
RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

1/31/2013

US-APWR Design Certification

Mitsubishi Heavy Industries

Docket No. 52-021

RAI NO.: NO. 852-6003 REVISION 3
SRP SECTION: 03.07.02 – Seismic System Analysis
APPLICATION SECTION: 3.7.2
DATE OF RAI ISSUE: 10/24/11

QUESTION NO. RAI 03.07.02-129:

In Subsection 5.3.4.2 of MUAP-10001 (R3), "Validation of the CIS," the first paragraph (Page 5-189) states, "Please note that the ARS produced by ACS SASSI demonstrate higher peak responses due to the additional amplification from slight variations in the models used for analysis (variations present in both cracked and uncracked models). The fixed base analysis for the ANSYS model considers fixed boundary conditions at the base of the CIS structure. The SSI validation analysis with hard rock soil conditions considers the entire R/B complex with fixed base boundary conditions at the bottom of the basemat. As discussed in Section 4.3.3, this difference in support elevation creates amplifications at the base of the CIS as presented in the transfer functions provided in Figure 5.3.4.2-1 and Figure 5.3.4.2-2."

The Applicant is requested to address the following:

1. The transfer functions presented in Figure 5.3.4.2-1 and Figure 5.3.4.2-2 are for x and y directions. The applicant is requested to present the corresponding transfer function in the z direction to assist the staff to better understand the ARS shown in Figures 5.3.4.2-13 and 5.3.4.2-14 (Pages 5-202 to 5-203) where the results of SASSI model in z direction have a second distinct peak around 28 Hz.
2. The transfer function in the x direction shown in Figure 5.3.4.2-1 is amplified above 1.5 in the frequency range from 25 Hz to 37 Hz. However, the ARS at top of pressurizer compartment in the x direction shown in Figure 5.3.4.2-3 does not show any amplification in the same frequency range. The applicant is requested to provide a technical explanation for this phenomenon and what changes are made to the FE model to rectify this discrepancy.

ANSWER:

Technical Report MUAP-10001, Rev. 3, is superseded by Technical Report MUAP-10006, Rev. 3.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 combined basemat to form the R/B complex. Technical Report MUAP-10006, Rev. 3,

presents the information relevant to the A/B as well as the other buildings that make up the R/B complex.

The validation of the model no longer uses the methodology or acceptance criteria that were stated in Technical Report MUAP-10001. The methodology and validation of the model is presented in Part 2 of Technical Report MUAP-10006, Rev. 3.

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. MHI to Verify

Impact on Technical/Topical Report

There is no impact on Technical/Topical Report

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