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To: "Christian Araguas" <CJA2@nrc.gov>
Date: 9/14/2006 8:12:33 AM
Subject: SSAR 2.5.2 Section 3 of 3

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Jim Davis
Southern Nuclear
ESP Project Engineer
205.992.7692 Office
205.253.1248 Cell
205.992.5294 Fax
Mailing Address
Post Office Box 1295, BIN B056
Birmingham, AL 35201
Street Address
Building 40
Inverness Center Parkway
Birmingham, AL 35242

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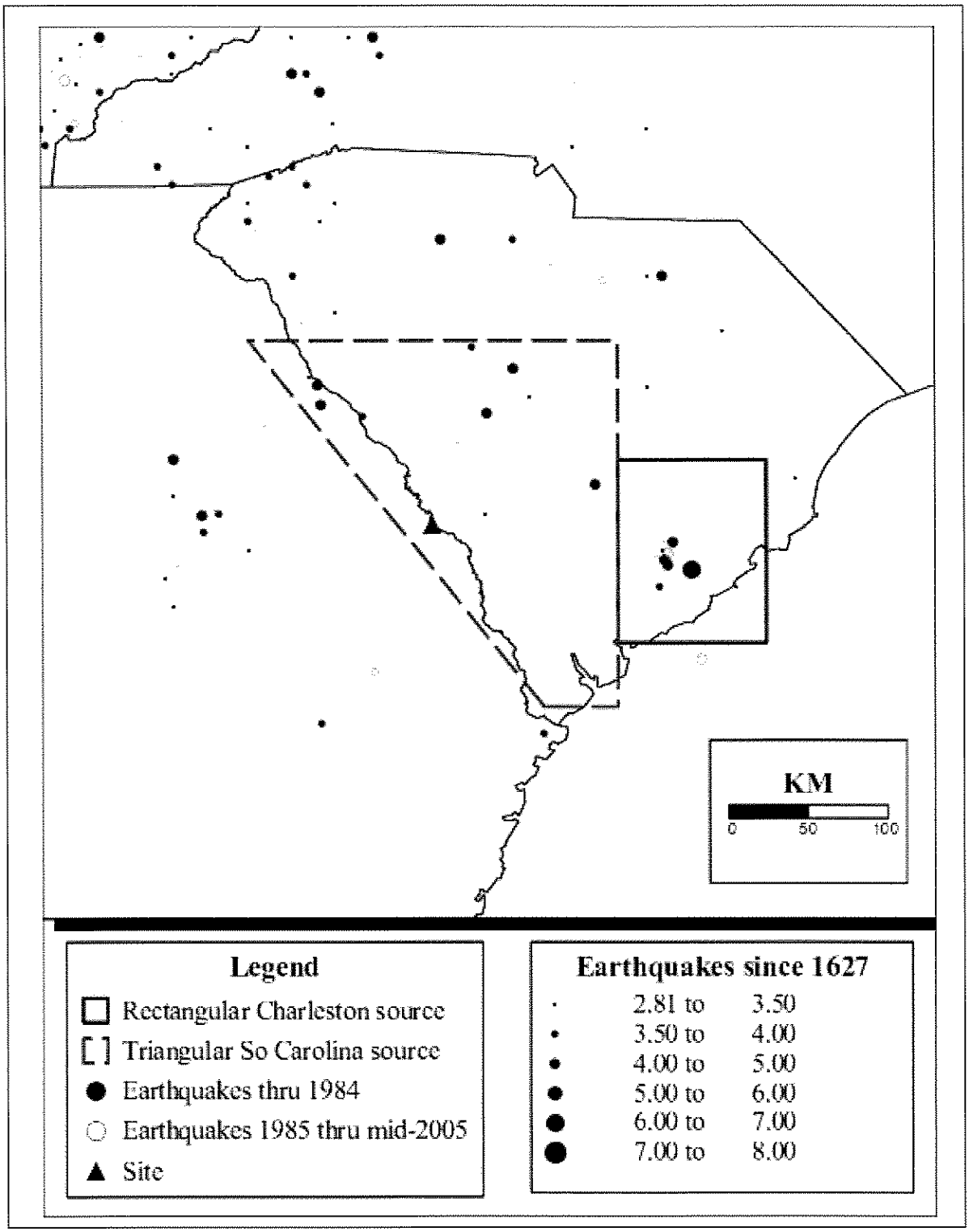


Figure 2.5.2-16 Map Showing Two Areas Used To Examine Effect of New Seismicity Information

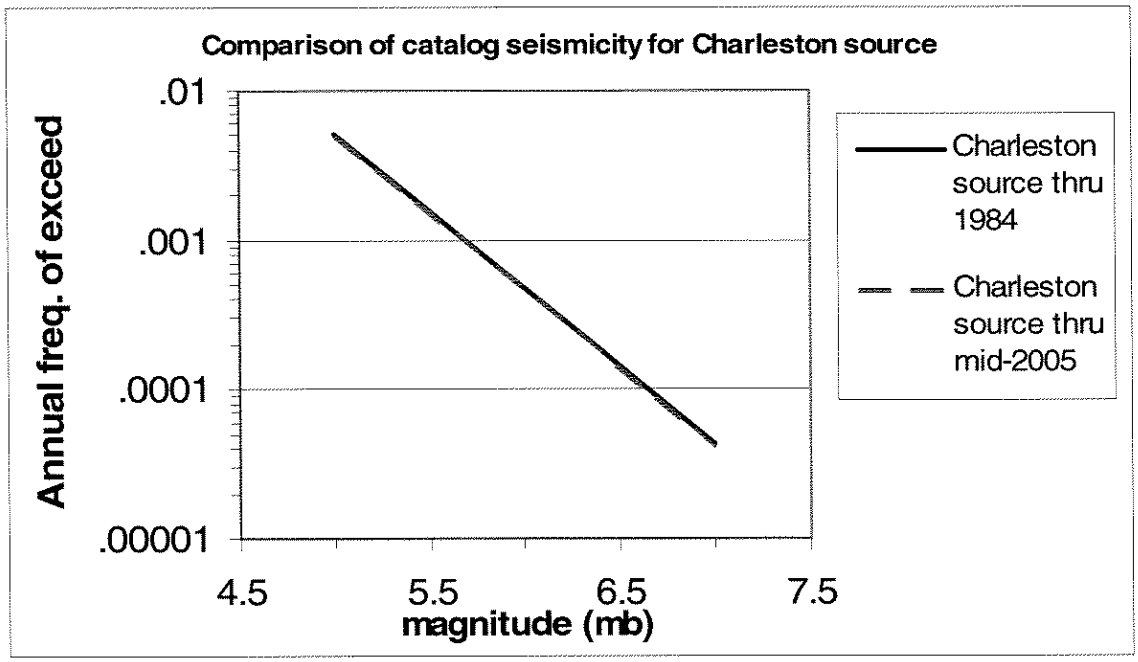


Figure 2.5.2-17 Comparison of Recurrence Rates for Rectangular Charleston Source

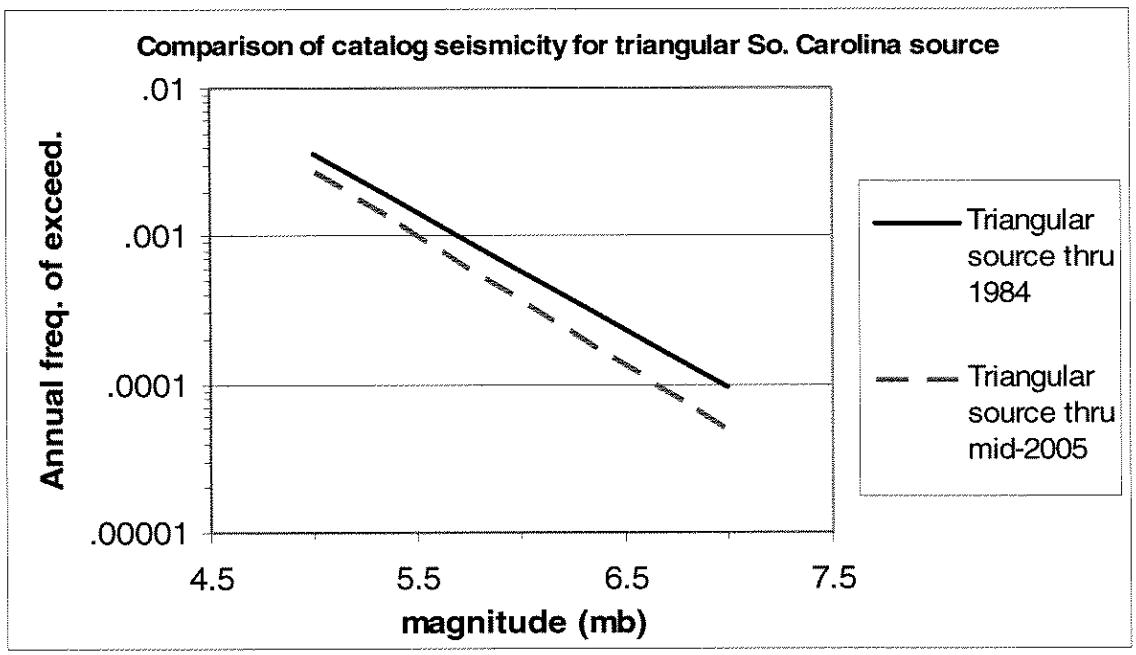


Figure 2.5.2-18 Comparison of Recurrence Rates for Triangular South Carolina Source

