RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

1/31/2013

US-APWR Design Certification

Mitsubishi Heavy Industries

Docket No. 52-021

RAI NO.:	**NO. 776-5851 REVISION 3**
SRP SECTION:	**03.07.02 – Seismic Systems Analysis**
APPLICATION SECTION:	**3.7.2**
DATE OF RAI ISSUE:	**06/15/11**

QUESTION NO. RAI 03.07.02-79:

In Section 1.0 of the MUAP-11001 (R0), it is stated that response spectrum analysis (RSA) is used to obtain static and dynamic demands of the major representative structural members of A/B. The ISRS at A/B basemat resulting from lumped-mass stick model SSI analysis is used as the input response spectrum for RSA.

In Subsection 5.2.1 of MUAP-11001 (R0), "Determination of the Input Response Spectrum," (page 63), the Applicant listed five steps used for calculating the In-Structure Response Spectra (ISRS). The staff reviewed the five-step procedure and was not able to identify the step that includes the base rocking motion in the ISRS generation. SRP Acceptance Criteria 1.A.iii of Section 3.7.2 requires consideration of rocking response of site structures and their foundations. As a result of soil-structure interaction, the superstructure experiences an additional rocking motion at its base, and the effect of this rocking motion should be considered in the generation of ISRS.

The Applicant is requested to provide technical details that show how this rocking motion is included in generating the ISRS. If this rocking motion is not included, the Applicant is requested to provide the technical basis and justification that demonstrates that the seismic displacements and design forces of A/B structure based on the analyses using the ISRS (that are generated excluding the rocking motion) are conservative.

ANSWER:

This answer revises and replaces the previous MHI answer that was transmitted by letter UAP-HF-11281 (ML11243A163).

Technical Report MUAP-11001 has been superseded and the relevant information incorporated into Technical Report MUAP-10006, Rev. 3. The reactor building (R/B), prestressed concrete containment vessel (PCCV), containment internal structure (CIS), east and west power source buildings (PS/Bs), auxiliary building (A/B), and essential service water pipe chase (ESWPC) are now structurally integrated and supported on a common basemat to form the R/B complex. Technical Report MUAP-10006, Rev. 3 presents the information relevant to the added A/B and PS/Bs as well as the other buildings that make up the R/B complex.

The seismic evaluations of the A/B discussed in Technical Report MUAP-11001 are superseded by the soil-structure interaction (SSI) analyses in Technical Report MUAP-10006, Rev. 3, which include base rocking motion. The generation of in-structure response spectra (ISRS), which is described in Section 03.3.6 of the report, therefore includes effects of base rocking motion.

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 a Technical/Topical Report.

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