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RULES AND DIRECTIVES  
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Chief, Rules and Directives Branch  
Office of Administration  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555-0001

**SUBJECT:** Additional NEI Comments on Draft Regulatory Guide DG-1146,  
"Performance-Based Approach to Define the Site-Specific  
Earthquake Ground Motion"

**PROJECT NUMBER: 689**

This letter provides additional comments to the NEI letter. NEI Comments on Draft Regulatory Guide DG-1146, dated December 7, 2006, addressed to the Chief, Rules and Directives Branch. On December 14, 2006, the NRC held a public meeting in which these additional comments were developed. These comments are divided into categories of general and specific.

GENERAL

1. The terms, "Existing Probabilistic Seismic Hazard Assessment (PSHA) database," and "accepted probabilistic seismic hazard studies," appear at various places throughout the text of the draft Regulatory Guide DG - 1146. The draft does not adequately define what is meant by these terms. We recommend that these terms be replaced with the term, *Acceptable PSHA model* and be defined in the glossary as follows:

*Acceptable PSHA model* is a method of conducting a Probabilistic Seismic Hazard Analysis (including the seismic sources and ground motion equations) that has been developed using Senior Seismic Hazard Analysis Committee (SSHAC) guidelines and that has been reviewed and accepted by the NRC either for generic application (e.g. the 1989 studies by LLNL and EPRI, with the inherent seismic source description for the CEUS) or as part of an ESP or COL application. Acceptable PSHA models are starting points for developing probabilistic seismic hazard calculations for new ESP or COL applications, yet must be updated with new information on seismicity, geology, geophysics, and ground motion equations, as appropriate for a site that is being reviewed.

SUNSI Review Complete  
Template = ADM-013

E-RIDS = ADM-03  
Add = A.J. Murphy (ASMA)  
S. O'Connor (SCD)  
S. Ridgely (JNR)  
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2. The industry comment in the referenced letter relating to the need for guidance for Western U.S. sites should not delay issuance of the Regulatory Guide. This topic could be developed and included as a revision later

SPECIFIC

1. On page 2, third paragraph, the draft Regulatory Guide indicates that site-specific design spectra should be sufficient to assure that a 0.1g spectrum at the building foundation level in the free field is met. These minimum spectra should have an "appropriate" shape, which the NRC is currently planning to define as the Regulatory Guide 1.60 shape. An "appropriate" shape would include shapes that have adequate energy in the low frequency range, not only the Regulatory Guide 1.60 spectra.
2. On page 18, Paragraph 7, first sentence, the draft Regulatory Guide states, "Once the SSE is developed, it is compared with the seismic design criteria in the design certification documentation." When the site-specific response spectrum is compared to the certified design spectrum, the importance of the spectral exceedances identified, if any, should be evaluated considering the spectral frequency ranges that control soil response to determine liquefaction potential (approximately 1/2 Hz to 2 Hz), structural response (approximately 2 Hz to 10 Hz) and equipment response (greater than 10 Hz). (Note: The frequency ranges shown are approximate.)

We appreciate this opportunity to provide comments based on the public meeting. If you have any further questions regarding these comments, please contact Rick Hill (Project Director) at [rahill@erineng.com](mailto:rahill@erineng.com) or me (202) 739-8094; [aph@nei.org](mailto:aph@nei.org).

Sincerely,



Adrian P. Heymer

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