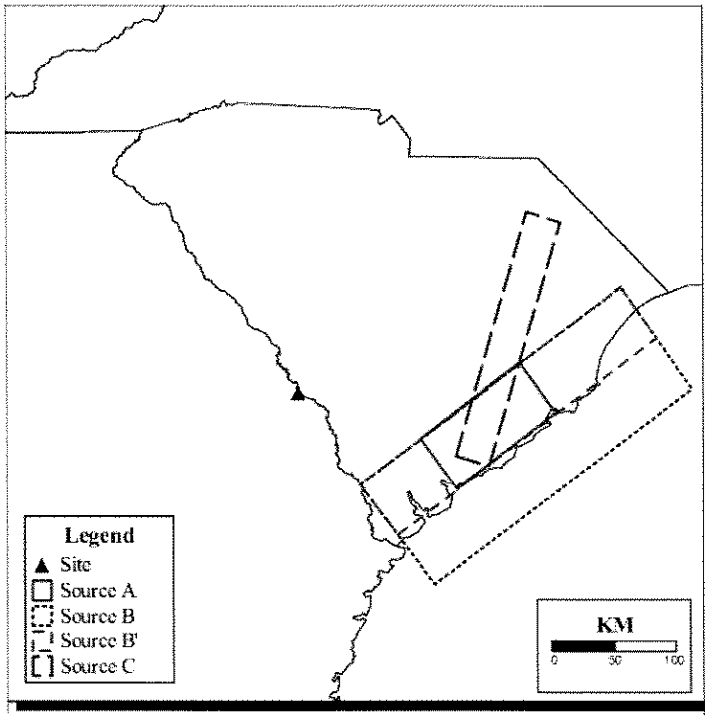


Figure 2.5.2-19 Geometry of Four New Charleston Sources

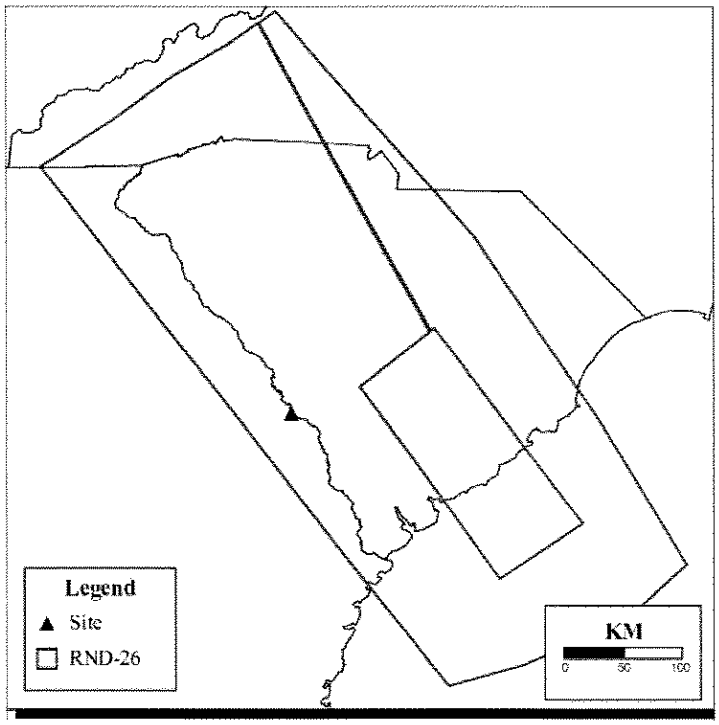


Figure 2.5.2-20a Original Rondout Source 26

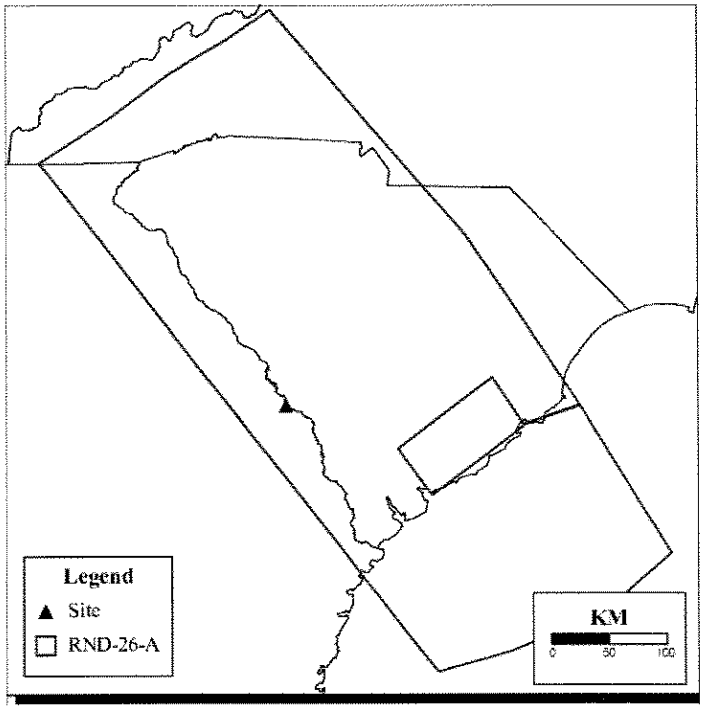


Figure 2.5.2-20b New Rondout Source 26-A that Surrounds Charleston Source A

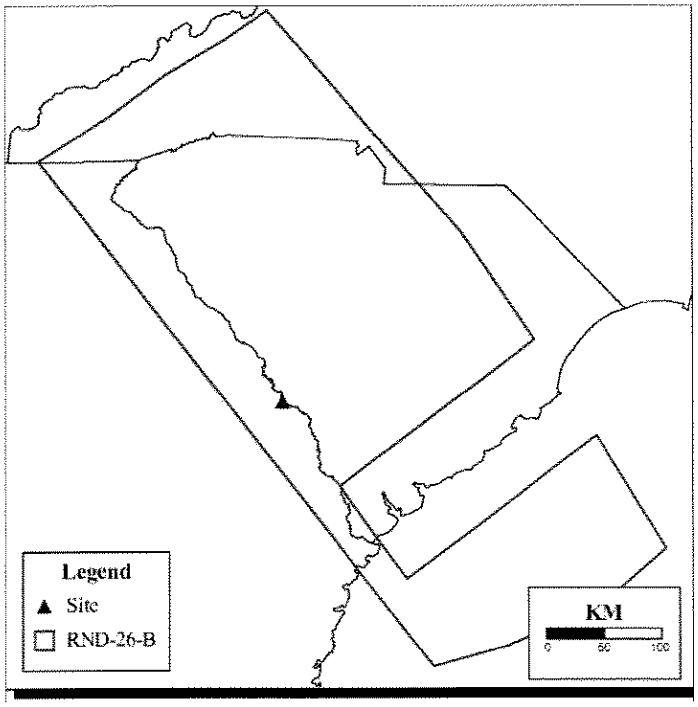


Figure 2.5.2-20c New Rondout Source 26-B that Surrounds Charleston Source B

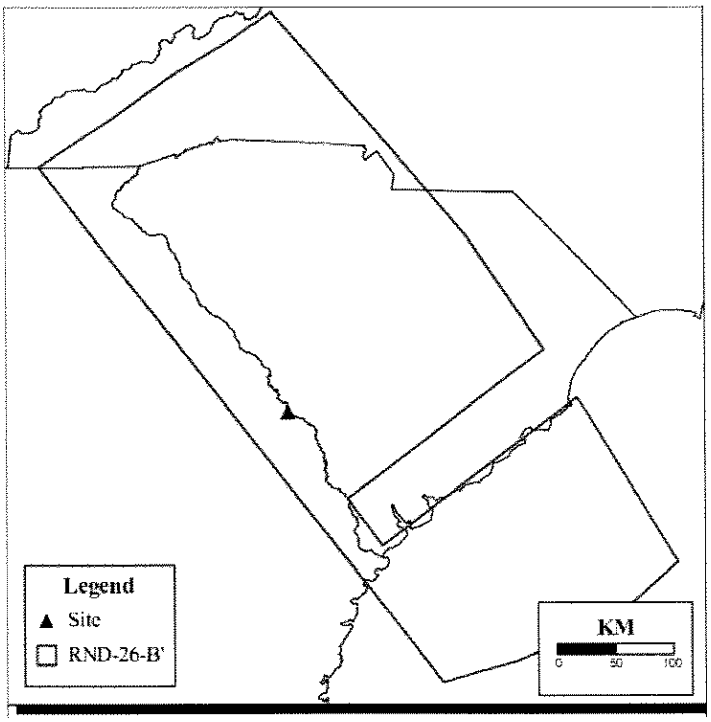


Figure 2.5.2-20d New Rondout Source 26-B´ that Surrounds Charleston Source B

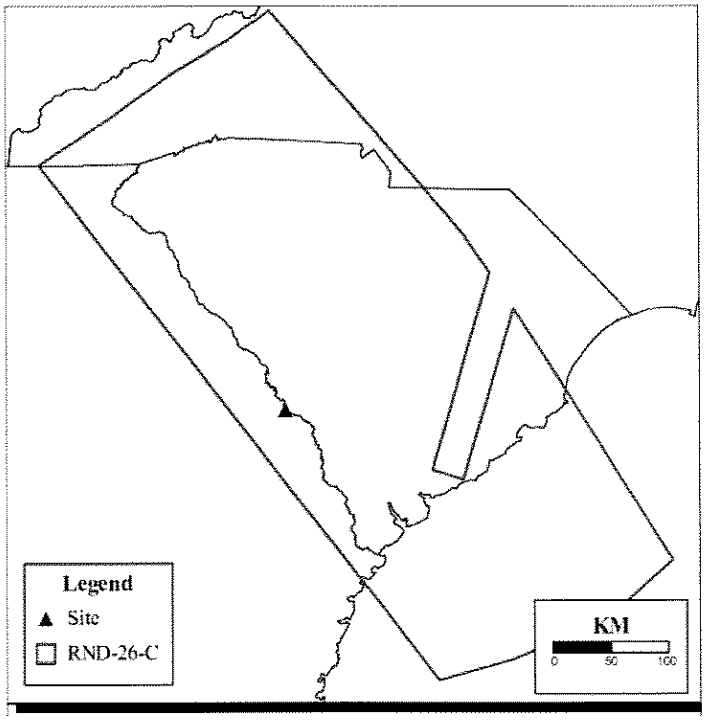


Figure 2.5.2-20e New Rondout Source 26-C that Surrounds Charleston Source C

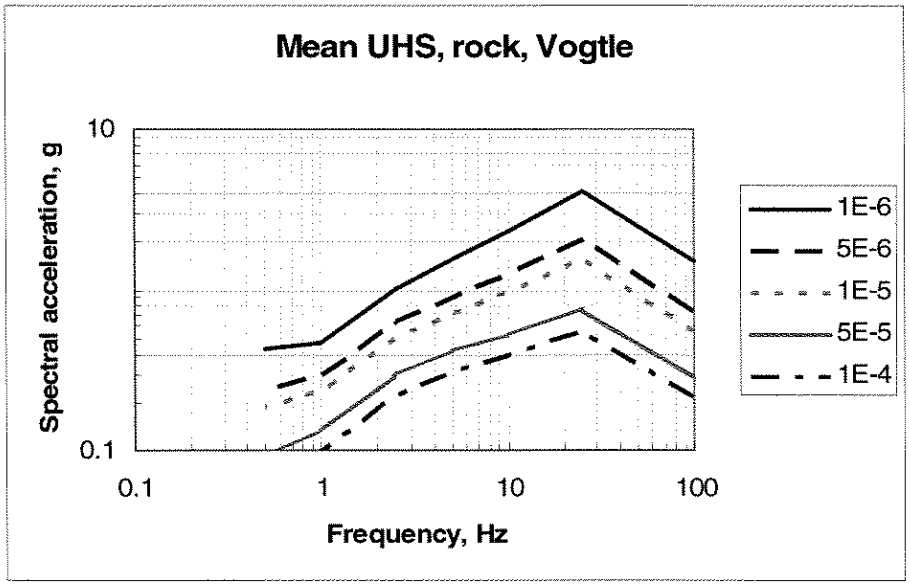


Figure 2.5.2-21 Mean Uniform Hazard Spectra, Hard Rock Conditions, for VEGP ESP

High Frequency, 1.0e-4

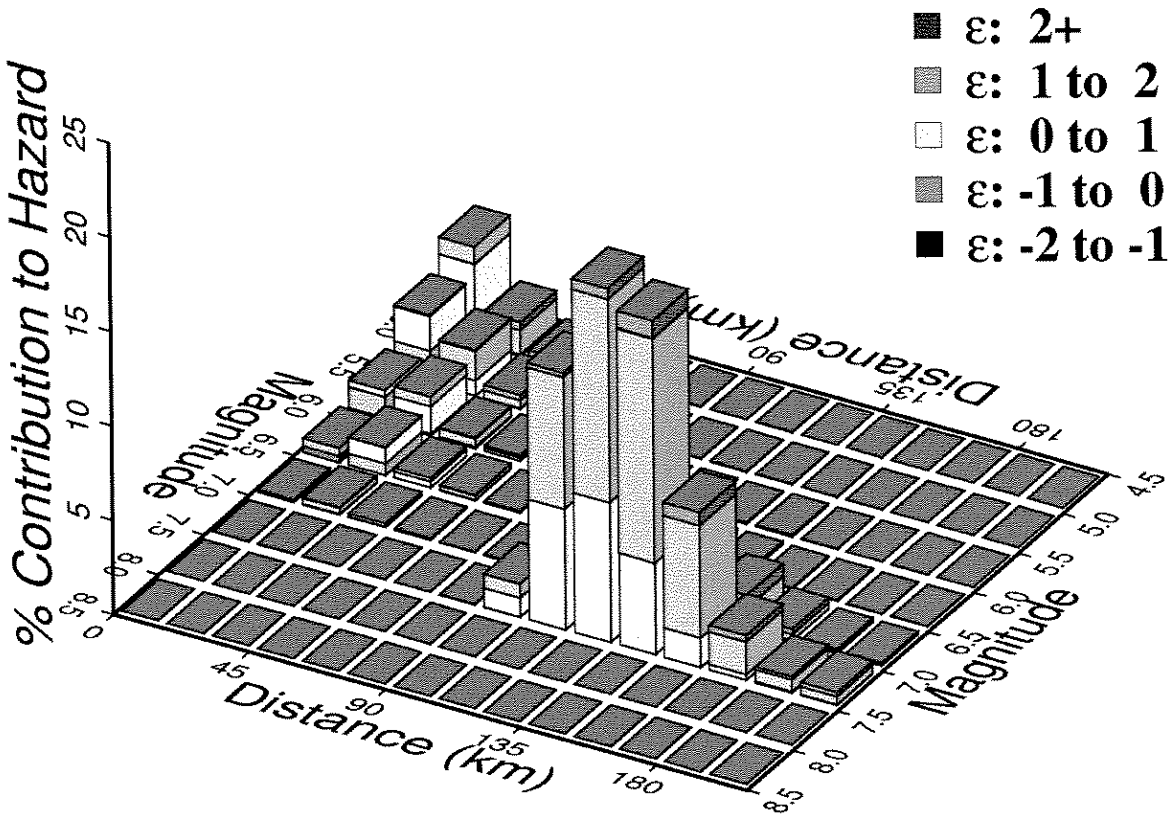


Figure 2.5.2-22 Magnitude-Distance Deaggregation for High Frequencies, 10^{-4} Mean Annual Frequency of Exceedance

Low Frequency, 1.0e-4

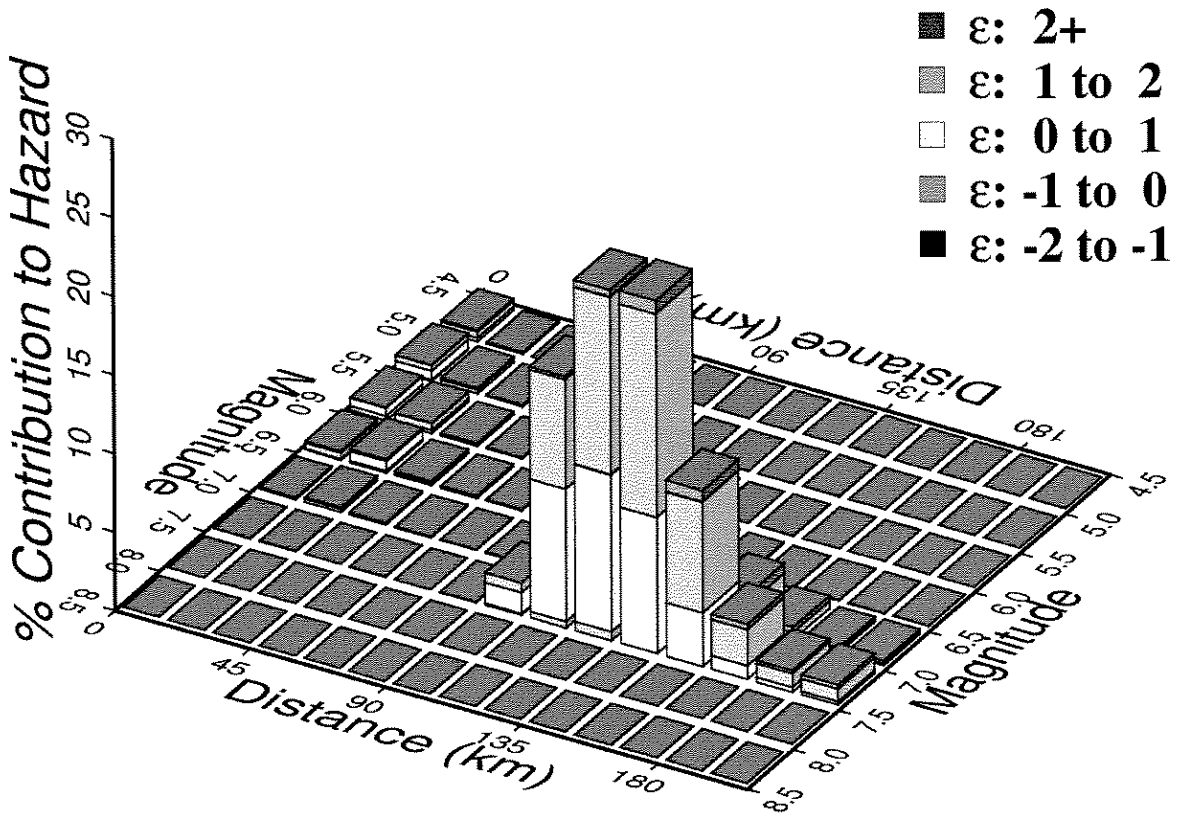


Figure 2.5.2-23 Magnitude-Distance Deaggregation for Low Frequencies, 10^{-4} Mean Annual Frequency of Exceedance

High Frequency, 1.0e-5

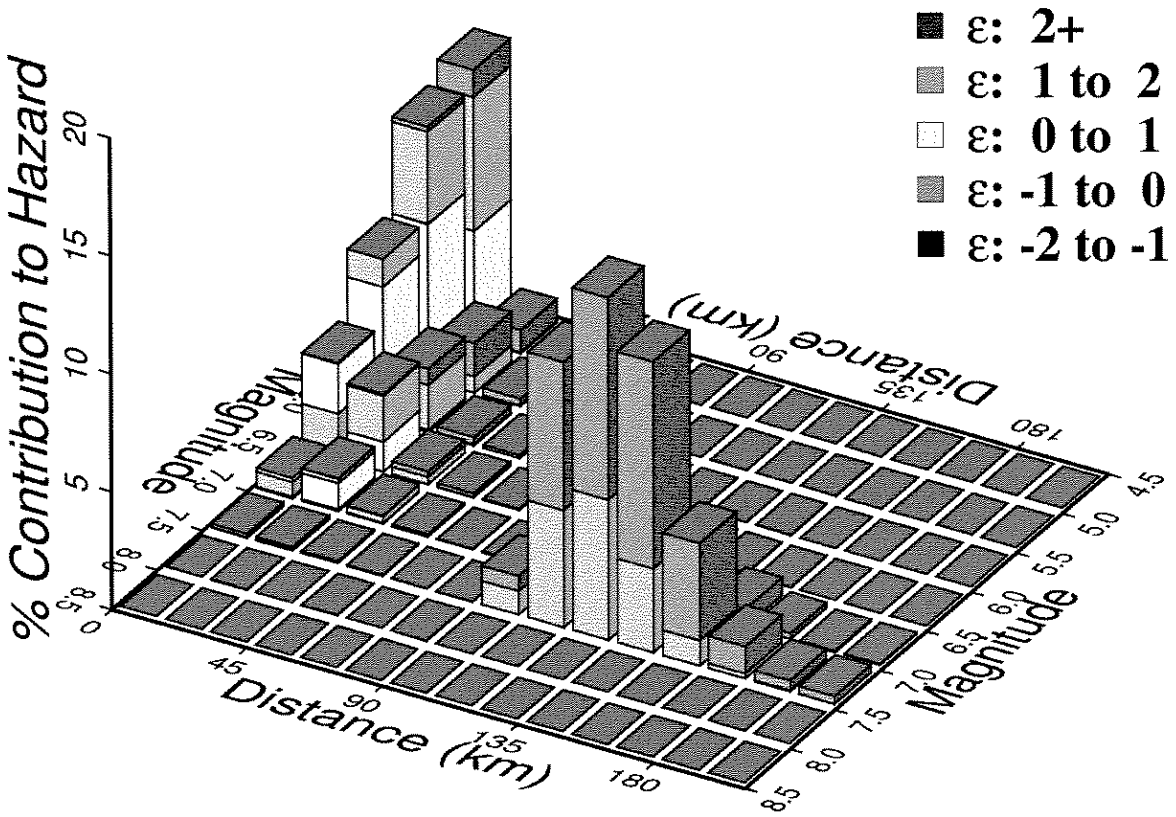


Figure 2.5.2-24 Magnitude-Distance Deaggregation for High Frequencies, 10^{-5} Mean Annual Frequency of Exceedance

Low Frequency, 1.0e-5

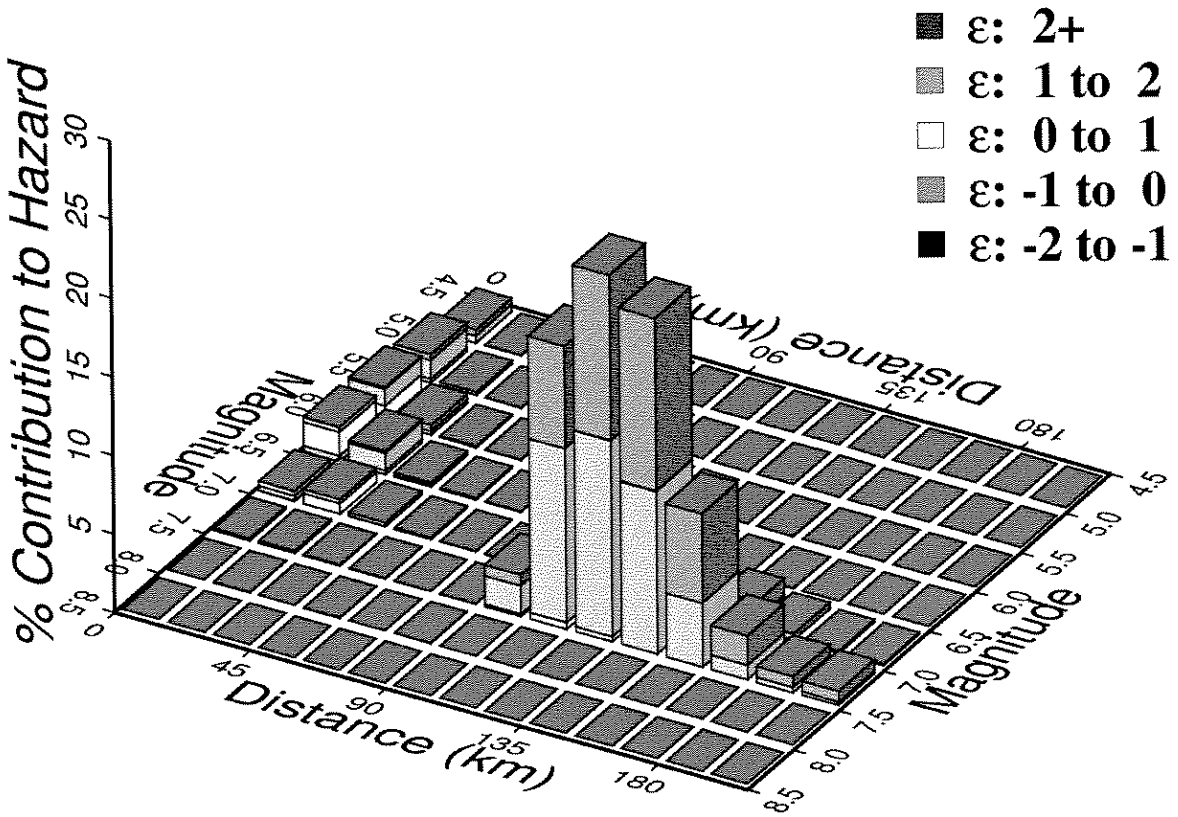


Figure 2.5.2-25 Magnitude-Distance Deaggregation For Low Frequencies, 10^{-5} Mean Annual Frequency of Exceedance

