COMMUNICATION PLAN
FOR SEISMIC ISSUES
IN
NEW REACTOR DESIGN

GOALS

This communication plan describes the methods and tools that the Nuclear Regulatory Commission (NRC) staff will use to communicate with internal and external stakeholders regarding the proposed draft interim staff guidance (ISG) on seismic issues in new reactor design.

BACKGROUND

The industry initiated the New Reactor Seismic Issues Resolution Program to work with the NRC to address technical issues pertaining to the seismic design of new reactors. The NRC Seismic Issues Technical Advisory Group, comprising staff members from the NRC's Office of New Reactors, Office of Nuclear Regulatory Research, and Office of Nuclear Material Safety and Safeguards, was a principal interface with industry.

There were two critical issues that needed to be addressed. The first, related to the implementation of the performance-based approach to determining the ground motion, as outlined in the American Society of Civil Engineers (ASCE) Standard 43-05, "Seismic Design Criteria for Structures, Systems, and Components in Nuclear Facilities." The second arose from the fact that the current ground motion models for the Central and Eastern United States are predicting ground motions for some sites that would exceed the certified design ground motions in the high frequency range (greater than 10 hz).

The NRC staff and industry reached a resolution on the first issue, and the staff formalized its regulatory guidance in Regulatory Guide (RG) 1.208, "A Performance-Based Approach to Define the Site-Specific Earthquake Ground Motion," which was issued in March 2007. The staff then developed and incorporated the umbrella framework to review the conditions that would arise as result of the "high-frequency issue"(second issue) in Section 3.7.1, "Seismic Design Parameters," of NUREG-0800, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants," Revision 3, which was issued in March 2007 (referred to hereafter as the SRP).

On the second issue, industry conducted technical studies that were used as input for the development of staff guidance to review the effects of high frequency ground motion on structures, systems and components. Some of the more recent examples of industry and staff technical exchanges are cited below.

NEI recently submitted two draft white papers on effects of high-frequency ground motion on the integrity of structures, systems and components. The first draft report deals with historical studies, past earthquake experiences, and analytical studies to demonstrate why the effects of high frequencies are limited with respect to structural integrity considerations. This report provides a foundation for the staff position to perform only a sampling analysis rather than a complete analysis of all structures,

systems, and components. The second report includes proposed framework for demonstrating the functional adequacy of components that are sensitive to high-frequency ground motions.

In July 2007, the industry submitted a number of technical reports that were the focus of a meeting held on July 23-14, 2007. The key staff acceptance criteria for conducting advanced seismic analysis using input motion that varies over the foundation (incoherency effect) are based on results contained in these reports.

The proposed staff guidance reflects the complete information needed to perform a detailed safety review using the framework in SRP Section 3.7.1. Westinghouse has already presented the preliminary results to the staff.. Westinghouse plans to submit formally their report to address the high-frequency seismic ground motion issue in October 2007, in conjunction with its request to amend the AP1000 design certification.

Thus, the proposed draft interim staff guidance (ISG) attached with this communication supplements the SRP framework already established in the March 2007.

KEY MESSAGES

The key messages to be communicated through this plan are as follows:

- The draft ISG provides an acceptable approach for demonstrating the adequacy of existing certified design for which the earthquake motion used in their design is exceeded by that of a site-specific ground motion in the high frequency part.

- The technical acceptance criteria are based on extensive review and feedback from stake holders through public meetings.

- The staff guidance recognizes that the high frequency ground motions are less damaging than low frequency ground motions and allows for a sampling approach to show that the existing design is adequate to resist site-specific motions.

- The draft ISGs provide—(1) technical positions defining specific acceptance criteria or an acceptable approach and (2) information to be included in a combined license application to fully address the high-frequency issue. This approach has been implemented in the framework in the updated SRP Section 3.7.1.

- Although these ISGs focus on the COL application, they are also applicable to an amendment to a certified design. They should also be useful in developing a design certification application.

- Westinghouse in its application to amend the AP1000 design certification has adopted a sampling approach consistent with the staff guidance. The final Westinghouse report will be submitted in October 2007.

- The issue of the high-frequency response is likely to vary in scope and extent from site to site. In general, the issue is more likely to affect hard-rock sites.

AUDIENCE

The intended audience for this communication plan includes the following internal and external stakeholders.

