

REQUEST FOR ADDITIONAL INFORMATION NO. 156-1877 REVISION 0

1/14/2009

US-APWR Design Certification

Mitsubishi Heavy Industries

Docket No. 52-021

SRP Section: 14.03.02 - Structural and Systems Engineering - Inspections, Tests, Analyses, and Acceptance Criteria
Application Section: 14.3

QUESTIONS for Structural Engineering Branch 1 (AP1000/EPR Projects) (SEB1)

14.03.02-1

RAI-14.3-1: Define ITAAC to verify by inspection the special modular construction techniques for steel concrete (SC) modules.

The NRC staff has reviewed the frame work for steel concrete modules as it relates to Subsections 3.8.3.6.1, "Special Modular Construction Techniques," 3.8.3.1.7, "Refueling Cavity," and 3.8.3.1.5, "Primary Shield Wall" of the DCD. Particularly, in Subsection 3.8.3.6.1, the applicant states those special modular construction techniques, in addition to the methodology will be provided in a later supplement to the DCD. In accordance with Appendix A, GDC 2, to 10 CFR Part 50, the NRC staff request that the applicant develop ITAAC to verify by inspection that the special modular construction techniques adequately address the fabrication, shipping, handling, and installation of the steel concrete modules and reconcile the as-built configuration of the plant with the structural design basis of the licensed facility.

In addition, the applicant should provide a summary of the information in the supplement to the DCD that describes these special module construction techniques. This summary should include descriptions of special requirements placed on the fabrication, shipping, handling, and installation of the SC modules, which are necessary to avoid overstressing, excessive distortion, and/or any other degradation mechanism of the steel faceplates during these operations.

These explanations should be detailed enough to allow staff evaluation of the SC modules. As an example, in describing transportation issues, the discussion should address things such as maximum size and weight of the modules, how the modules are packaged and secured to the rail car (or truck bed). This information should address how the modules are supported to minimize vibrations and impact loading; how they are protected from the elements during transportation and storage; and how loading and unloading is to be accomplished to avoid overstressing the steel plate assemblies. Similar types of information should be provided for the other steps in the construction process.

Include in these explanations the acceptance criteria for the SC modules for loads related to fabrication, shipping and handling, erection and any other steps in the construction process.

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The discussion should include a description of quality control measures needed, if any, that supplement those contained in applicable codes and standards (e.g., ACI 349; AISC 690).

RAI-14.3-2: Define ITAAC to verify that failure of non-seismic Category 1 SSCs will not impair the ability of near-by safety related SSCs.

The NRC staff reviewed the safety significance of both the turbine building (T/B) and the auxiliary building (A/B) described in Tier 1, Section 2.2, "Structural and System Engineering," and Tier 2, Section 3.7.2.8, "Interaction of Non-Seismic Category I Structures with Seismic Category I Structures," of the DCD. Both buildings are seismic Category II structures and are located adjacent to the reactor building (R/B). Section 14.3.2 of the SRP states that for non-seismic SSCs, the need for ITAAC to verify that their failure will not impair the ability of near-by safety-related SSCs to perform the safety-related functions should be assessed based on the specific design. In accordance to Section 14.3.2 of the SRP, the NRC staff requests that the applicant provide ITAAC for non-seismic SSCs to verify that their failure will not impair the ability of near-by safety-related SSCs to perform the safety-related functions.