High Frequency, 1.0e-6

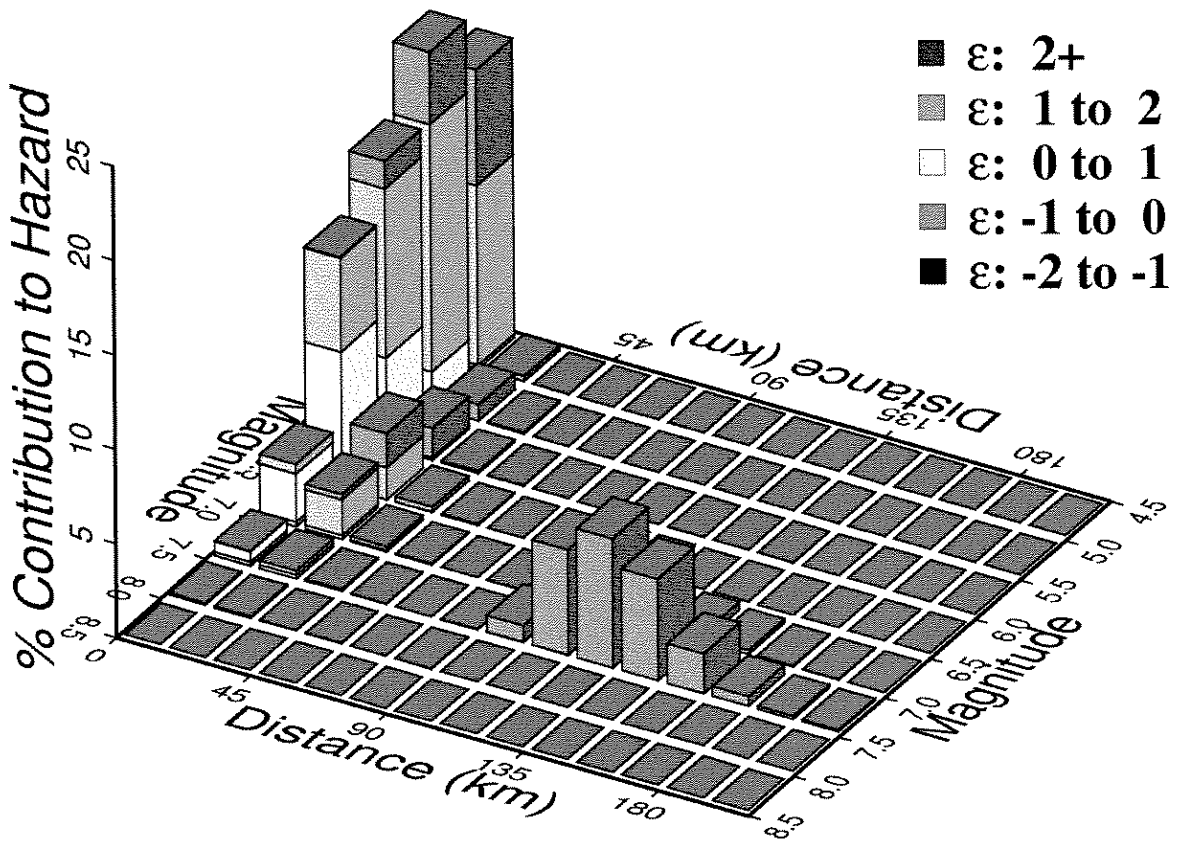


Figure 2.5.2-26 Magnitude-Distance Deaggregation for High Frequencies, 10^{-6} Mean Annual Frequency of Exceedance

Low Frequency, 1.0e-6

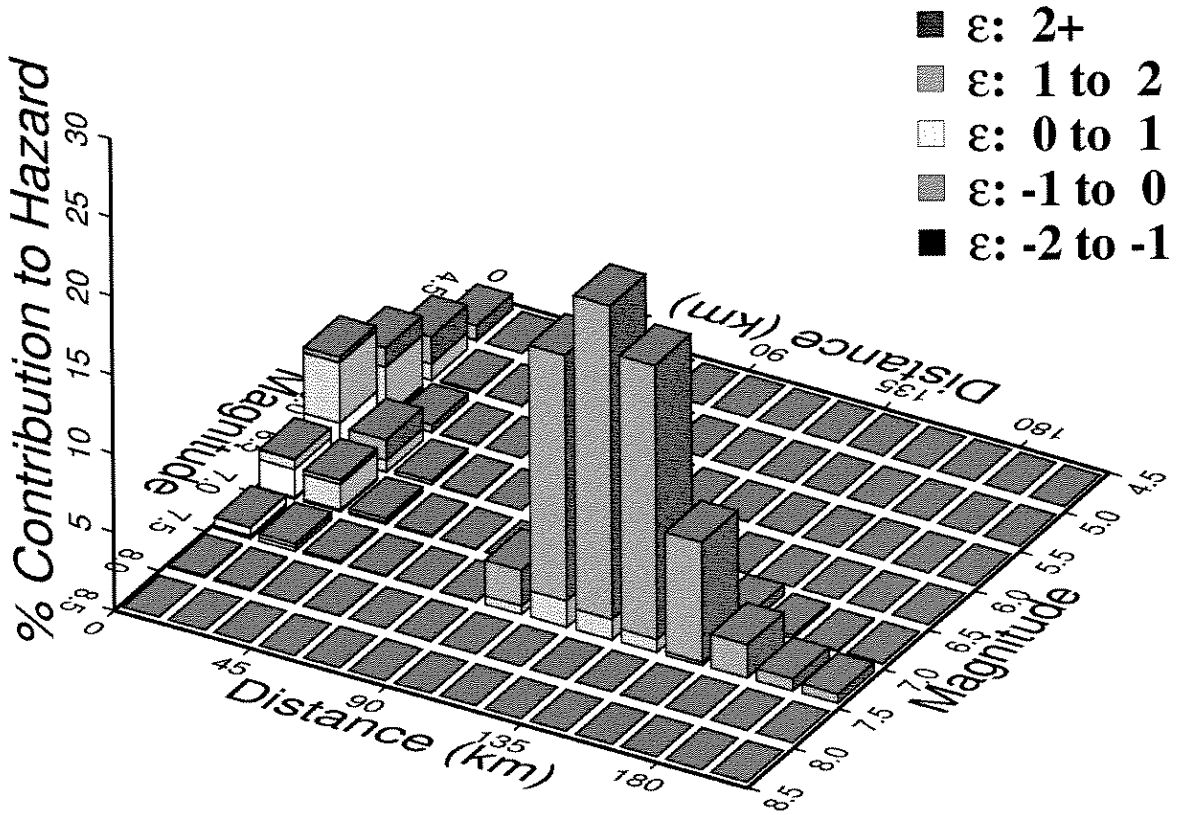


Figure 2.5.2-27 Magnitude-Distance Deaggregation for Low Frequencies, 10^{-6} Mean Annual Frequency of Exceedance

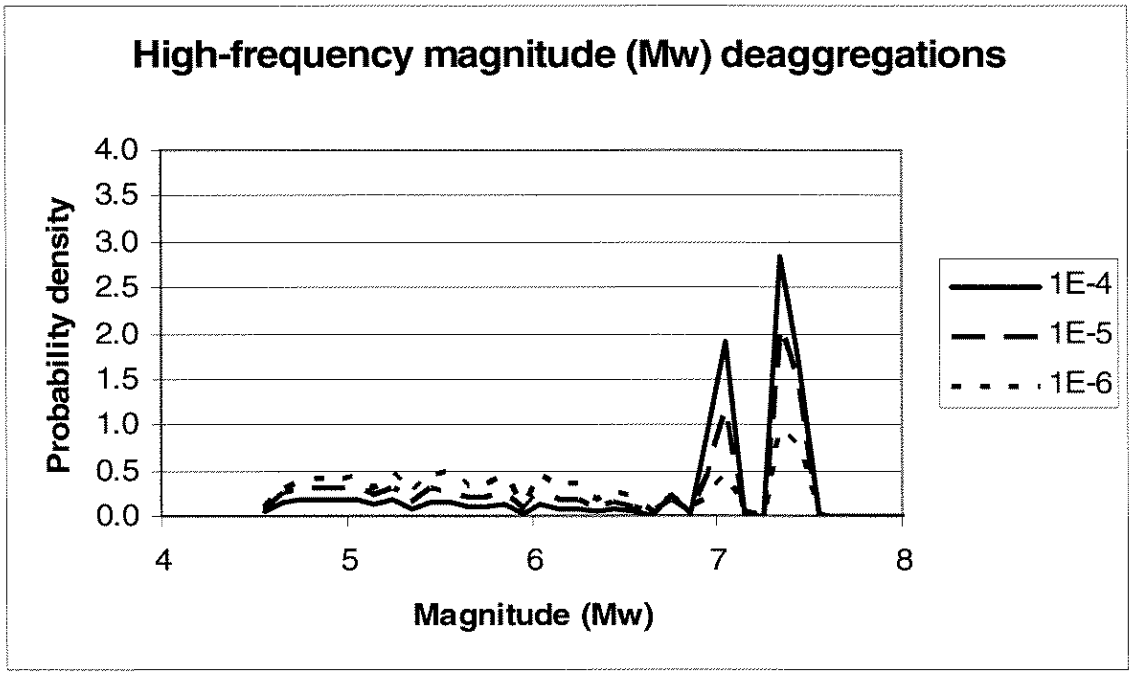


Figure 2.5.2-28 Magnitude Deaggregation for High Frequencies for Three Mean Annual Frequencies of Exceedance

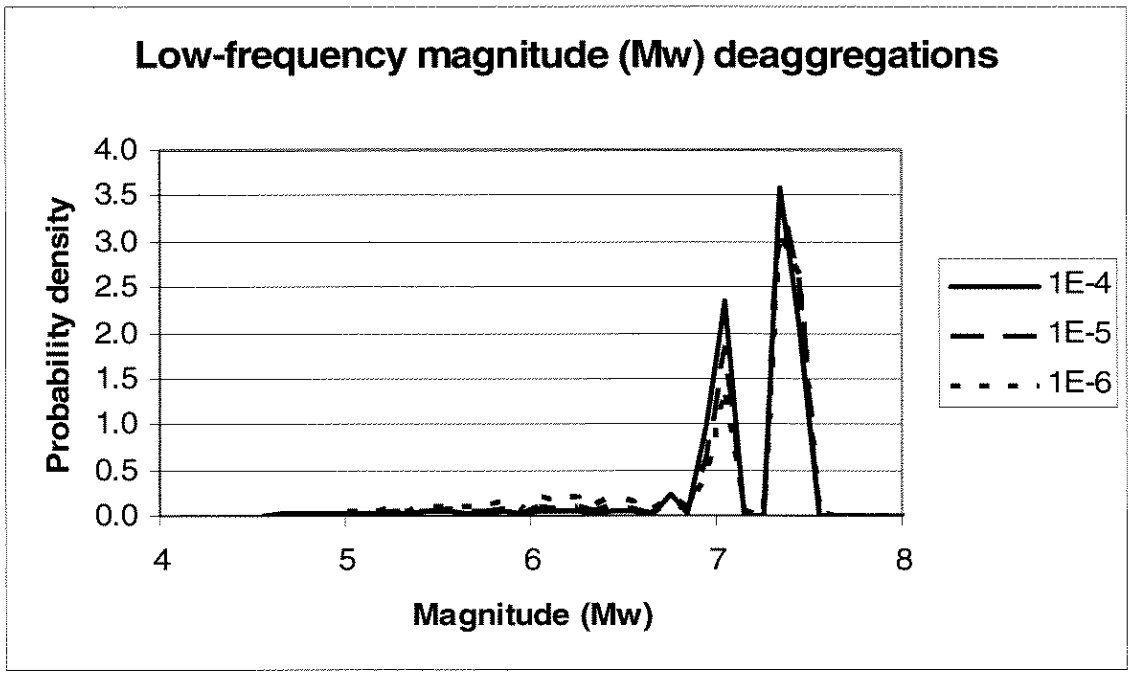


Figure 2.5.2-29 Magnitude Deaggregation for Low Frequencies for Three Mean Annual Frequencies of Exceedance

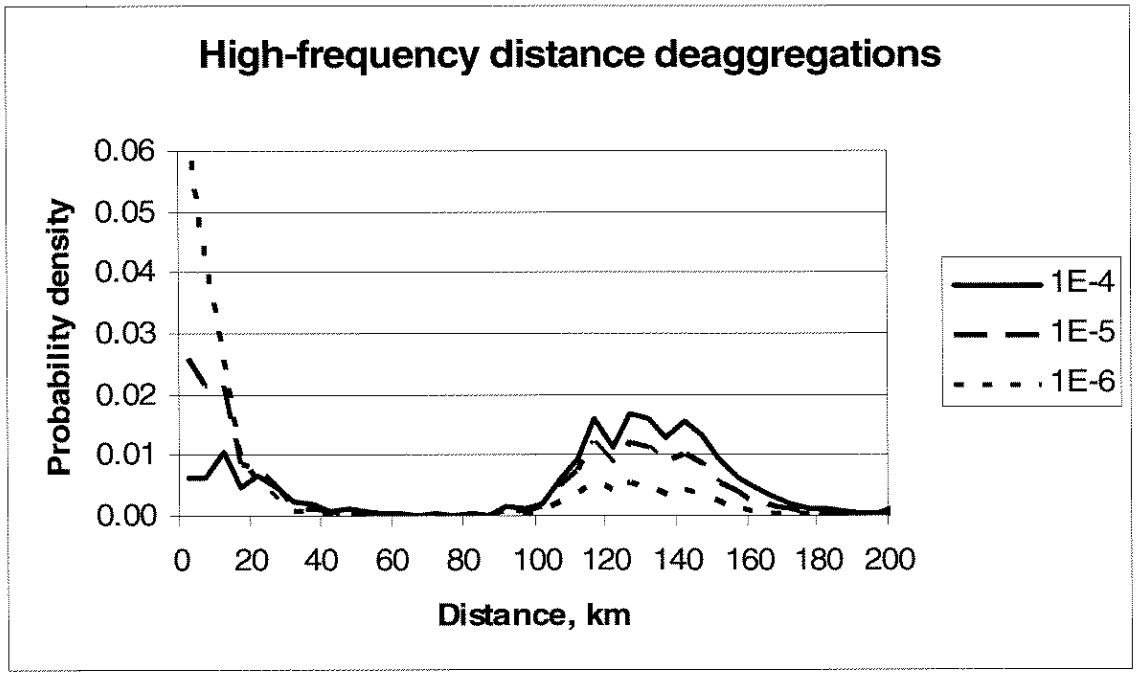


Figure 2.5.2-30 Distance Deaggregation for High Frequencies for Three Mean Annual Frequencies of Exceedance

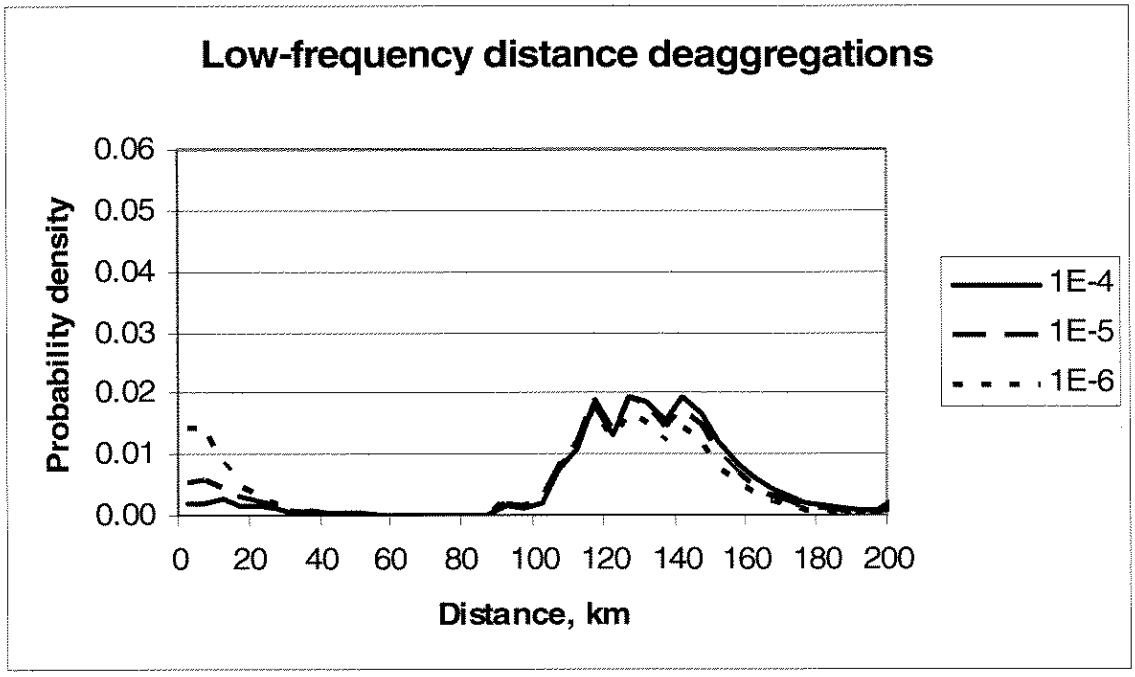


Figure 2.5.2-31 Magnitude Deaggregation for Low Frequencies for Three Mean Annual Frequencies of Exceedance

