
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 03.07.02-114:

On P. 4-12, in Section 4.3 of this MUAP 10001 (R3), “ACS SASSI Dynamic Finite Element Model of R/B Complex,” the third step in the procedure states:

“Step 3: Translate the Dynamic FE Model into ACS SASSI format and verify the accuracy of the translation. The translator built into the ACS SASSI code serves as the platform for the translation of the dynamic FE model from ANSYS to ACS SASSI house module format. In order to validate the translation of the model, validation SSI analyses are performed on the ACS SASSI dynamic FE model resting on a very rigid elastic half space. The dynamic properties of the model revealed by the resulting amplification transfer functions (ATFs) and 5% or 7% damping ARS at selected locations are compared to the fixed base dynamic properties and responses obtained from ANSYS modal and time history analyses to ensure the translation is competed correctly.”

The applicant is requested to define the term “very rigid” in this Step 3, and to provide the rationale that explains why it is necessary to qualify the term “rigid.” Also, there appears to be a typo in the last line: the word “competed” should be “completed.”

ANSWER:

Technical Report MUAP-10001, Rev. 3 has been superseded and its relevant information has been incorporated into Technical Report MUAP-10006, Rev. 3. Modeling information previously discussed in Technical Report MUAP-10001 Rev. 3, Section 4.3 is now discussed in Technical Report MUAP-10006, Rev. 3, Section 02.4.1.

The intent of the term was to define a half space to provide a fixed base condition, however a half space can not be more than rigid. Therefore, the wording “very rigid elastic half space” has been re-worded to “very stiff elastic half space” in Step 3 in Section 02.4.1. The use of a very stiff half space helps simulate fixed base conditions for the validation purposes with minimal impact on the numerical accuracy of the solution. Similarly, the wording “very rigid elastic half-space” in Section 4.4 of Technical Report MUAP-10001 has been re-worded in Section 02.4.3 of MUAP-10006, Rev. 3, to “very stiff elastic half space”.

The word “competed” was a typographical error and has been revised to “completed” in Step 3 in Section 02.4.1.

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.