

REQUEST FOR ADDITIONAL INFORMATION 798-5876 REVISION 3

8/5/2011

US-APWR Design Certification

Mitsubishi Heavy Industries

Docket No. 52-021

SRP Section: 03.07.01 - Seismic Design Parameters

Application Section: 3.7.1

QUESTIONS for Structural Engineering Branch 1 (AP1000/EPR Projects) (SEB1)

03.07.01-14

In Subsection 3.7.1.1 of DCD (R3), "Design Ground Motion", the first paragraph under the subtitle "FIRS" (page 3.7-4) states, "The material present above the control point elevation can be excluded from the site response analysis."

Per DC/COL-ISG-017, the effects of any soil above the control point need to be considered in calculating the properties of the soil below the control point. The applicant should confirm that the effects of any overlying soil have been properly accounted for, or provide the technical basis and justification for not conforming to DC/COL-ISG-017.

03.07.01-15

In Subsection 3.7.1.1 of DCD (R3), "Design Ground Motion", the first paragraph under the subtitle "Duration of Motion" (page 3.7-8) states, "The duration of motion has been determined using random phase characteristics."

The Applicant is requested to explain how the duration of motion is determined using random phase characteristics, and describe how this approach is consistent with the acceptance criteria of SRP 3.7.1.II.1a. If the approach is not consistent with SRP guidelines, the Applicant should provide technical justification for the selected approach.

03.07.01-16

In Subsection 3.7.1.1 of DCD (R3), "Design Ground Motion", the second paragraph under the subtitle "Duration of Motion" (Page 3.7-8) states, "the total duration of the ground motion time histories has been demonstrated to be long enough such that adequate representation of the Fourier components at low frequency is included in the time history."

The Applicant is requested to define "low frequency" in this context and to show how the adequate representation of the Fourier components is implemented to assure that the ground motion duration is sufficient.

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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.