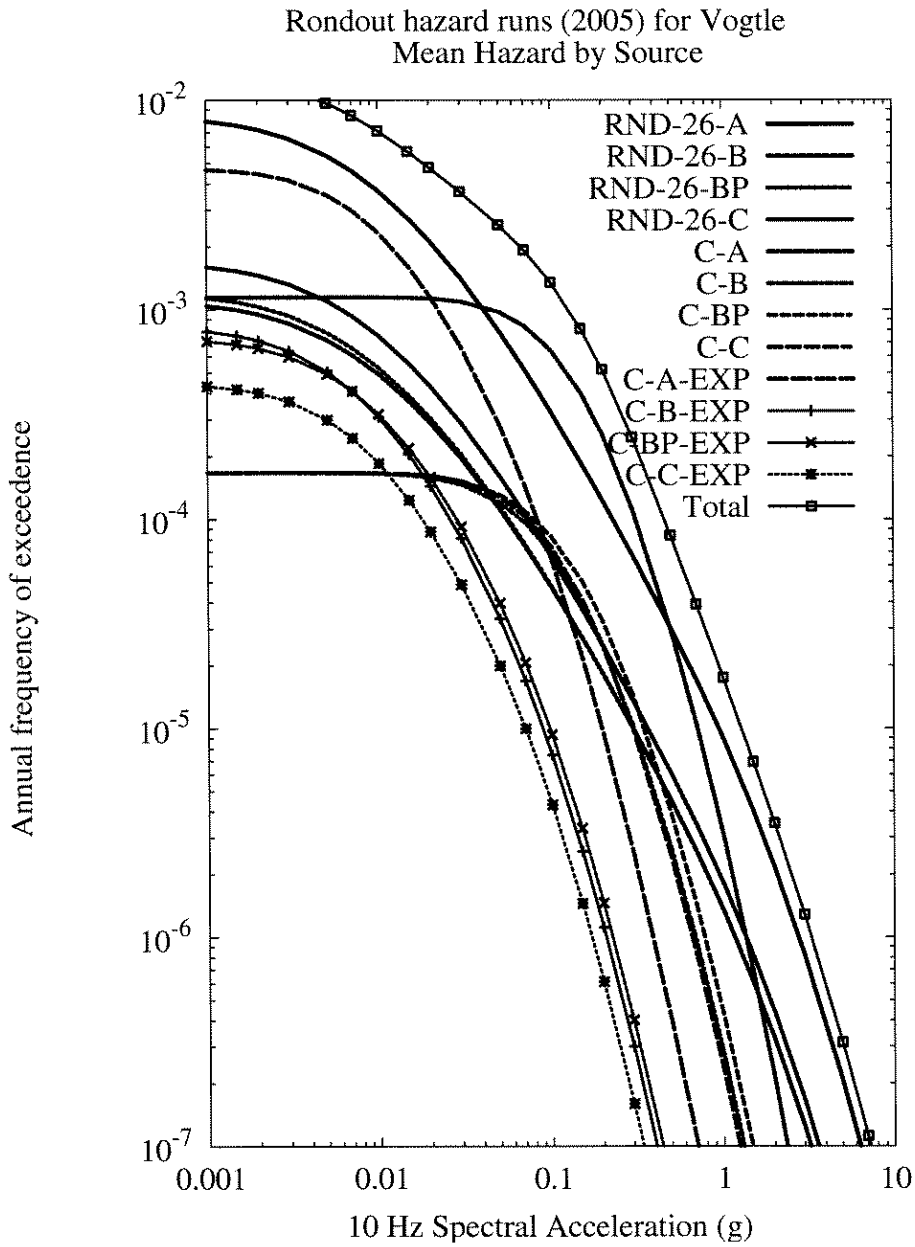


Figure 2.5.2-32 10 Hz Seismic Hazard Curves by Seismic Source for Rondout Team

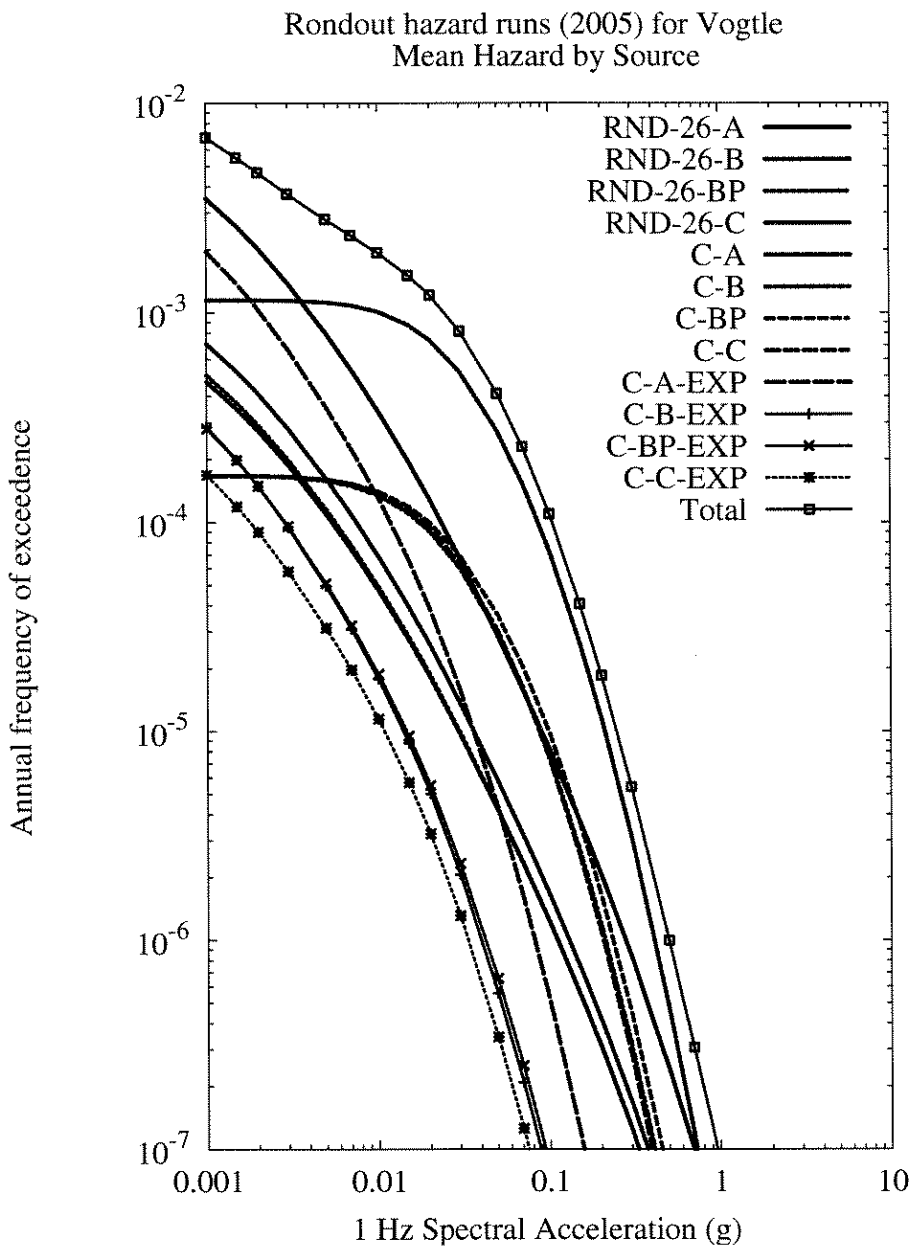
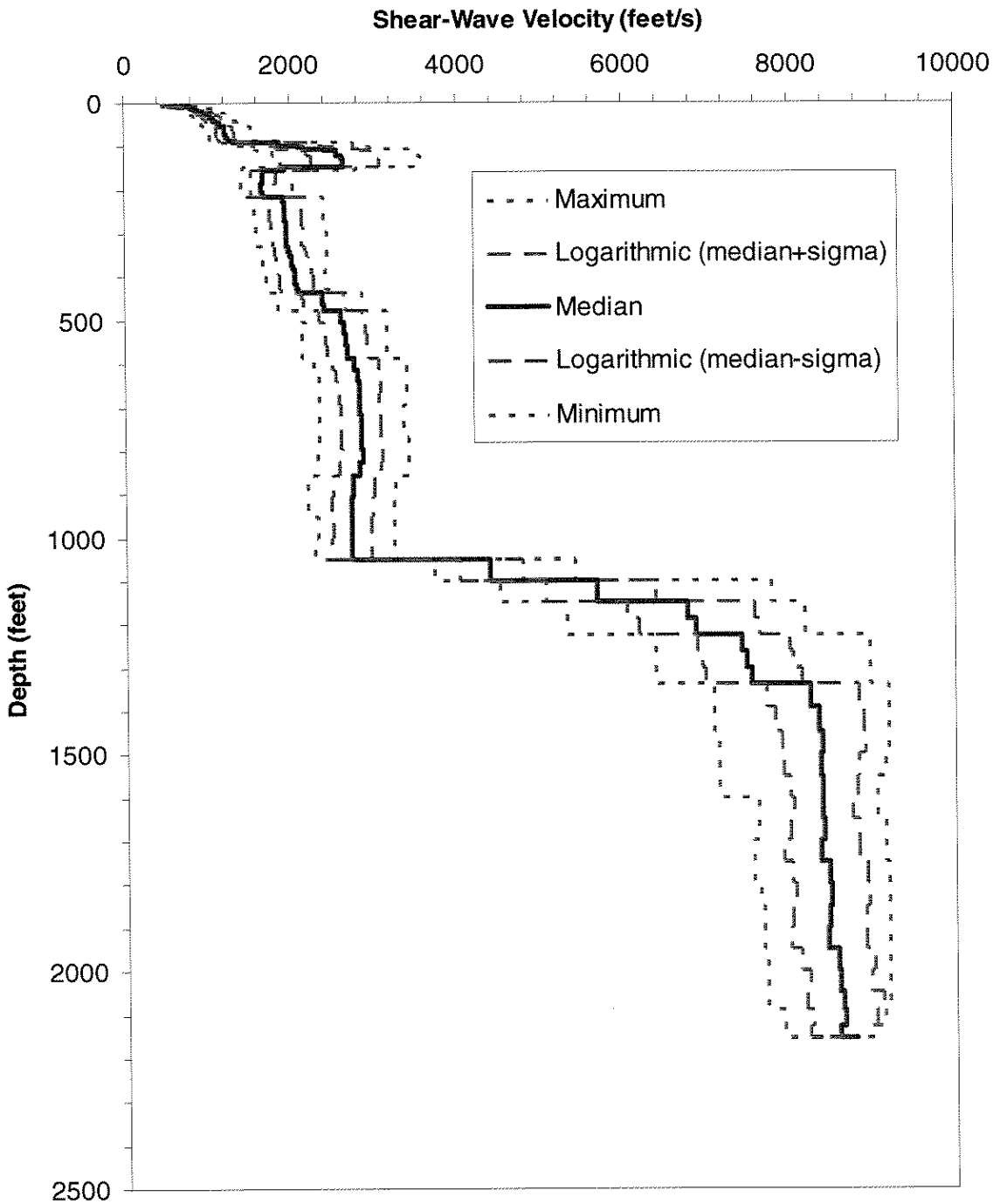


Figure 2.5.2-33 1 Hz Seismic Hazard Curves by Seismic Source for Rondout Team



Note: Statistics do not include the velocities on the crystalline bedrock.

Figure 2.5.2-34 Summary Statistics Calculated from the 60 Shear-Wave Velocity Profiles

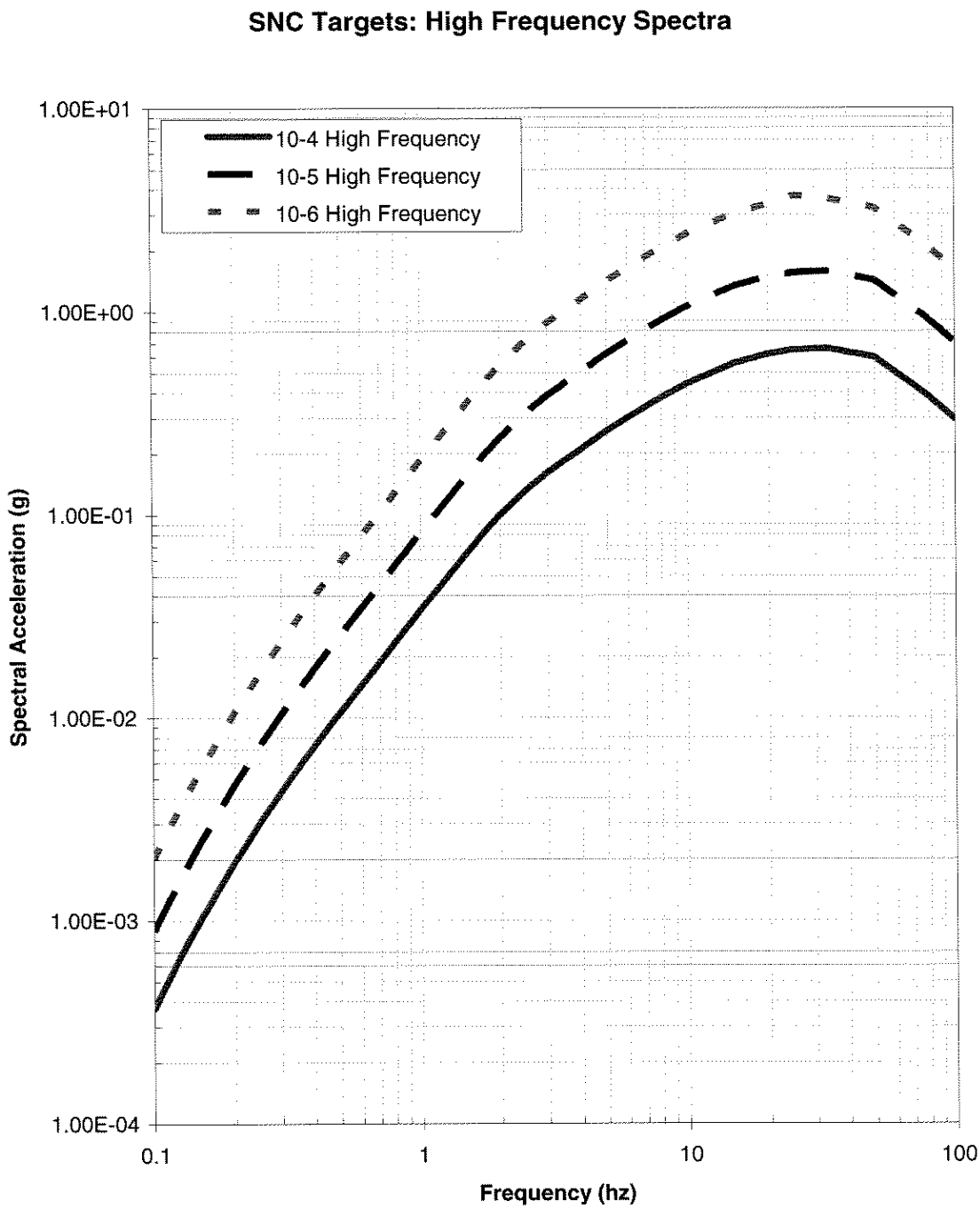


Figure 2.5.2-35a High Frequency Target Spectra for the Three Annual Probability Levels of 10^{-4}, 10^{-5}, and 10^{-6}

