
RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

1/31/2013

US-APWR Design Certification

Mitsubishi Heavy Industries

Docket No. 52-021

RAI NO.: NO. 856-6094 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 03.07.02-168:

In Subsection 3.1 of MUAP-11011 (R0), "SSSI Analyses Methodology," the third paragraph (Page 5) states, "The results from the site-independent SSI analyses of the standalone PS/B dynamic FE model with different stiffness and damping levels for these soil cases will be evaluated to determine which structural stiffness level governs the response. The stiffness properties of the PS/B model in the combined SSSI model will be based on the most critical stiffness level determined from this evaluation."

The applicant is requested to provide more detailed information for the study mentioned in the above quoted first sentence. The staff is not able to find this study presented in the report. If the study will be presented in Revision 1, the applicant is requested to clarify this. Also, the applicant is requested discuss the criteria used to select the most critical stiffness level mentioned in the above quoted sentences.

ANSWER:

Technical Report MUAP-11011, Rev. 0 has been superseded and the relevant information on the structure-soil-structure interaction analysis methodology has been incorporated into Technical Report MUAP-10006, Rev. 3.

The power source building (PS/B) is no longer a standalone building in the US-APWR standard plant design.

The soil-structure interaction (SSI) analyses is performed using dynamic FE models of the reactor building (R/B) complex, which consists of the R/B, prestressed concrete containment vessel (PCCV), containment internal structure (CIS), east and west PS/Bs, auxiliary building (A/B) , and essential service water pipe chase (ESWPC) supported on a combined basemat. The structure-soil-structure (SSSI) analysis evaluates the influence of the Turbine Building (T/B) on the R/B complex. The T/B is also a FE model.

As stated in Subsections 02.1.0, 02.3.3, 02.4.1.1.3, and 02.4.2 of Technical Report MUAP-10006, Rev. 3, two different levels of stiffness and damping properties corresponding to cracked and uncracked concrete are used in the dynamic FE modeling. As stated in Section 03.1.0 of Technical Report MUAP-10006, Rev. 3, the SSSI analysis is performed for four (270-200, 560-500, 900-100, 900-200) of the six generic profiles using both cracked and uncracked models.

The soil profile 270-500 and the rock profile 2032-100 were not evaluated in the structure-soil-structure interaction analyses as explained in Section 03.3.5 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.

Impact on Technical/Topical Report

There is no impact on the Technical/Topical Report

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