Internal stakeholders:
Allegations Coordinator
Office of Public Affairs (OPA)
Office of Congressional Affairs (OCA)
Office of Federal and State materials and Environmental management Programs (FSME)
Office of Nuclear Regulatory Research (RES)
Office of Nuclear Security and Incident Response (NISR)
Office of Nuclear Material Safety and Safeguards (NMSS)
Office of General Council (OGC)
Office of the Inspector General (OIG)
Office of the Executive Director of Operations (EDO)
Advisory Committee on Reactor Safeguards (ACRS)
Office of New Reactors (NRO)
Regions
Commission

External Stakeholders:
Public
State energy program offices
Congress
Government agencies
Industry groups (e.g., Nuclear Energy Institute)
Investors
Utility (new reactor applicant)
Vendors

COMMUNICATION TEAM

Goutam Bagchi (NRO/DSER) Team Leader	301-415-3305
Bob Jasinski(NRO/PMDA) NRO Senior Communications Specialist	301-415-1452
Lauren Quinones (EDO) EDO Communications Assistant	301-415-0782
Scott Burnell (OPA) Public Affairs Officers	301-415-8204
David Cullison (NRO/DE) Technical Assistant	301-415-1212
Raeann Shane (OCA) Sr. Congress Affairs Officer	301-415-1699
Nilesh Chokshi(NRO/DSER) Deputy Director	301-415-1634
Sujit Samaddar (NRO/DE) Structural Branch Chief	301-415-3309

COMMUNICATION TOOLS

NRO Website
Information regarding the application will be made available to internal and external stakeholders through the NRO Website.
Public Meetings
Conference calls
Telephone calls
Written communication: Letter to NEI
OPA will coordinate all media with external stakeholders, as needed:

TIMELINE

DATE	ACTIVITY	RESPONSIBLE ORGANIZATION	COMMENTS
8/24/07	Develop draft ISG	DSER	
8/31/07	Draft ISG issued for concurrence	DSER	
9/07/07	NRC issues draft ISG to Industry	DSER	
9/14/07	Public informed by notices and regular updates via ADAMS, NRC public website.		Continuous
TBD	Staff receives final industry report	DSER	
TBD	Staff reviews final report	DSER,DE & RES	
TBD	Staff issues ISG	DSER & DE	
TBD			

COMMUNIC**ATION CHALLENGES**
The issue is complex, clear communication to the public is important

UPDATES AND REVISIONS
As appropriate

FINAL CLOSE-OUT
Expected by the end of this calendar year.

QUESTIONS AND ANSWERS

Q1.How does the performance-based design assure higher public safety?

a1. The performance-based design, utilizes a probabilistic approach to hazard assessment which includes the influence of uncertainty in the estimate and

performance of structures to different levels of the seismic hazard. This process provides an assurance that the performance of the structure will be predictable for the associated level of hazard.

Q2. What is the high frequency zone? Does it affect all plant sites?

A2. The high frequency zone is the range of frequencies beyond 10Hz. No, all plant sites do not have site responses that have significant energy in the high frequency zone, only those at hard rock sites. Hence the earthquake effects in this zone do not have much damage potential.

Q3. Why has the staff chosen the sampling approach?

A3. The SSC's of a power plant respond to different frequencies. An earthquake spectrum covers a wide range of frequencies. Sampling allows the applicant to eliminate those components that do not fall within the frequency range of exceedance.

Q4 Does the lack of this set of interim staff guidance slow the progress of the applicants?

A5. This interim guidance does not affect those applicants who have early in their design process utilized a site design response spectra that includes sites that have ground response in the high frequency range.

Q5. Why was incoherency not included in earlier reactor design?

A5. The simplicity of the analysis is the main reason. Also, data of recorded ground motion from a dense array of seismic instruments were not available.

Q6. Why is NRC allowing for exceedance considering these are all new plants to be built?

A6. High frequency seismic input motion generally does not damage structures and mechanical equipment. NRC regulation, 10 CFR Part 52 allows the use of analysis to demonstrate suitability of an existing certified design at a site.

Q7. Is it possible to proceed with the system and component design when the final staff positions on high frequency issues have not been issued?

A7. Yes, the industry has proposed an approach for the development of in-structure response which includes the high frequency segment of ground motion. The draft interim guidance reflects the staff positions. The final ISG will be issued when the final report is issued by the industry.

Q8. Do you anticipate changes in staff position when the final industry report is issued?

A8. The staff does not anticipate any change in their position if the final reports contain the same information as was presented to the staff during the July 23rd &

July 24th meeting at EPRI. The staff positions are based on the commitments and material presented up to that meeting.

Q9. Was it possible for to proceed with detailed design without the ISG on high frequency?

A9. Yes, if the design group chooses to, the design can be completed for those applications that fit their certified design response spectra. The ISG information can then be utilized to address instances where there is spectral exceedance.

Q10. Does the industry know how the staff will review the spectral exceedance?

A10. The staff has issued a revised Standard Review Plan section 3.7. 1 in March 2007 which clearly illustrates the review process that will be followed in the case of exceedance of the certified site design response spectra.