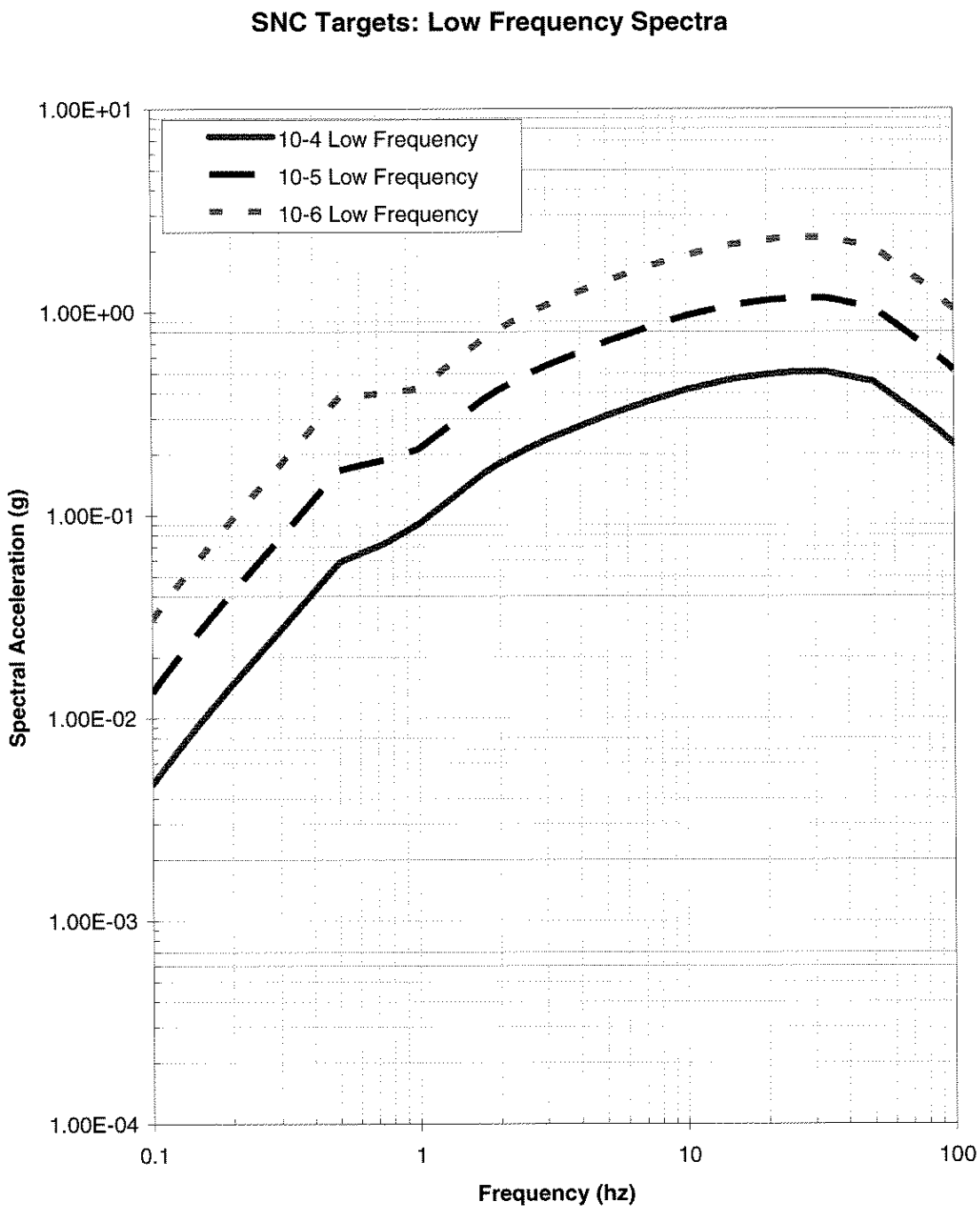
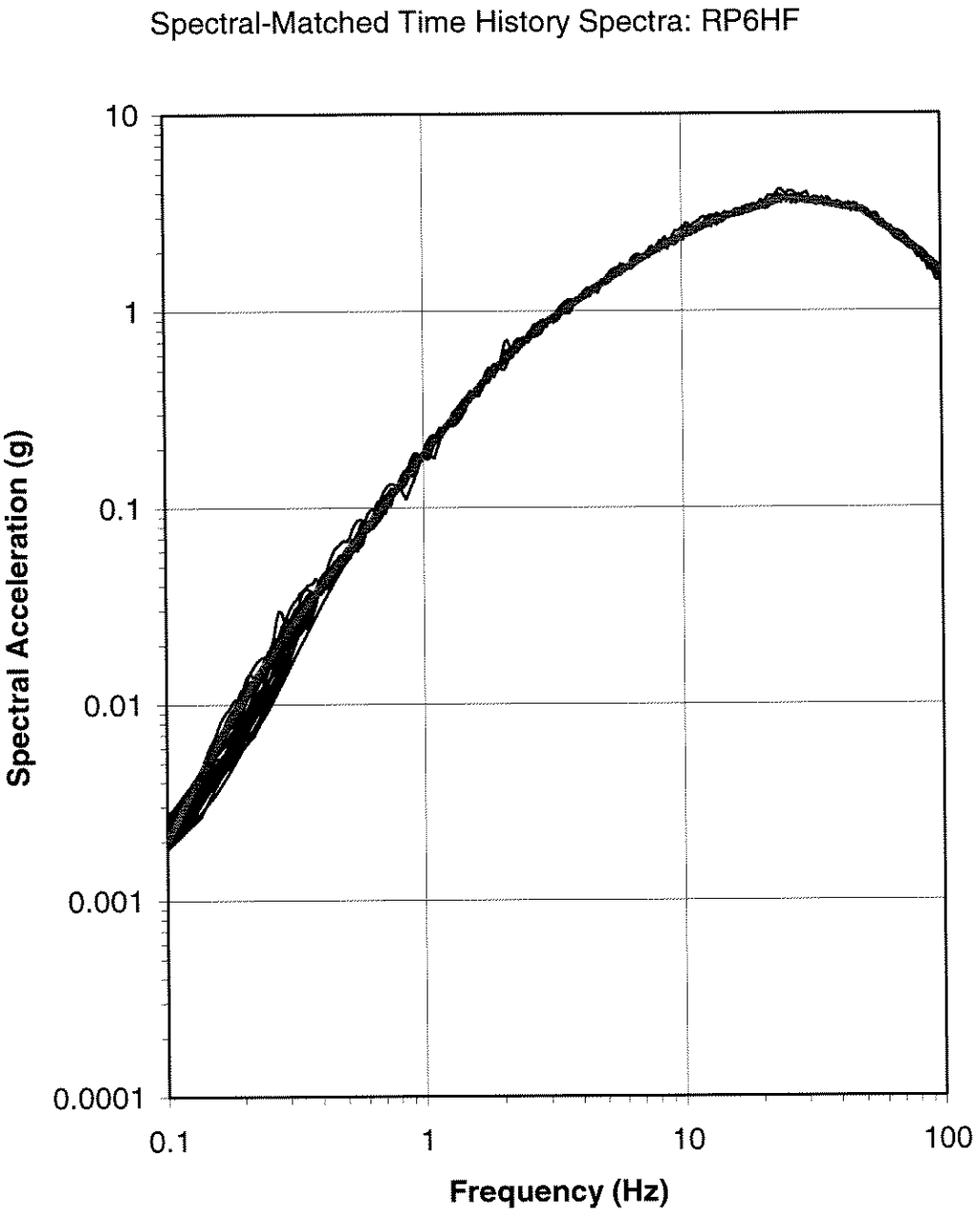
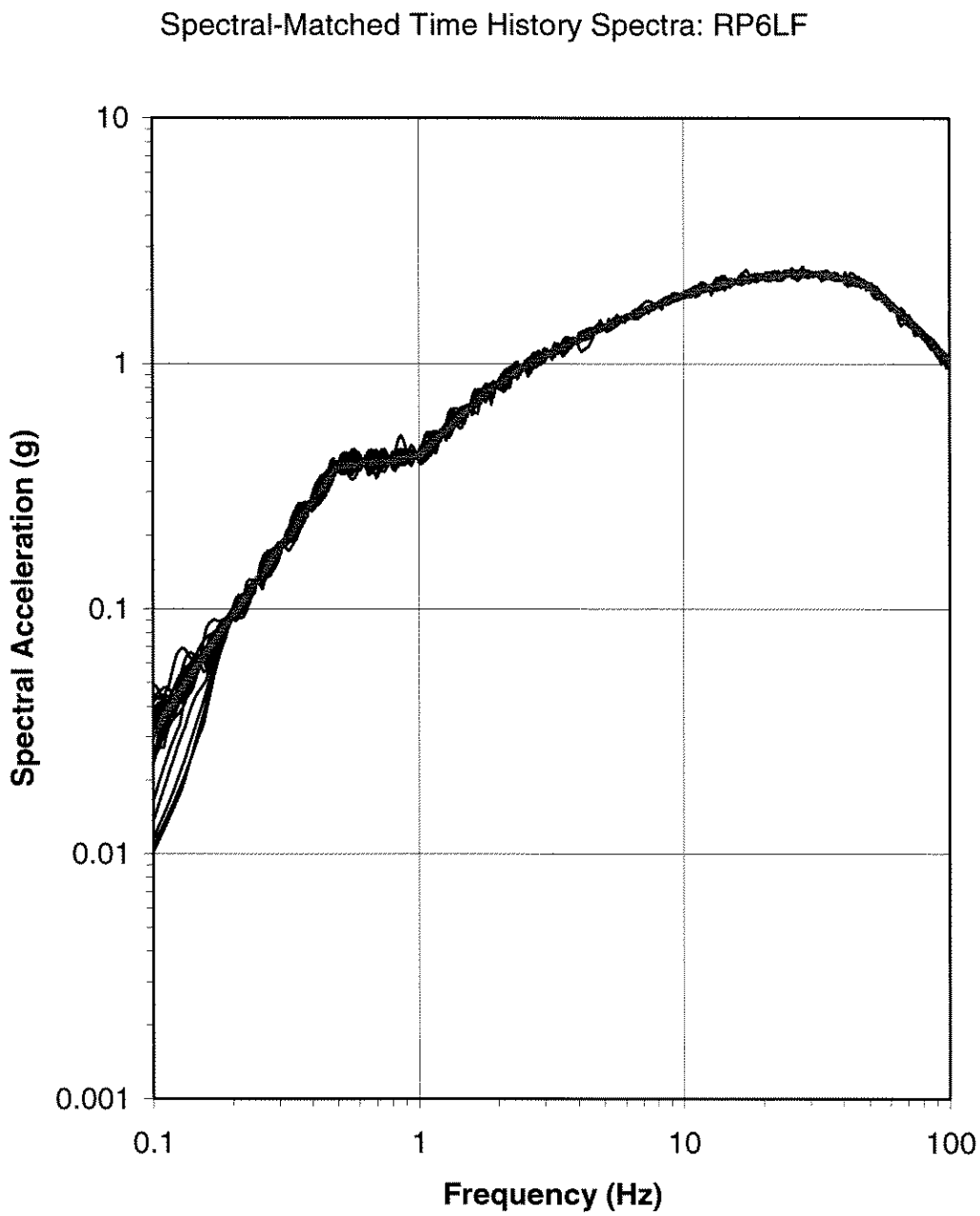


Figure 2.5.2-35b Low Frequency Target Spectra for the Three Annual Probability Levels of 10^{-4}, 10^{-5}, and 10^{-6}



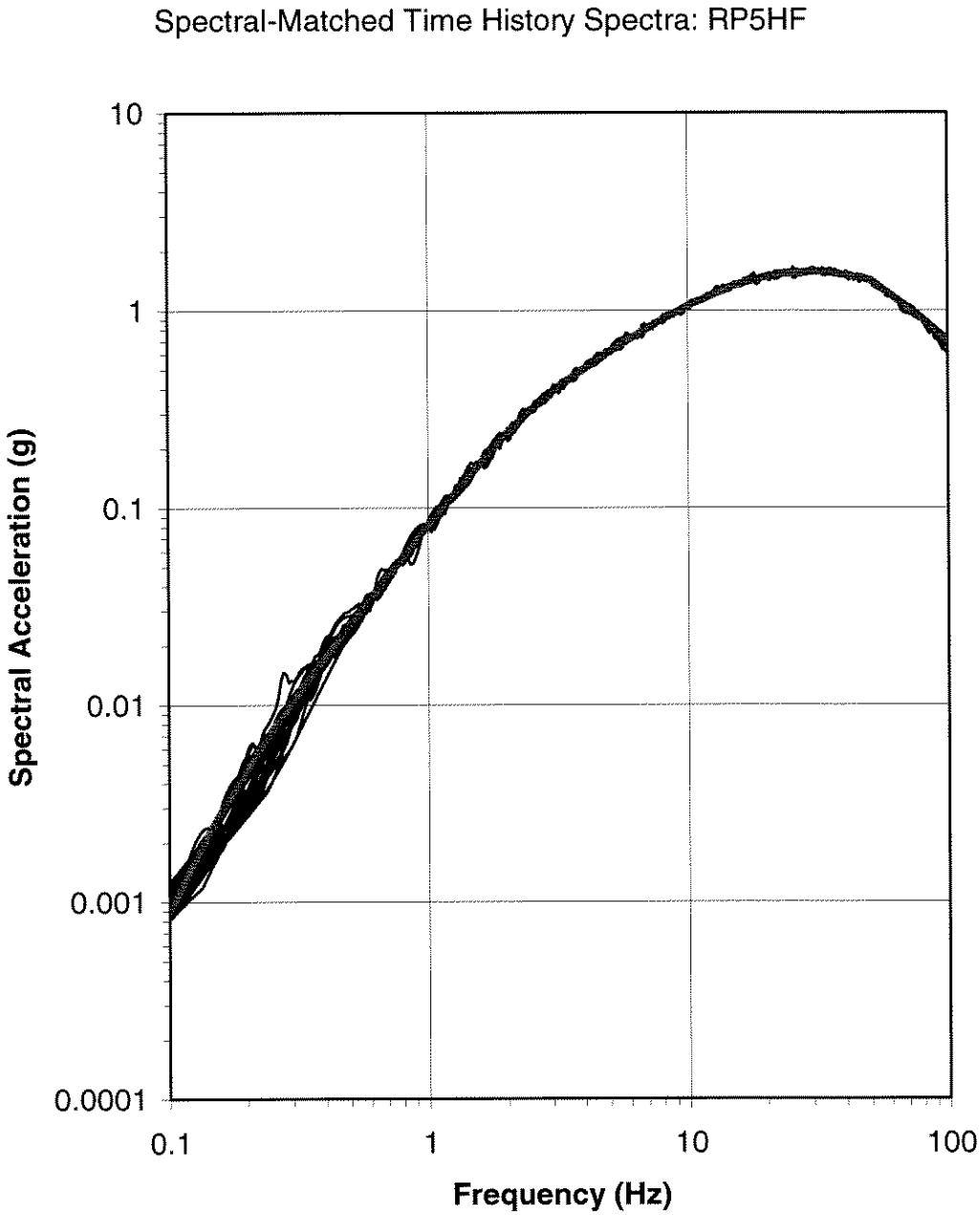
Note: Heavy red line is the target spectrum and thin black lines are the individual matches.

Figure 2.5.2-36a High Frequency (10^{-6}) Match for the 30 Time Histories



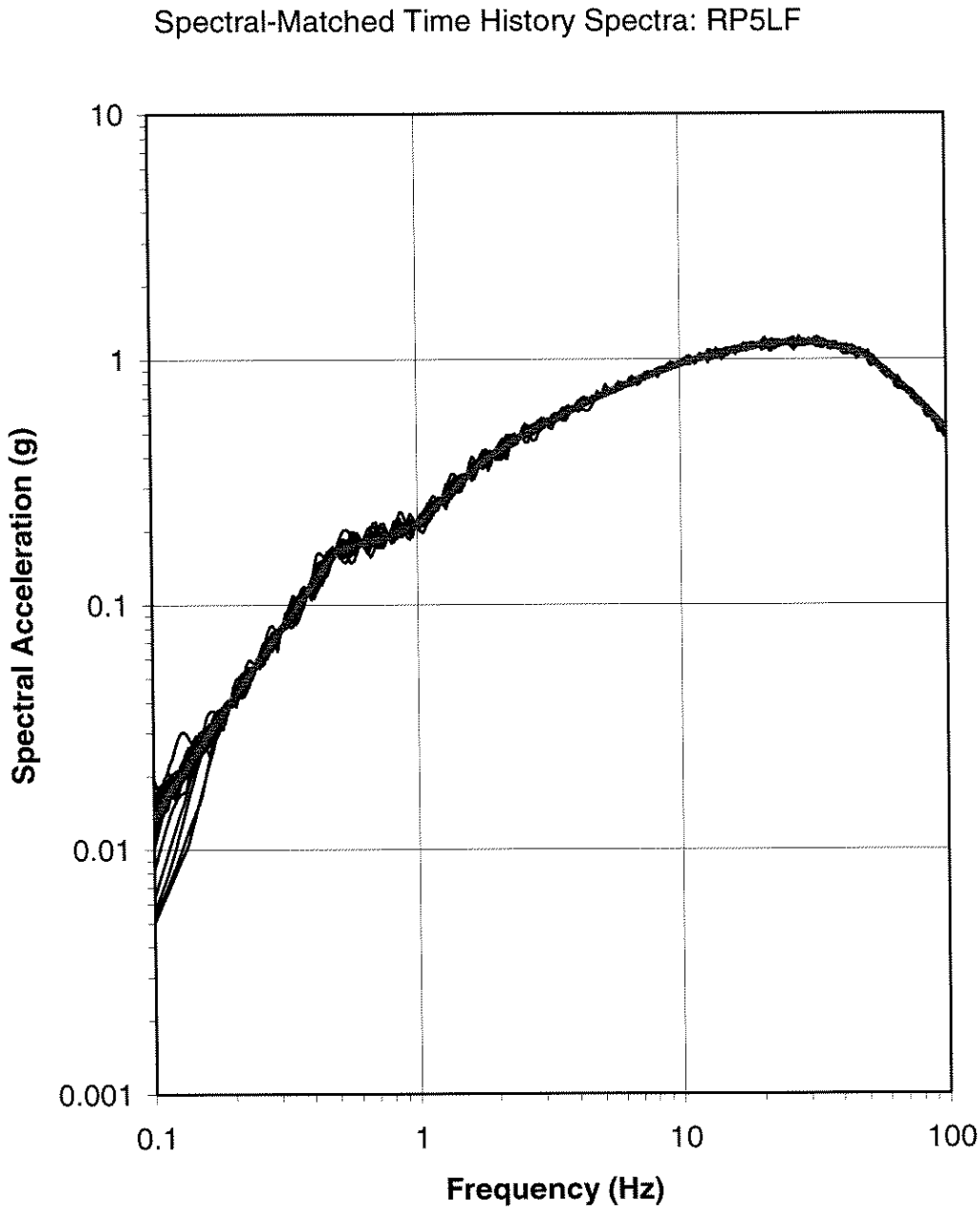
Note: Heavy red line is the target spectrum and thin black lines are the individual matches.

