
RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

1/31/2013

US-APWR Design Certification

Mitsubishi Heavy Industries

Docket No. 52-021

RAI NO.: NO. 854-6088 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 03.07.02-157:

Section 4.1.1 in MUAP 11007 (R0) indicates that neglecting the effect of embedment will lead to conservative response calculations. However, in the paragraphs following, it is stated that the assumptions associated with neglecting embedment cause potential SSI frequency shifts, modify effective motion input to the structural models, and can be expected to result in variations in computed transfer functions. In addition, none of the eight profiles considered for SSI include velocity inversions in the profile (i.e., a stiff layer with relatively high shear wave velocity overlaying a softer soil layer with lower shear wave velocity). Also, the last paragraph of Section 4.1.2 indicates that the responses at the extreme outer corners of the basemat are different from the general response. The applicant is requested to explain whether the embedment evaluation is intended to provide additional results to be included in the design-basis envelope, or is only intended to justify that neglecting the effects of embedment is conservative. If the latter is the case, the applicant needs to provide substantive comparisons of results (e.g., at multiple locations of peak structural demands and ISRS) that support this contention.

ANSWER:

Technical Report MUAP-11007, Rev. 2 only addresses the effect of groundwater on the standard plant soil-structure interaction (SSI) analysis.

The embedment study has been removed from Technical Report MUAP-11007, Rev. 2 since the design-basis SSI analyses in Technical Report MUAP-10006, Rev. 3 consider the reactor building (R/B) complex to be embedded, as discussed in Section 03.3.4 of Technical Report MUAP-11007, Rev. 2.

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.