RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

03/29/2013

US-APWR Design Certification

Mitsubishi Heavy Industries

Docket No. 52-021

RAI NO.:	**NO. 676-5209 REVISION 0**
SRP SECTION:	**03.08.03 – Concrete and Steel Internal Structures of Steel or Concrete Containments**
APPLICATION SECTION:	**3.8.3**
DATE OF RAI ISSUE:	**12/21/2010**

QUESTION NO. 03.08.03-35:

The staff does not agree with MHI's statement related to Question 03.08.03-25(b) (RAI No. 491-3733) that not considering any cracked sectional stiffness leads to conservative member forces. Changes in the SC sectional stiffness can affect the seismic response and alter the values of the calculated member forces and moments in other structural members. MHI is requested to furnish numerical data supporting their position that ignoring cracked concrete in the SC modules is conservative with respect to determination of member forces and moments in other structural members. The staff finds MHI's commitment to develop appropriate stiffness reduction factors for each load combination to be an acceptable approach. However, since MHI will document these new calculations in a forthcoming Technical Report that was promised for April 2010, the staff reserves final acceptance of these approaches pending receipt and acceptance of the promised Technical Report.

ANSWER:

This answer revises and replaces the previous response that was transmitted by MHI letter UAP-HF-11045 (ML110590564).

The design of steel-concrete (SC) module members consider the effect of the cracking of concrete on the stiffness of different structural members. Technical Report MUAP-10006, Rev. 3, Sections 02.4.1 and 02.4.2, describe the containment internal structure (CIS) dynamic three-dimensional finite element (FE) analysis modeling approach. Technical Report MUAP-11018, Rev. 1, describes SC module test data and stress analyses that establish the bases for the stiffness and damping values which are used in the seismic response analyses that determine the member forces for design of SC module members.

Impact on DCD

There is no impact on the DCD.

Impact on R-COLA

There is no impact on the R-COLA.

Impact on S-COLA

There is no impact on the S-COLA.

Impact on PRA

There is no impact on the PRA.

Impact on Technical/Topical Report

There is no impact on the Technical/Topical Report.

This completes MHI's response to the NRC's question.