Figure 2.5.2-36b Low Frequency (10^{-6}) Match for the 30 Time Histories



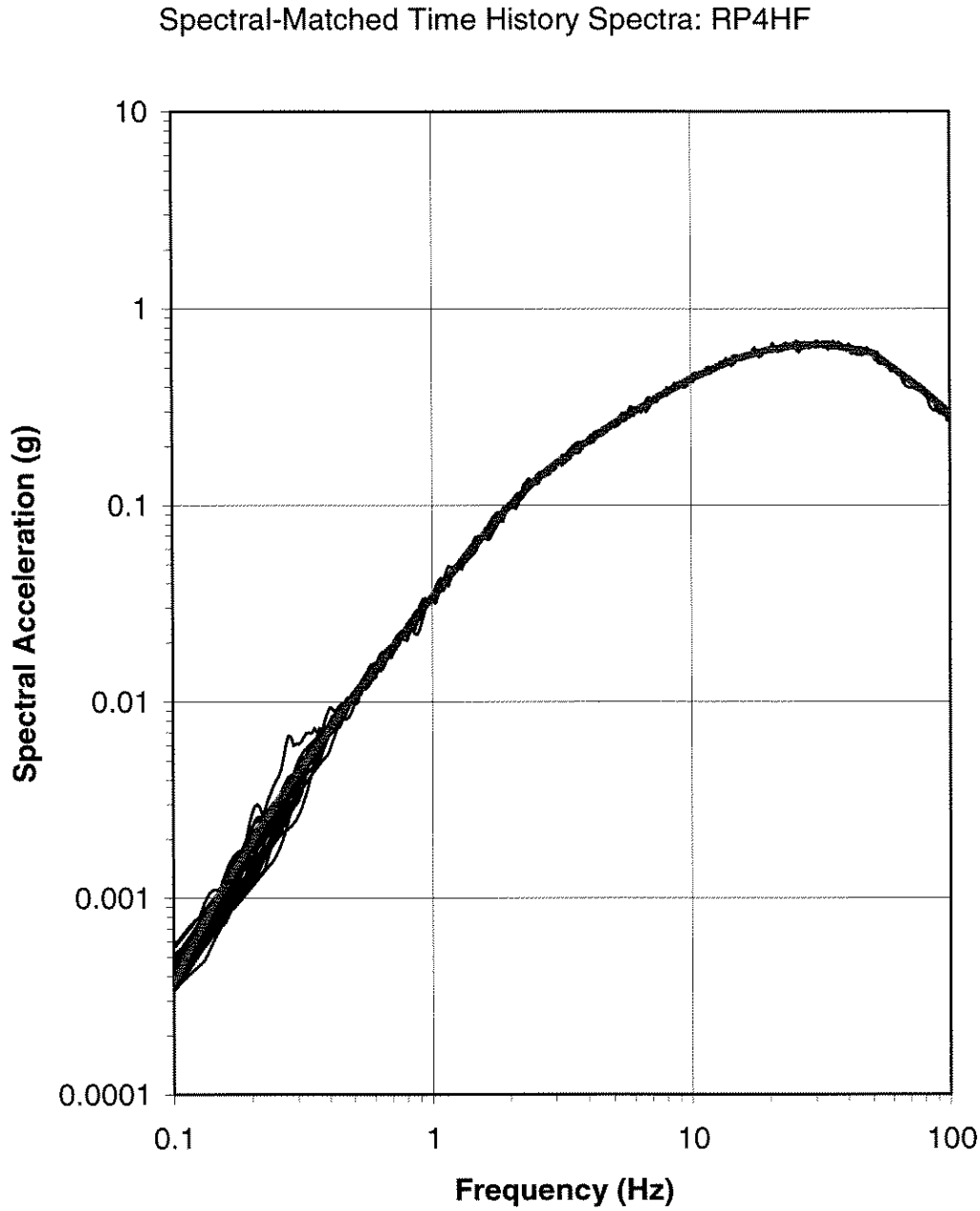
Note: Heavy red line is the target spectrum and thin black lines are the individual matches.

Figure 2.5.2-36c High Frequency (10^{-5}) Match for the 30 Time Histories



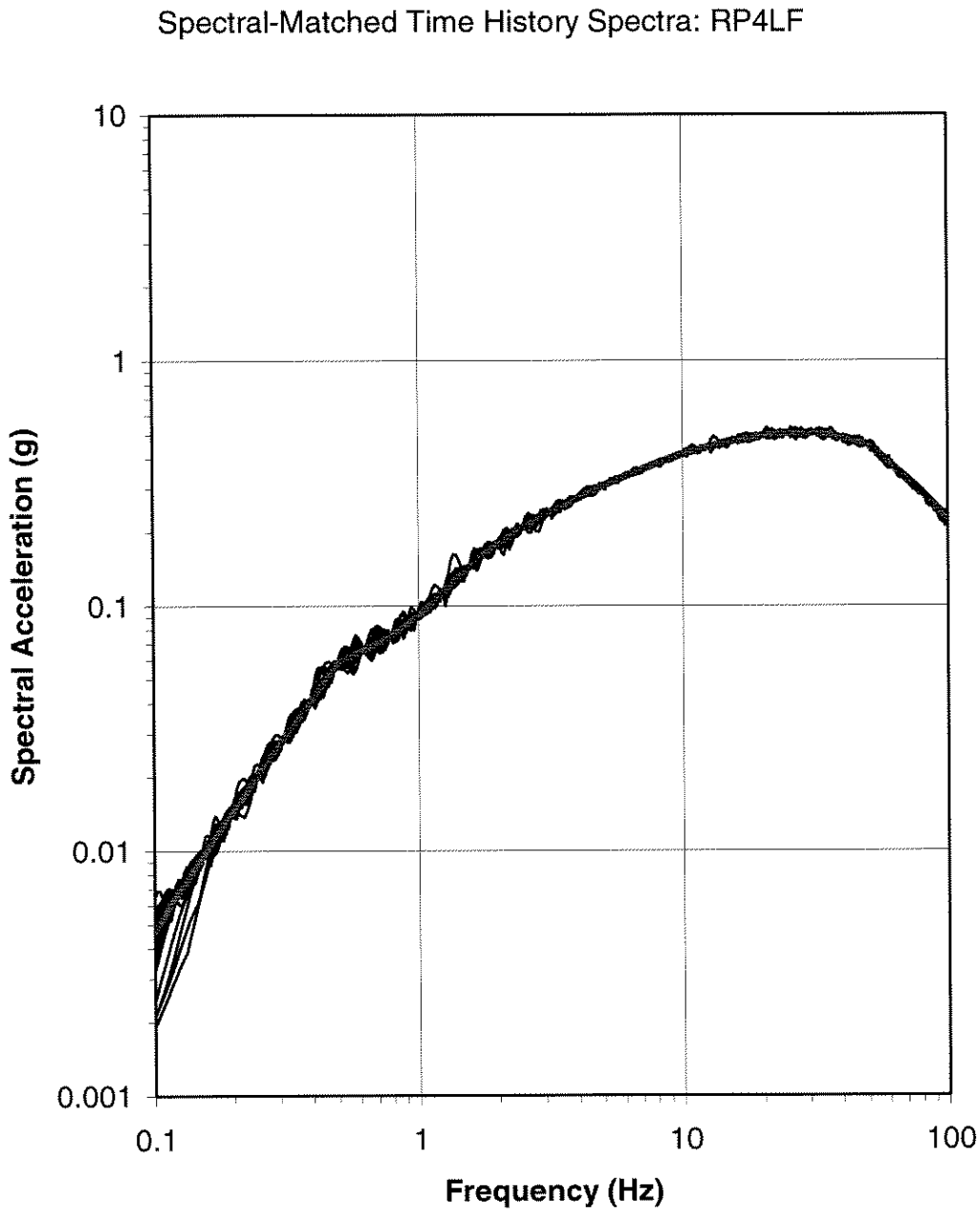
Note: Heavy red line is the target spectrum and thin black lines are the individual matches.

Figure 2.5.2-36d Low Frequency (10^{-5}) Match for the 30 Time Histories



Note: Heavy red line is the target spectrum and thin black lines are the individual matches.

Figure 2.5.2-36e High Frequency (10-4) Match for the 30 Time Histories



Note: Heavy red line is the target spectrum and thin black lines are the individual matches.

Figure 2.5.2-36f Low Frequency (10^{-4}) Match for the 30 Time Histories

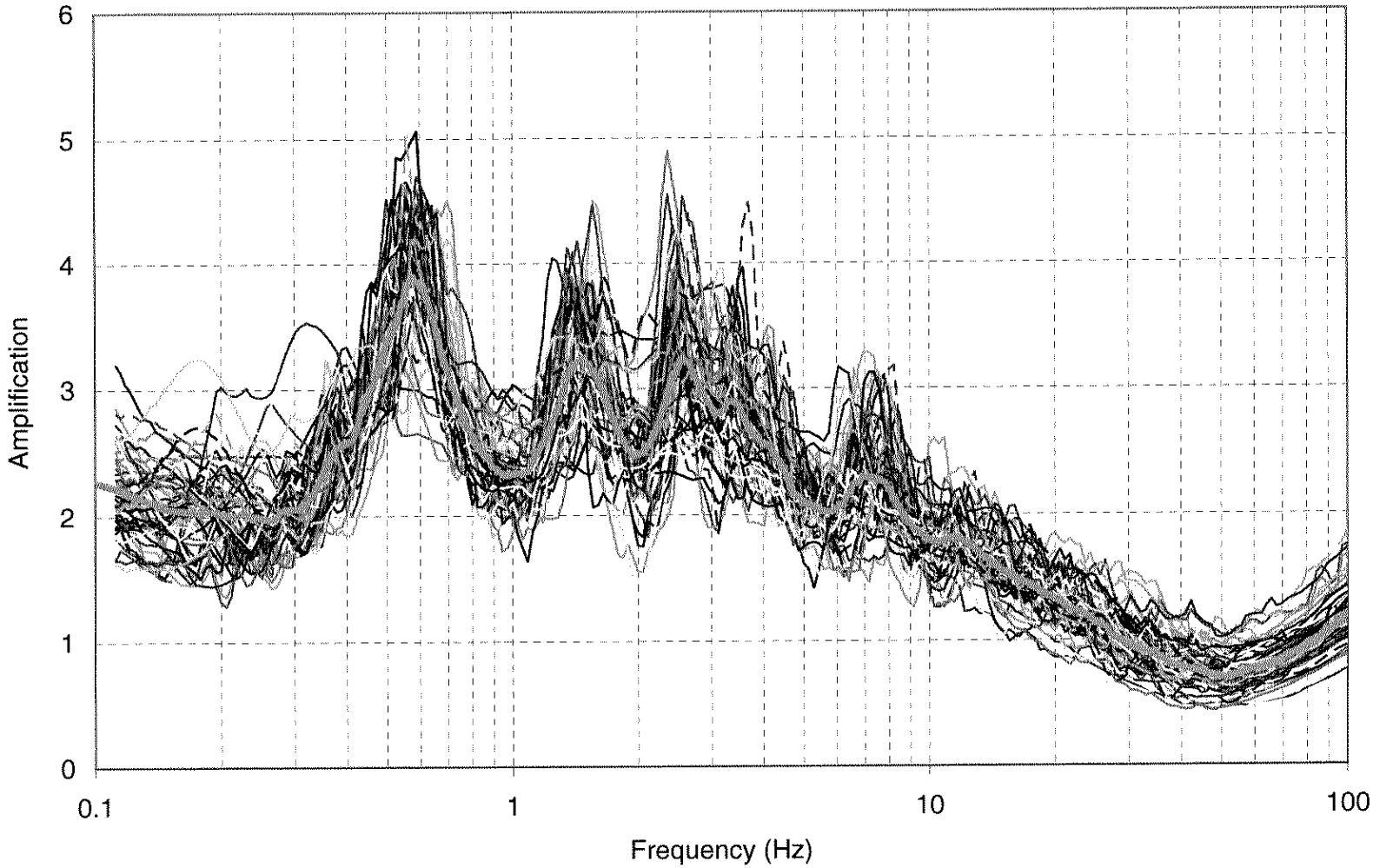


Figure 2.5.2-37 Typical Results of Spectral Amplification at 86-ft Depth (Top of Blue Bluff Marl) Using EPRI Degradation Curves for High Frequency Time Histories of 10^{-4} MAFE Input Motion Level

