listed in ASME Code Section III, Appendix D, Article D-1000. In addition, the staff notes that the statement in the applicant's response that low alloy steel components are not used in ESF systems appears to conflict with proposed revisions to Tables 6.1-1 and 6.1-2 which list Grade F22 (2.25%Cr,1% Mo) materials which are low alloy steels. With regard to RG 1.50, RAI 06.01.01-17 requested that the applicant move its statement that it follows RG 1.50 from DCD Subsection 6.1.1.2.2 "Controls for Austenitic Stainless Steels" to Subsection 6.1.1.1 "Materials Selection and Fabrication" since RG 1.50 does not apply to stainless steels. The staff requests that the applicant modify DCD Subsection 6.1.1.1 to state that the minimum preheat temperatures used for welding carbon and low alloy steels in ESF systems will meet or exceed the guidelines listed in ASME Code Section III, Appendix D, Article D-1000 or provide an alternative including a technical basis. In addition, the staff requests that the applicant move its statement that it follows RG 1.50 from DCD Subsection 6.1.1.2.2 "Controls for Austenitic Stainless Steels" to Subsection 6.1.1.1 "Materials Selection and Fabrication" since RG 1.50 does not apply to stainless steels. Also, address the inconsistency between the DCD and your statement, in response to RAO 06.01.01-17, that low alloy steels are not listed in any ESF components.