RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

1/31/2013

US-APWR Design Certification

Mitsubishi Heavy Industries

Docket No. 52-021

RAI NO.:	**NO. 798-5876 REVISION 3**
SRP SECTION:	**03.07.01 – Seismic Design Parameters**
APPLICATION SECTION:	**3.7.1**
DATE OF RAI ISSUE:	**08/05/11**

QUESTION NO. RAI 03.07.01-17:

In Subsection 3.7.1.3 of DCD (R3), "Supporting Media for Seismic Category I Structures", the last sentence of the fourth paragraph (page 3.7-11) states, "Note that for purposes of development of compression wave velocities, the profiles are analyzed in the saturated condition."

The Applicant should describe the sensitivity studies performed to address the effect of variability of the ground water table (i.e., dry versus saturated soil) on the SSI analysis results. Also, the applicant should describe how the variability in pore water and the variability of ground water level with time affect the seismic response of the structures per SRP Section 3.7.2.I.4.

ANSWER:

This answer revises and replaces the previous MHI answer that was transmitted by letter UAP-HF-11421 (ML11342A220).

Technical Report MUAP-11007, Rev. 2, provides a sensitivity study of the effects of water table on the US-APWR standard design. The study includes a comparison of seismic responses obtained from unsaturated soil profiles with the responses obtained from the design-basis saturated soil profiles. MUAP-11007 concludes that the effects of groundwater level on the seismic design basis response for the R/B complex are minor and that the use of saturated soil profiles will result in a standard plant design that envelops the seismic demands at a majority of candidate sites within the CEUS.

With regard to pore water, as discussed in Section 2.2 of Technical Report MUAP-11007, Rev. 2, the site response and soil-structure interaction (SSI) analyses implement a single phase continuum approach in which the mass of the groundwater is lumped with the mass of the soil skeleton, and the responses of the groundwater and the soil skeleton are considered to be completely in phase.

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.