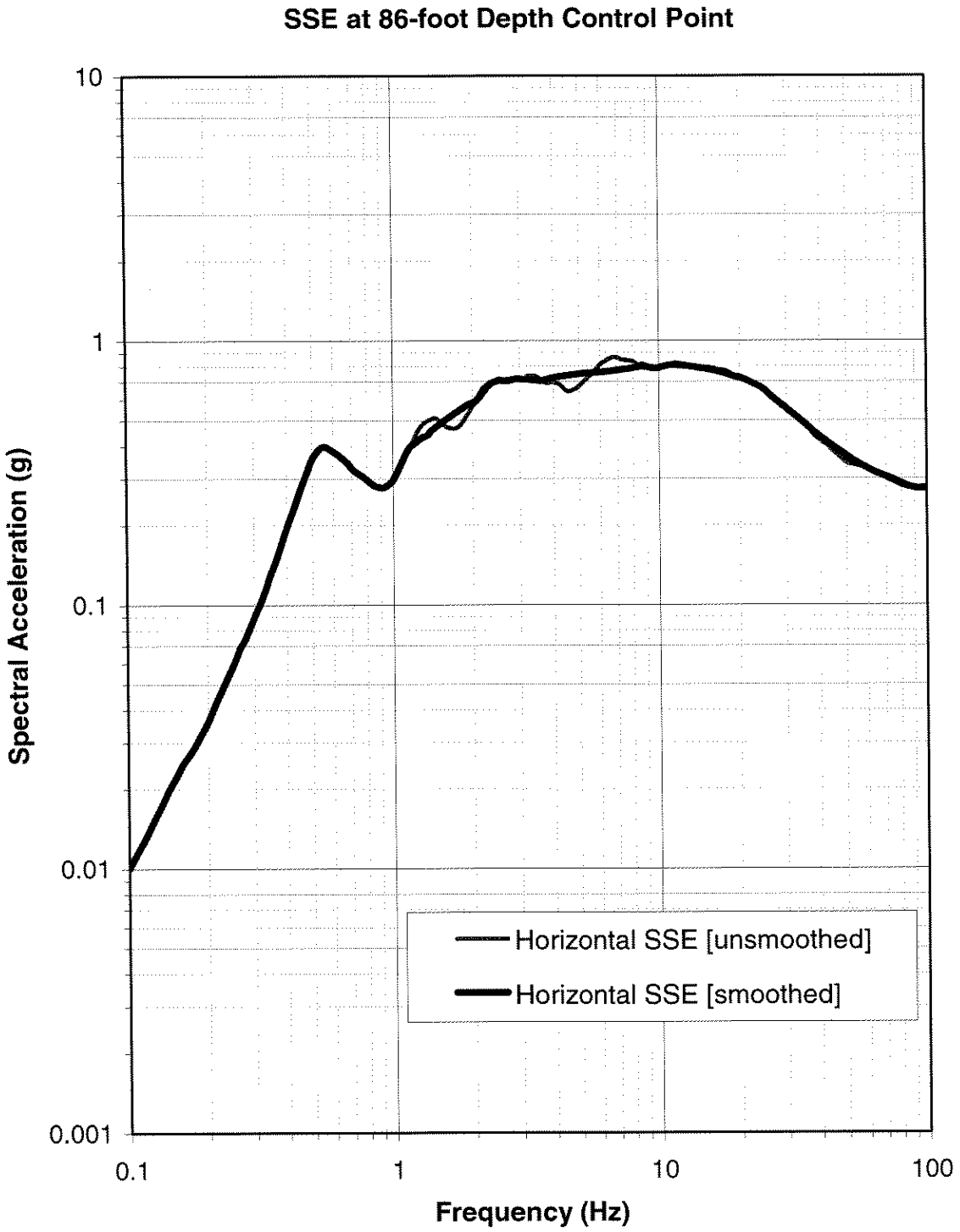


Figure 2.5.2-38 Horizontal Raw and Smoothed SSE, Top of Blue Bluff Marl

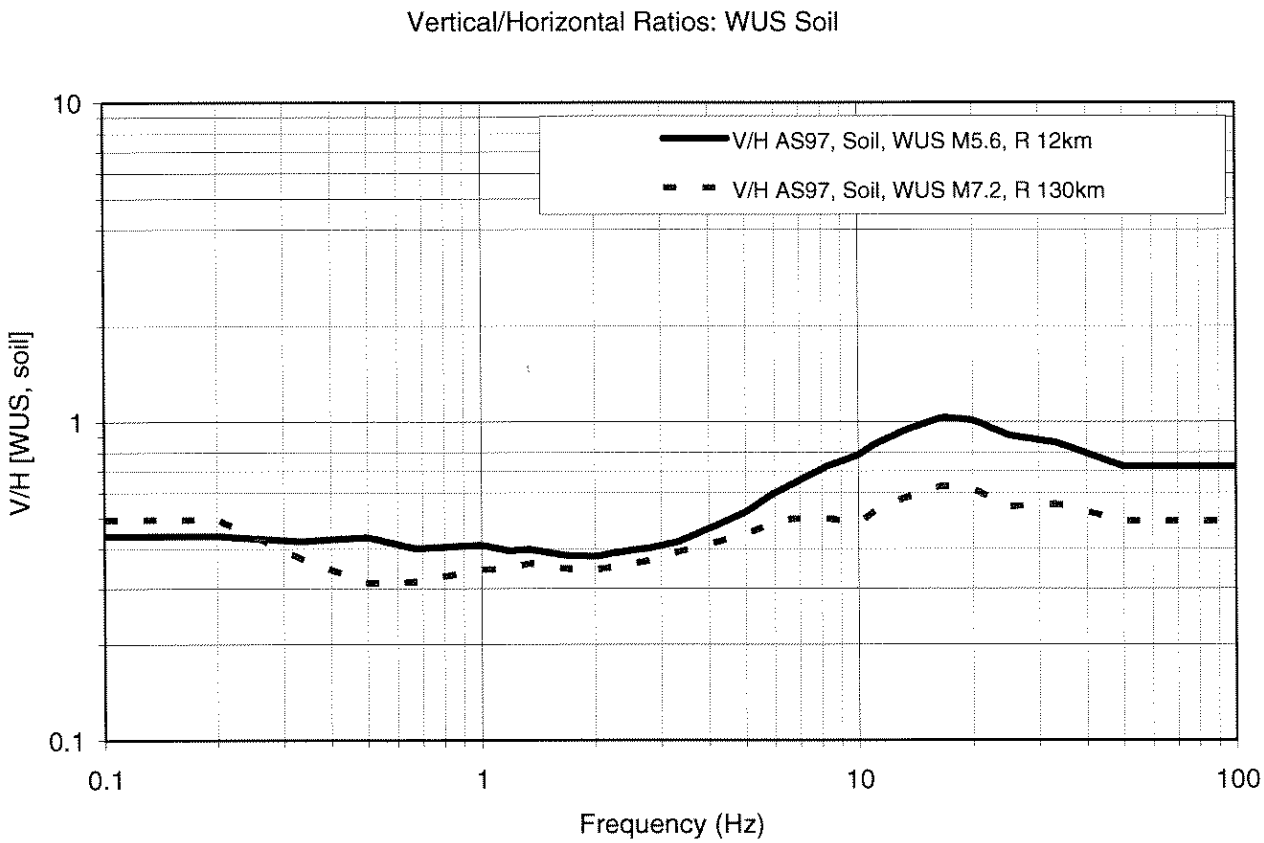
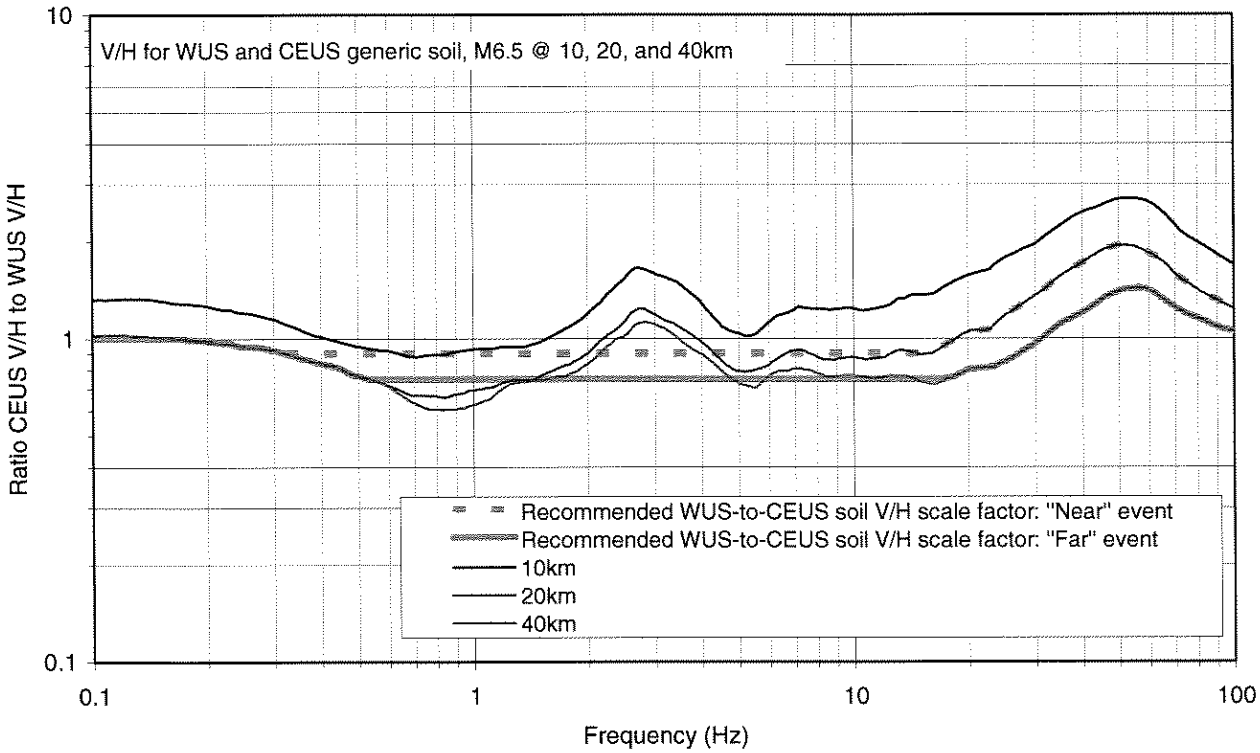


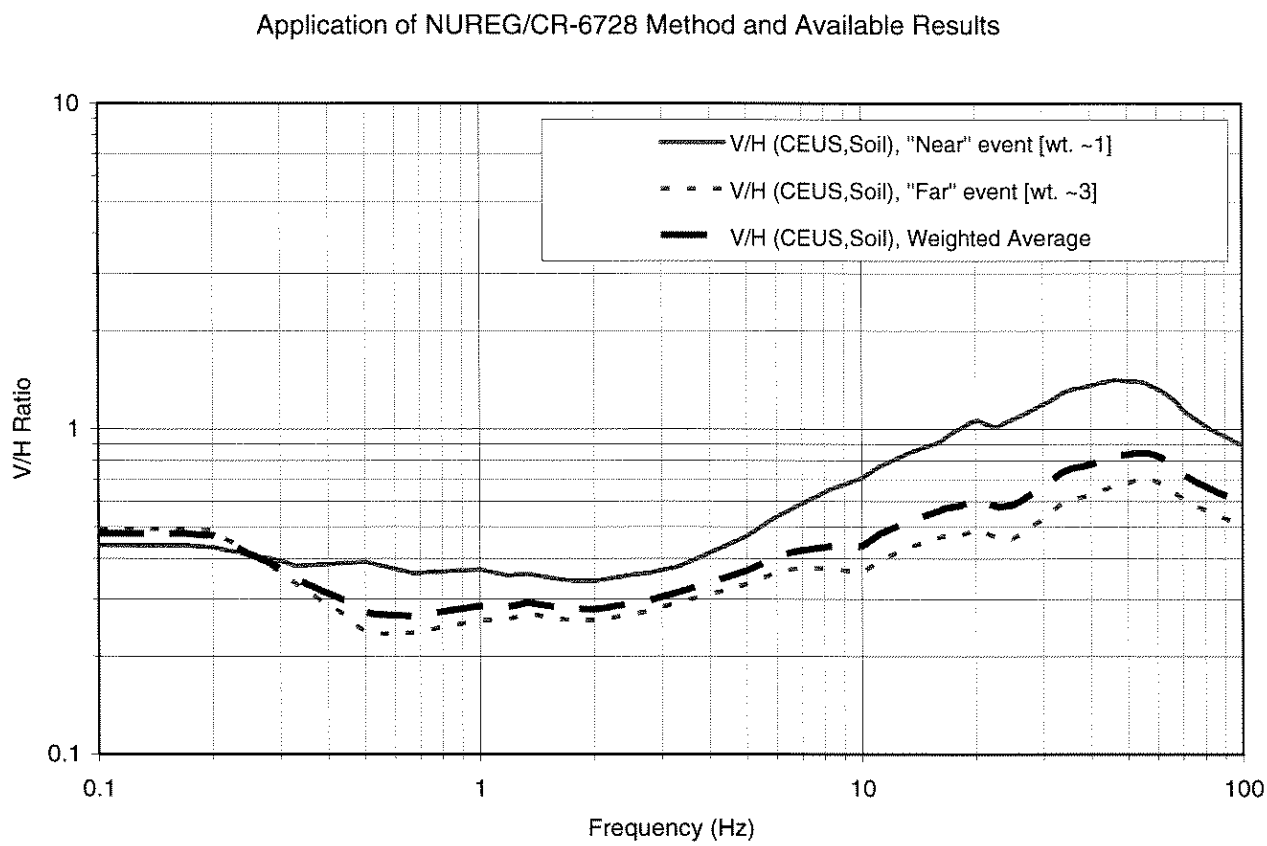
Figure 2.5.2-39 Plots of $V/H_{WUS,Soil,Empirical}$ Term of Equation 2.5.2-6 for "Near" [M5.6 at a Distance of 12 km] and "Far" [M7.2 at a Distance of 130 km] Events Using the Attenuation Relation of Abrahamson and Silva (1997)

NUREG/CR-6728, Figure J-31 and J-32



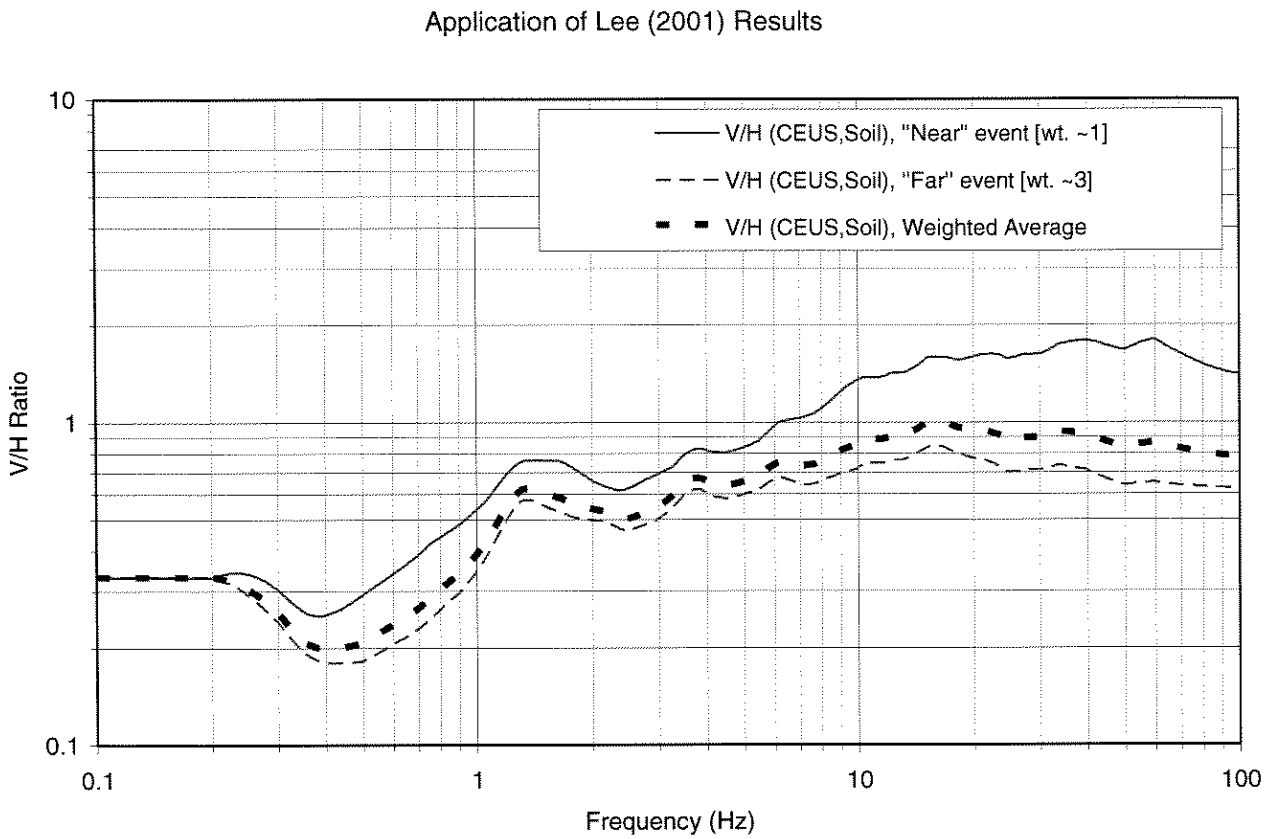
Note: The "near" and "far" ratios of V/H ratios recommended for this study are also shown.

Figure 2.5.2-40 Plots of [$V/H_{CEUS,Soil,Model}$ / $V/H_{WUS,Soil,Model}$] Term of Equation 2.5.2-6 for M6.5 and Distances of 10, 20, and 40 km, as Available in NUREG/CR-6728 (McGuire et al 2001)



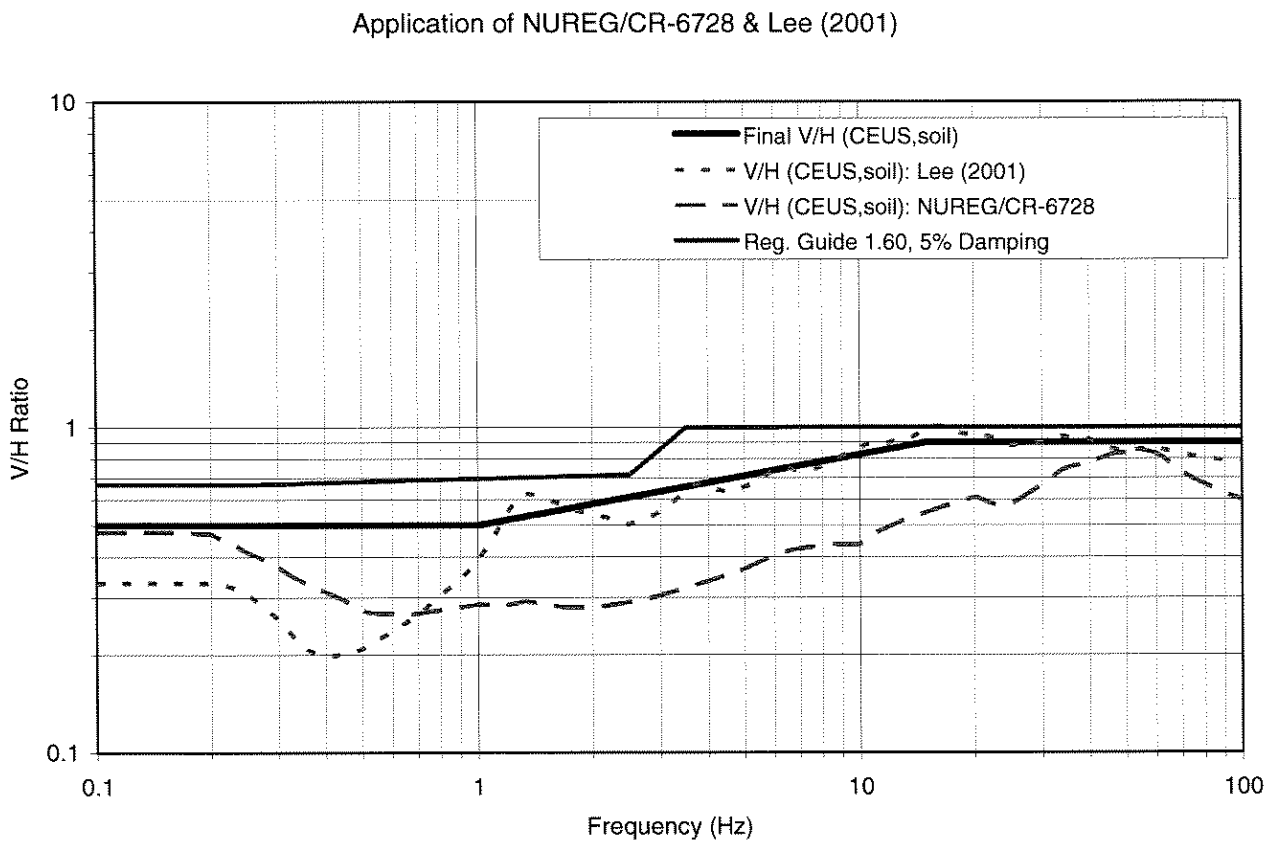
Note: Considering the relative contribution of the "near" and "far" events to the horizontal SSE design response spectrum, the approximately 1:3 weighted average is the recommended $V/H_{CEUS,Soil}$.

