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Dec. 14, 2004

Dr. Andrew J. Murphy
Engineering Research Applications Branch
Division of Engineering Technology
Mail Stop: T-10D20
U.S. Nuclear Regulatory Commission
Rockville, MD 20555-0001

Dear Dr. Murphy,
This is our monthly letter status report for November, 2004.

Project Title: Evaluation of 2002 USGS National Seismic Hazard Assessment
Job code: Y6797
P.I.: Arthur Frankel
Period of Performance: Oct. 2004- Nov. 2004
Reporting Period: Nov. 1-30, 2004

Expenses in Nov 2004 charged to the NRC project:
Estimated Salaries: $51,622.40
Estimated equipment and supplies: $7,000
Estimated Assessments: $25,647.20
Total for Nov 2004: $84,269.60

Total spending to date: $84,269.60 (including assessments)
Remaining funds: approx. $328.16

There were four phases to the work done for this project.

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The first phase involved writing and verifying computer codes requested by NRC. Two codes were written: 1) to calculate median values of response spectral ordinates from the four EPRI relations and the five attenuation relations used in the 2002 national seismic hazard maps. The user specifies the magnitude and distance of the event. The second code calculates pseudo-acceleration response spectrum (5% critical damping) from an input acceleration time series. Both codes were delivered to the NRC in early November.

The second phase of the work was modifying the deaggregation code we had written to accommodate additional procedures specified in the proposal, as well as simplifying use of the code. The deaggregations now include the mean as well as the median deaggregations. The deaggregation code now outputs a comprehensive set of results for various parameters.

The third phase of this work was an extensive Q.A. of the codes to do the Monte Carlo hazard calculations. Several subroutines were checked and evaluated. One significant bug was found in the code that caused the improper sampling of the seismicity models. This bug was corrected. We also corrected the sampling of the recurrence rate for New Madrid, Charleston, Cheraw fault and Meers fault to ensure that the mean recurrence rates were consistent with those used in the 2002 national maps. This involved sampling from a distribution of recurrence rates rather than from a distribution of recurrence intervals. A detailed description of the QA will be provided in the final report.

The fourth phase of the work was the re-calculation of the hazard curves using the QA'd codes. This was accomplished and results will be sent to the NRC.

Sincerely,

Arthur Frankel