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September 24, 2009

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**Subject:** Industry Comments on Draft Interim Staff Guidance on Ensuring Hazard-Consistent Seismic Input for Site Response and Soil Structure Interaction Analyses (ISG-17), Docket ID NRC-2009-0380

**Project Number: 689**

The Nuclear Energy Institute (NEI)<sup>1</sup> is pleased to provide the enclosed industry comments on the subject draft Interim Staff Guidance (ISG-17).

As a result of the of the September 25-26, 2008 meeting between the NRC staff and the NEI Seismic Issues Task Force, the industry developed a white paper describing an approach for obtaining site-consistent seismic input for soil-structure interaction analyses. The draft ISG-17 identifies the industry white paper as one of two acceptable approaches that can be used for this purpose.

We agree with the technical content of the draft ISG-17, and offer the enclosed comments as suggested clarifications for the staff's consideration.

<sup>1</sup> The Nuclear Energy Institute (NEI) is the organization responsible for establishing unified industry policy on matters affecting the nuclear energy industry, including the regulatory aspects of generic operational and technical issues. NEI's members include all entities licensed to operate commercial nuclear power plants in the United States, nuclear plant designers, major architect/engineering firms, fuel fabrication facilities, nuclear materials licensees, and other organizations and entities involved in the nuclear energy industry.

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Add = R. Subbaratnam (RX52)  
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September 24, 2009  
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If you have any questions about the industry comments, please contact me or Kimberly Keithline.  
(202-739-8121; kak@nei.org).

Sincerely,



Russell J. Bell

Enclosure

c: Dr. Niles Chocksi, U.S. Nuclear Regulatory Commission  
Mr. William Burton, U.S. Nuclear Regulatory Commission  
NRC Document Control Desk

**Industry Comments on ISG-17, Ensuring Hazard-Consistent Seismic Input for Site Response and Soil Structure Interaction Analyses (September 24, 2009)**

<b>ISG Section/ Paragraph/Sentence</b>	<b>Comment</b>	<b>Proposed Resolution</b>
Page 3, soil column, 2 <sup>nd</sup> sentence	This section states that soil column properties, best estimate, and upper bound and lower bound values of each layer are obtained from the soil response motion at the MAPE of 10 <sup>-4</sup> . In the previous section under Site Response Analysis, the development of design motion using the soil column responses at 10 <sup>-4</sup> and 10 <sup>-5</sup> are described. To be consistent with the design motion, the soil column properties should also be obtained from interpolation of strain-compatible soil properties corresponding to 10 <sup>-4</sup> and 10 <sup>-5</sup> MAPEs.	The best estimate soil property should be obtained from the interpolation of the median strain-compatible soil properties corresponding to the soil column analyses using 10 <sup>-4</sup> and 10 <sup>-5</sup> MAPEs rock motions. The upper bound and lower bound soil column properties are obtained from the variation of the strain-compatible soil properties from the median profile. Typically, one standard deviation is used to define the upper and lower bound values.
Section 1, page 1, middle of paragraph	"Section 3.3" should be changed to "Section 5.0."	Change "Section 3.3" to "Section 5.0."
Section 3, page 4, item 1	Hard rock and 9200 ft/sec is applicable to CEUS sites only and not for all sites. In addition this definition is likely to change for CEUS sites when NGA East is completed.	Change to "Rock UHS is calculated at the rock horizon under the geologic outcrop condition."
Section 5.2.1, fist sentence, page 7	Same as the item above	Change "hard rock" to "rock."

**Industry Comments on ISG-17, Ensuring Hazard-Consistent Seismic Input for Site Response and Soil Structure Interaction Analyses (September 24, 2009)**

<b>ISG Section/ Paragraph/Sentence</b>	<b>Comment</b>	<b>Proposed Resolution</b>
Section 5.2.1, footnote 2	The PSHA analysis provides various statistical measures of the annual probability of exceedance as a function of rock spectral accelerations. Regulatory Guide 1.208 specifies that the mean annual probability of exceedance [MAPE] be used in developing the rock motions. In site response analysis, it is assumed that the soil amplification and soil response motions in terms of acceleration response spectra are log-normally distributed, consistent with the definition of the rock ground motion attenuation relations used in the PSHA commonly being defined as median ground motions. With this assumption, the mean of the logarithmic values are used, which amounts to median values of the soil response motion.	Remove foot note number 2.
Paragraph 3 on page 2, Effect of Overburden in the Soil Profile Properties.	Paragraph 3 on page 2 requires that, in computing the GMRS at the uppermost in situ competent layer, one needs to capture the effect of soil overburden on confining pressures. The paragraph does not specifically state that the "dynamic" effect of the soil overburden should also be captured in computing the GMRS. In Section 3.1.2 of the NEI paper (ISG-17 Reference 3), an approach is proposed to include the effects of the overburden soil both in terms of the confining pressure and the dynamic effect in computing the response of the truncated soil columns.	In paragraph 3 of page 2, change the statement "However, the calculation needs to capture the effect of the weight of the soil overburden in producing confinement" to:  "However, the calculation needs to capture the effect of the weight of the soil overburden in producing confinement and includes the effects of the soil column frequency of the overburden soil."