

May 22, 2008

Lawrence A. Salomone
Washington Savannah River Company
Savannah River Site
Building 730-4B, Room 3125
Aiken, SC 29808

Dear Mr. Salomone:

Reference: *Central and Eastern United States Seismic Source Characterization for Nuclear Facilities*, Draft Project Plan, Rev 00, April 14, 2008:
Participatory Peer Review Panel review meeting, May 8, 2008

This letter states the observations and recommendations of the designated Participatory Peer Review Panel (PPRP) for the referenced project relating to the draft project plan and the plan review meeting held in Palo Alto on May 8, 2008. The PPRP was able to review the draft project plan and provided its written comments prior to the meeting. Members of the Panel are listed in Attachment 1; the Panel's written comments on the draft project plan together with additional comments provided by sponsor agencies are in Attachment 2. We want to express our appreciation for the opportunity to meet with the Project Team and project sponsor representatives and for the responsive and thorough discussions of our written comments during the meeting. We believe the discussions and follow-on actions that grew out of them satisfactorily resolve our written comments.

The paramount goal of the project is to develop a seismic source characterization (SSC) model for the central and eastern United States (CEUS) that can be adopted by the sponsoring organizations as an accepted starting basis model for performing a site-specific probabilistic seismic hazard analysis (PSHA) at any geographic location within the region. In order to achieve this overarching goal the SSC model must have the stability of being broadly accepted by the informed scientific and technical community and must remain valid for a period into the future. The CEUS SSC assessment will implement current practice and guidance on the use of experts and assessment of uncertainty described in Budnitz, et al., 1997¹ (the SSHAC process). The planned approach is to use a SSHAC Level 3 process for assessing key SSC issues and a Level 2 process for assessing issues that have lesser hazard significance.

Our written comments on the draft project plan were satisfactorily resolved by discussions during the meeting and with planned revision of the plan. We have the following additional observations and recommendations following the meeting.

¹ Budnitz, R. J., G. Apostolakis, D. M. Boore, L. S. Cluff, K. J. Coppersmith, C. A. Cornell, and P. A. Morris, 1997. *Recommendations for Probabilistic Seismic Hazard Analysis: Guidance on Uncertainty and Use of Experts*. NUREG/CR-6372, Washington, DC, U.S. Nuclear Regulatory Commission.

1. We endorse the planned use of a SSHAC Level 3 process for key issues of the CEUS SSC model. However, the planned use of Level 2 processes for “those issues having lesser hazard significance or are not subject to large uncertainty” is potentially problematic vis-à-vis desired stability. At a minimum, decisions to use Level 2 processes in developing aspects of the CEUS SSC model should be carefully scrutinized both by the Technical Integrator (TI) team and the PPRP. We recommend that consideration be given to using the Level 3 process for assessment of *all* SSC issues regardless of the level of uncertainty about the issue or its hazard significance. The planned early identification of the most hazard-significant issues should serve to more efficiently focus the workshops and assessments. However, a uniformly implemented Level 3 assessment will assure uniform thoroughness and completeness of the assessments and will raise scientific and public confidence in the result. Implemented this way, we are confident that the Level 3 assessment will result in a SSC model that properly reflects the uncertainty of the informed scientific community and that will serve as a stable starting basis for performing site-specific PSHA’s.
2. The TI Team should make every effort to comprehensively address proponent positions on the various SSC issues and to thoroughly evaluate the issues in workshops. The workshop proceedings and the assessments of the issues should be thoroughly documented and summarized within the main body of the report, with more detail provided in the appendix of the report. It is clear that scientific investigations will continue to expand the available database and to improve scientific understanding of earthquake processes into the future. Organizations that adopt the SSC model should develop and implement procedures for evaluating the significance of such advances in scientific knowledge in order to fully achieve the desired longevity goal for use of the study results into the future. We consider the development of such procedures to be a user function beyond the scope of this project since the appropriate procedures and evaluations would be specific to each organization as required to meet its seismic regulations.
3. The TI Team is constituted of individuals who are among the most experienced available for implementation of the SSHAC process. However, considering that the paramount goal of the study is to develop a broadly accepted CEUS SSC model that will remain stable into the future, we strongly recommend expanding the TI Team. Specifically, we urge the inclusion of experts—either as full members of the Team or as heavily involved resource experts—who have expert knowledge about CEUS tectonic and earthquake processes and experience with other seismic source assessments for seismic hazard mapping programs that may elect to adopt the study results. We consider achievement of this level of participation across programs to be essential.
4. We understand that the project is limited by available resources and must be optimized to the extent achievable. Nevertheless, we consider six test sites for development of hazard results feedback to be minimum. We strongly endorse the plan to select locations for the test sites so as to optimally capture the sensitivity of hazard to elements and parameters of the CEUS SSC model. In order to optimize the benefit of the feedback workshop, arrangements should be made to

- provide real-time analysis of the sensitivity of hazard to elements and parameters of the SSC model.
5. The project database is clearly fundamental for performing the assessments for development of the SSC model. A complete and well-qualified database should be the essential objective in order to reduce data uncertainty to the extent achievable. We recommend efficient open electronic access to the database by the project participants, to the extent achievable.
 6. We endorse the planned briefings for the project sponsors on the SSC model and how to use the model to perform a site-specific PSHA. We recommend that the project prepare a document describing lessons learned at the end of the project and include this as part of the briefings and as an appendix to the final report.
 7. In order to promote broad user community participation in, and subsequent use of, the CEUS SSC results, the PPRP was intentionally constituted to include qualified individuals from sponsoring organizations that expect to adopt the results and from other hazard mapping programs. Accordingly, the PPRP believes it is important to state the following. The PPRP intends to appropriately perform its function to provide critical review of procedural and technical aspects of the project. The Panel participants will focus their comments primarily on technical validity, technical completeness, and conformity to the SSHAC process. We expect the sponsoring organizations to communicate explicit statements of their views to the Project Team independently of the PPRP.

These observations and recommendations are our primary ones at this time. The Panel intends to provide, in a timely way, further comments regarding specific issues for consideration by the Project Team in planning Workshop 1.

Do not hesitate to contact us to discuss any of our observations and recommendations.

Sincerely,

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Attachments

- PPRP Members and Sponsor Representatives
- Consolidated Written Comments on Draft Project Plan