

# REQUEST FOR ADDITIONAL INFORMATION 500-4012 REVISION 0

12/1/2009

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 2 (ESBWR/ABWR Projects)  
(CIB2)

## 10.03.06-10

In response to RAI 10.03.06-1, the applicant modified Table 10.3.2-3 to list main steam piping flanges. The applicant listed SA-508 Class 1, Class 900 material for flanges for the steam generator to containment penetration main steam piping. Material specification SA-508 does not include or list Class 1 or Class 900 as a grade of material. The applicant also listed material specification SA-182 but specifies no material grade for valves in feedwater piping from the feedwater piping area wall to the MFIV. The staff requests that the applicant modify the Design Control Document to address the above errors.

## 10.03.06-11

In RAI 10.03.06-6, the staff requested that the applicant revise COL Item 10.3(1) to provide clarity to the COL Applicants requirements for an FAC monitoring program. The applicant responded by letter dated April 1, 2009. The staff found the applicant's response and proposed FSER modifications acceptable. The proposed FSER modifications referenced EPRI Technical Report NSAC-202L-3. However, in reviewing modifications made to Design Control Document (DCD) Revision 2, the staff noticed that the applicant referenced Revision 2 (NSAC-202L -2) in lieu of Revision 3 (NSAC-202L - 3) which is the most current revision. The staff requests that the applicant modify the DCD sections 10.3.6.3, 10.3.7 and Table 1.8-2 to reference EPRI Technical Report NSAC-202L-3.

## 10.03.06-12

RAI 10.03.06-9 requested, in part, that the applicant describe the corrosion allowance specified and discuss how the corrosion allowance covers the design life of the plant for all high-energy systems (ASME Code Class 1, 2 and 3 and non-safety related systems) potentially susceptible to FAC. The applicant's response stated that the design wall thickness is determined based on piping design pressure/temperature and allowable stress in accordance with ASME Code Section III or ASME B31.1. The specified wall thickness (prior to fabrication) is specified to exceed the required design wall thickness by a large and appropriate amount to account for the expected wall thinning during fabrication. Wall thinning during fabrication is controlled by establishing fabrication

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tolerances. The applicant also states that the FAC monitoring program provided by the COL Applicant will include preservice thickness measurements of as-built piping considered susceptible to FAC. The applicant further states that by performing this preservice measurement, the piping thickness margin that will be used as a wall thinning margin will be known, and then by combining the measurement with regular inspection the frequency of pipe replacement will be predicted.

Given that analytical tools are available to predict FAC degradation, the staff expects that an evaluation of the final system design will be conducted to determine if carbon steel components will require the addition of wall thickness or an upgrade in materials to provide reasonable assurance that piping and components will maintain the minimum required design wall thickness for the design life of the system. The staff requests that: (a) the applicant modify the Design Control Document (DCD) to specify that it will perform an evaluation of its final design of all ASME Code Class 2 and 3 as well as non-ASME Code systems or portions of systems susceptible to FAC and (b) modify its design if necessary to provide reasonable assurance that piping and components exposed to water or wet steam will maintain their minimum design wall thickness for the design life of the plant. If the design life of the applicable systems is less than the 60-year design life of the plant, the staff requests that the applicant identify the design life of these systems. The staff also requests that the applicant provide, in the DCD, its corrosion allowance for general corrosion and a basis for this allowance