

REQUEST FOR ADDITIONAL INFORMATION 538-4320 REVISION 2

3/2/2010

US-APWR Design Certification

Mitsubishi Heavy Industries

Docket No. 52-021

SRP Section: 03.07.04 - Seismic Instrumentation

Application Section: 3,7.4

QUESTIONS for Geosciences and Geotechnical Engineering Branch 1 (RGS1)

03.07.04-3

Section 3.7.4.1 of the DCD states that seismic instrumentation for monitoring the free-field ground motion is not specifically required since both the site-independent and site-specific design are based on control motions that are defined at the bottom of the basemats. Section 3.7.4.1 of the DCD further states that the response spectra of the free-field ground motion are not directly relevant to the design of the US-APWR standard plant nor are directly comparable to the design input ground motion as defined by the CSDRS and FIRS in Subsection 3.7.1.1. In lieu of a free field seismic instrument, you propose that the OBE exceedance checks be performed using ground motions obtained from seismic instrumentation installed at five plant locations (i.e. two basemat locations and three upper level locations as described in Subsection 3.7.4.2). You further state that the use of five instrument locations is more conservative than the interim OBE exceedance guidelines given in Appendix A of RG 1.166 (Reference 3.7-41), which allow basemat level only instrumental checks.

RG 1.12 specifies that a seismic instrument be located in the free-field and RG 1.166 states that the evaluation to determine whether the OBE has been exceeded should be performed using the ground motion recorded from a free-field seismic instrument. In addition, the purpose of Appendix A, as noted in RG 1.166, is to provide interim OBE exceedance guidelines in the case that the installed seismic instrumentation or data processing equipment is inoperable.

With regard to Section 3.7.4 of the DCD, please provide the following information:

1. Explain how the proposed US-APWR design is consistent with the regulation, as well as the guidance in RG 1.12 and RG 1.166, which specify that COL applicants install a free-field instrument to determine OBE exceedance.
2. Please clarify the OBE exceedance criteria in subsection 3.7.4.1, which states that, "the shutdown of the plant is required only if all three of the above conditions are met." RG 1.166 states that the OBE exceedance occurs if the response spectrum check and the CAV check are exceeded. The OBE response spectrum is exceeded if the spectral acceleration **or** spectral velocity criteria are exceeded.
3. Subsection 3.7.4.1 states that "the measured response spectra at each of the instrumentation locations in Subsection 3.7.4.2 are compared against the corresponding site-specific OBE instructure acceleration and velocity response spectra." Please explain how the in-structure acceleration and velocity response spectra are developed. Specifically, clarify whether the site-specific instructure

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OBE spectra would necessitate that applicants perform a soil-structure-interaction (SSI), if they elect not to have a free-field seismic instrument to determine OBE exceedance.