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**RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION**

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02/27/2013

**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:** 10/24/2011

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**QUESTION NO. 03.07.02-155:**

The lumped mass stick model (LMSM) shown in MUAP 11007 (R0), Fig. 3.4.1-1, appears to indicate that all sticks representing the R/B complex superstructure (R/B, PCCV, CIS) connect into one plan location on the basemat. The applicant is requested to confirm this, and explain how such a model can account for any bending effects of the basemat on the walls and diaphragms of the superstructure, and how it can be used to justify the design of the standard plant SSCs or to develop bounding estimates of ISRS that includes the effect of embedment. The staff notes that coupling of the superstructure with the basemat cannot be accommodated in these analyses.

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**ANSWER:**

The lump mass stick model methodology described in Technical Report MUAP-11007, Rev. 0 is not used in Technical Report MUAP-11007, Rev. 2. Technical Report MUAP-11007, Rev. 2 is a study of the impact of groundwater on the Soil-Structure Interaction (SSI) analysis and no longer includes the effects of embedment on the SSI analyses.

The effects of embedment on the SSI analyses are now included in Technical Report MUAP-10006, Rev. 3. The SSI analyses of the US-APWR are performed using a fully-bonded, embedded dynamic Finite Element (FE) model of the Reactor Building (R/B) complex.

**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.

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