

June 17, 2003

Dr. Ronald L. Simard  
Nuclear Energy Institute  
1776 I Street, NW, Suite 400  
Washington, DC 20006-3708

SUBJECT: RESOLUTION OF EARLY SITE PERMIT TOPIC 13 (ESP-13), GUIDANCE FOR  
ESP SEISMIC EVALUATIONS

Dear Dr. Simard:

The purpose of this letter is to respond to your understanding and expectations regarding the guidance for seismic evaluation information which will be used in early site permit (ESP) applications. This topic, which is identified as ESP-13 on the list of Nuclear Energy Institute (NEI) generic ESP issues, was discussed during public meetings held on June 13, July 16, October 16, 2002, and March 5, 2003 (Meeting Summaries - ADAMS Accession Nos. ML021840352, ML022330668, ML023370573, and M030990608). In addition, on September 4, 2002, NEI submitted information related to ESP seismic demonstration activities. Subsequently, NEI documented its position on this topic in a letter dated April 25, 2003.

Given that specific technical review guidance should reside solely within the ESP Review Standard (RS) in order to avoid any confusion or inefficiency during the application review, no statement made in this letter should be construed as overriding or conflicting with the guidance provided in the ESP RS. In addition, the subject guidance listed below is not intended to be inclusive of the entire scope of review on this subject.

The staff's responses to items 6, 7, and 8 have been combined since they pertain to the same subject matter. Item 9 represents a technical position which will have to be addressed during the ESP application review.

Understandings and expectations:

1. The staff agrees with NEI. Pursuant to 10 CFR 100.23(c), the ESP applicant will investigate and identify the geological, seismological, and engineering characteristics of a site and its environs to permit evaluation of the site and to support evaluation of the Safe Shutdown Earthquake (SSE) ground motion.
2. The staff agrees with NEI. Pursuant to 10 CFR 100.23(d), the ESP applicant will identify site-specific geologic and seismic siting factors including a determination of the SSE ground motion for the site, the potential for surface tectonic and nontectonic deformations, and the design bases for seismically induced floods and water waves.
3. The staff agrees with NEI. Regulatory Guide (RG) 1.132 provides the principal current NRC guidance for conducting geotechnical characterization of the site. The ESP applicant may utilize existing geotechnical data from previously considered applications if its continued validity is confirmed or it is updated.

- NEI states that “additional exploration and evaluations may be necessary for COL applications to support specific design considerations.” The staff does not understand the context of the subject statement within the ESP review scope. As discussed below, the staff expects that all site characterizations will be provided in the ESP application and be consistent with the applicable sections of the ESP RS so that the staff’s disposition under 10 CFR Part 100 will be final.
4. The staff agrees with NEI. RG 1.138 provides the principal current NRC guidance for conducting laboratory testing necessary to determine the properties of subsurface materials of the site.
  5. The staff agrees with NEI. Pursuant to 10 CFR 100.23(d)(1), a probabilistic seismic hazard analysis (PSHA) or suitable sensitivity analyses are acceptable ways to address the uncertainties in the determination of the design basis ground motion for a site. RG 1.165 provides the principal current NRC guidance for determining safe shutdown earthquake ground motion using PSHA.
  6. The staff agrees with NEI. Once the controlling earthquakes are determined using Appendix C of RG 1.165, Regulatory Position 4 in RG 1.165 provides the procedure for determining the SSE. Appendix F of RG 1.165 elaborates on Position 4 by providing further guidance on the development of the smooth SSE free-field spectra. Additional guidance from NUREG/CR-6728 and NUREG/CR-6769 may be used as specified below.
    - Define appropriate rock spectrum using spectral shape appropriate for CEUS.
    - Assess dynamic response properties for the site using results of geotechnical investigations.
    - Perform site response analyses using procedures to develop free-field surface motions.

Site subsurface investigations supporting the ESP application must be conducted to provide sufficient coverage of the areas upon which all safety-related structures will be located, such that there is reasonable assurance that the actual site characteristics, revealed during excavations, will be consistent with the site subsurface model developed to support the ESP application. The ESP will contain a license condition requiring the reporting of any information the ESP holder has identified as having a significant implication for public health and safety. The Commission will evaluate any such information reported and will take appropriate action.

R. Simard

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Please contact Michael Scott, the ESP Senior Project Manager at 301-415-1421 if you have any questions on this matter.

Sincerely,

***/RA/***

James E. Lyons, Director  
New Reactor Licensing Project Office  
Office of Nuclear Reactor Regulation

Project No. 689

Enclosure: As stated

cc w/encl: See next page

R. Simard

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Please contact Michael Scott, the ESP Senior Project Manager at 301-415-1421 if you have any questions on this matter.

Sincerely,

*/RA/*

James E. Lyons, Director  
New Reactor Licensing Project Office  
Office of Nuclear Reactor Regulation

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cc w/encl: See next page

**ACCESSION NO. ML031280692 \*See previous concurrence**

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