
RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

02/27/2013

US-APWR Design Certification

Mitsubishi Heavy Industries

Docket No. 52-021

RAI NO.: NO. 853-6029 REVISION 3
SRP SECTION: 03.07.02 – Seismic System Analysis
APPLICATION SECTION: 3.7.2
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QUESTION NO. 03.07.02-148:

In Subsection 5.2.4 of MUAP-11006 (R0), "Base Shear Verification Results," it states that, "A dynamic Time-History response analysis using explicit time integration is performed to calculate the base shear of the combined R/B Complex LMSM. For this purpose, the three individual lumped mass stick structures, namely PCCV, R/B and FHA, as well as CIS (uncracked model), are constrained at the top of their basemats and an explicit time integration is performed on each model. The resulting time histories of base shear for each of the three LMSMs are added together to calculate the time history of base shear for the combined R/B Complex LMSM."

In order for the staff to better evaluate the characteristics of the LMSM, the applicant is requested to provide the following information:

1. Identify source(s) and provide justification of conservatism in the base shears predicted by LMSM relative to the base shears from the detailed dynamic model as shown in Figures 5.2.4-1, and 5.2.4-2 of MUAP-11006 (R0).
 2. Calculate and compare the maximum base overturning moments (in all three directions) predicted by LMSM relative to the maximum base overturning moments from the detailed dynamic model to show that the overturning moments due to LMSM are conservative.
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ANSWER:

A lumped mass stick model of the seismic category I structures is no longer used for the associated studies (Structure-Soil-Structure Interaction (SSSI) in Technical Report MUAP-11011 and embedment and water table in Technical Report MUAP-11007). Technical Report MUAP-11006 is withdrawn.

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.