Figure 2.5.2-41 Plots of Recommended $V/H_{CEUS,Soil}$ from Equation 2.5.2-6 for "Near" and "Far" Events Using Results from NUREG/CR-6728 (McGuire et al 2001)



Note: Considering the relative contribution of the "near" and "far" events to the horizontal SSE design response spectrum, the approximately 1:3 weighted average is shown.

Figure 2.5.2-42 Plots of Recommended $V/H_{CEUS,Soil}$ from Equation 2.5.2-6 for "Near" and "Far" Events Using Results from Lee (2001)



Note: Considering the site-specific aspects of the Lee (2001), it is preferred, guiding the recommended final $V/H_{CEUS,Soil}$ (blue solid). The V/H from RG 1.60 is shown (red) for comparison.

Figure 2.5.2-43 Plots of $V/H_{CEUS,Soil}$ (Blue Patterned) Derived from Results from NUREG/CR-6728 (McGuire et al 2001) and Lee (2001)

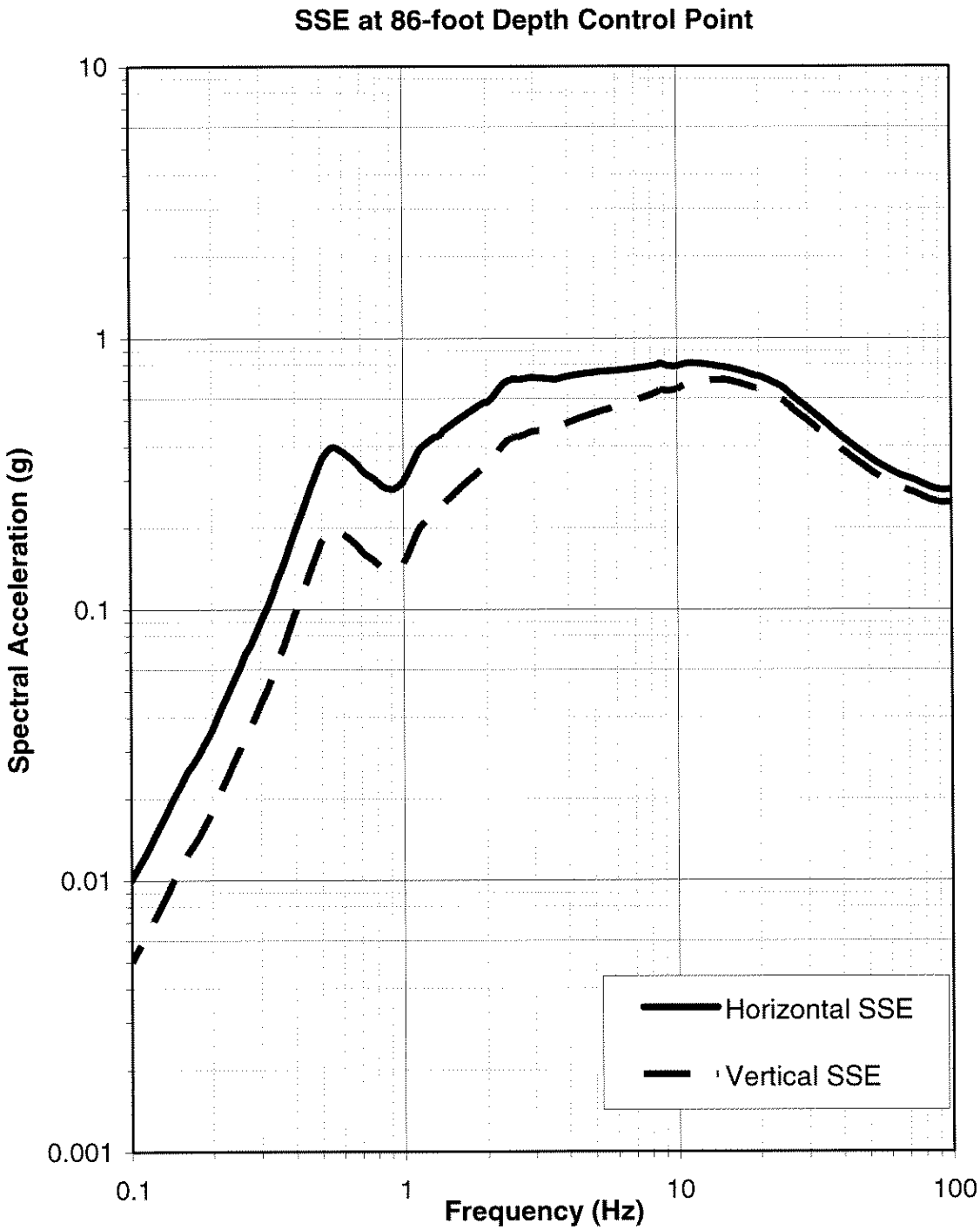


Figure 2.5.2-44 VEGP ESP Horizontal and Vertical SSE Spectra, Top of Blue Bluff Marl (5% Damping)

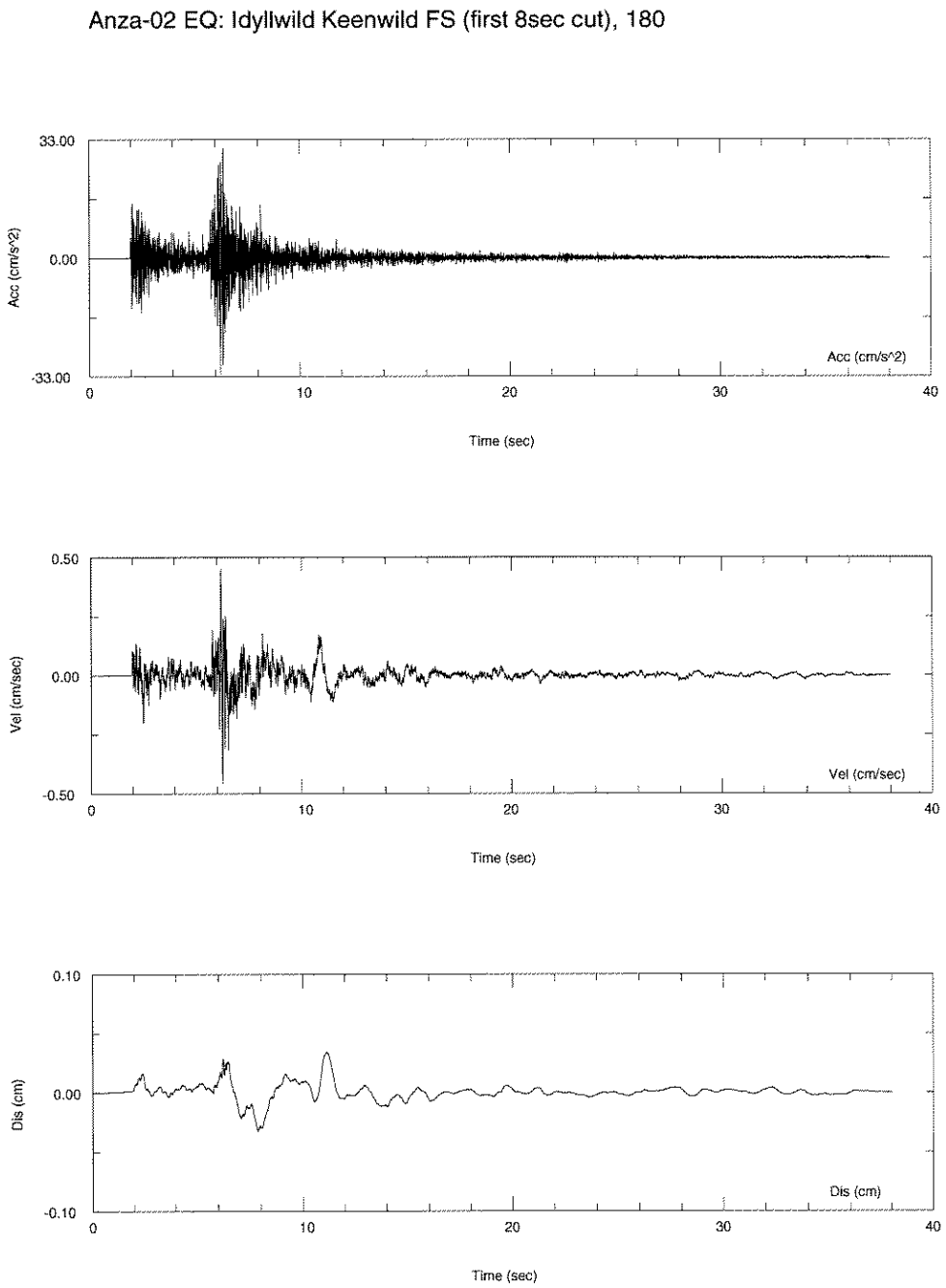


Figure 2.5.2-45a Initial Seed Input Time Acceleration, Velocity, and Displacement Time Histories (One of Thirty) for High Frequency Target Spectrum

SNC ALWR ESP VEGP: RP-6, HF, TH27, RUN6

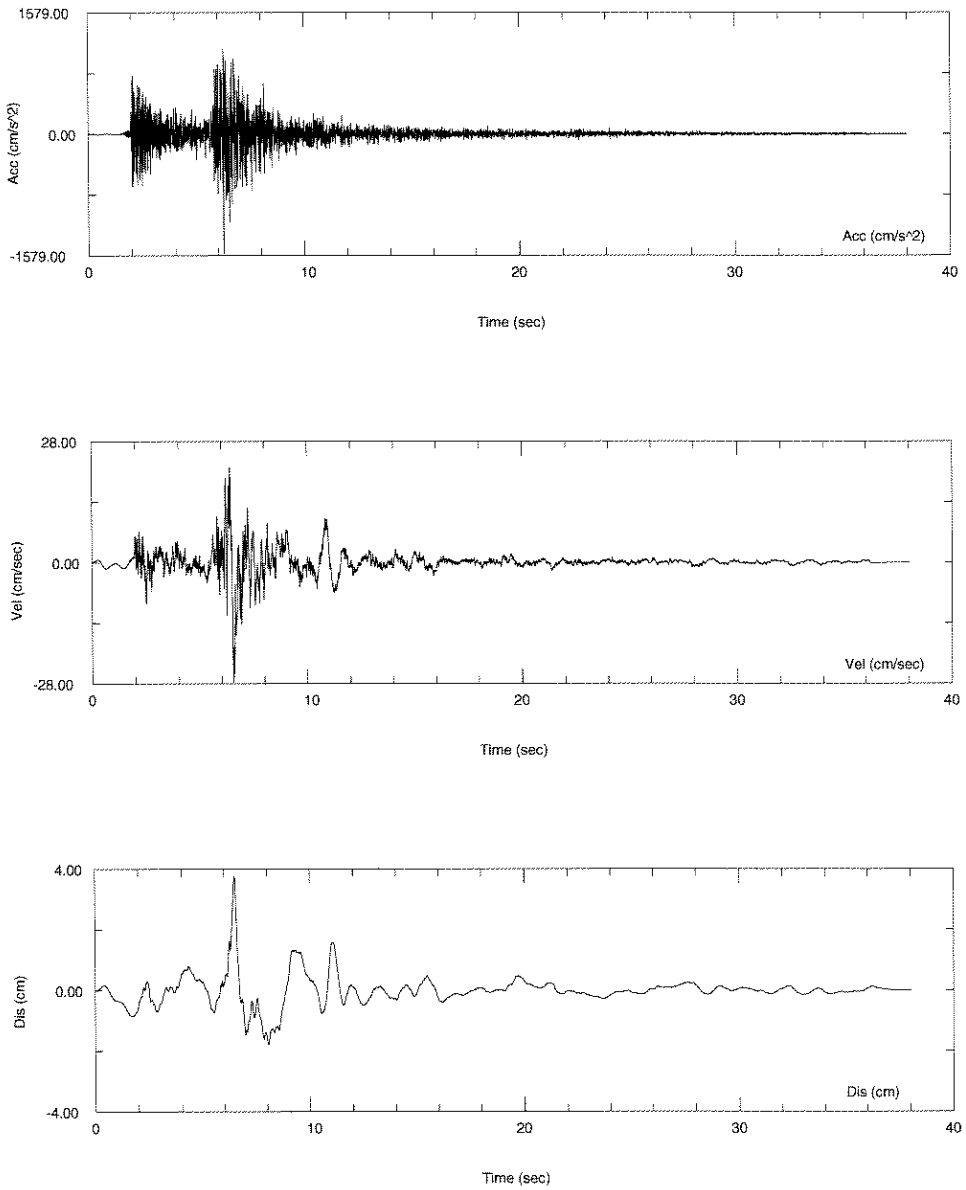


Figure 2.5.2-45b Final Modified Spectrum-Compatible Acceleration, Velocity, and Displacement Time Histories (One of Thirty) for 10^{-6} High Frequency Target Spectrum

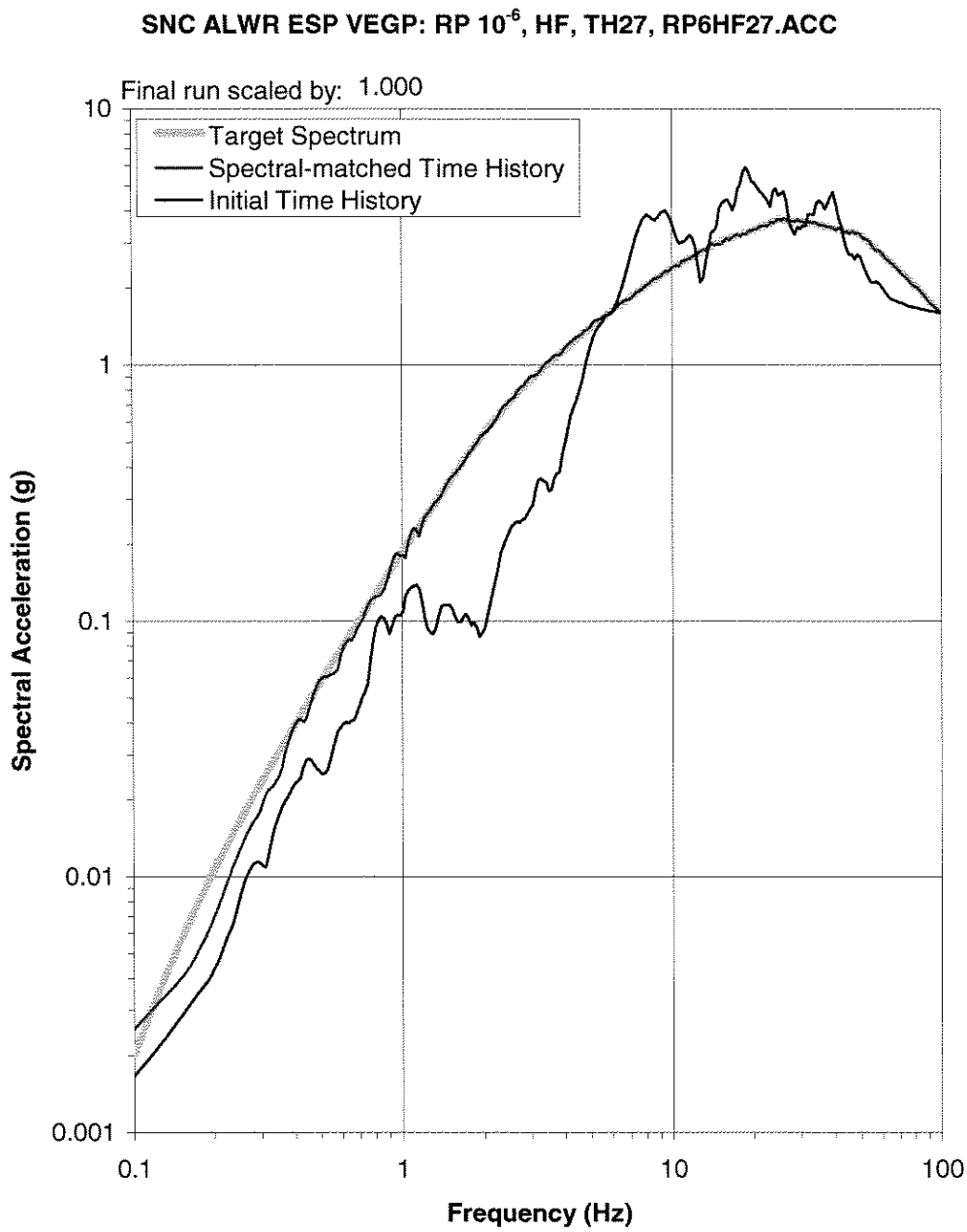


Figure 2.5.2-46 Comparison of 10^{-6} High Frequency Target Spectrum (Thick Grey Line), Response Spectrum from Initial Seed Input Acceleration Time History Scaled to Target PGA (Thin Blue Line), and Acceleration Response Spectrum for Final Modified Spectrum Compatible Time History (Thin Red Line)

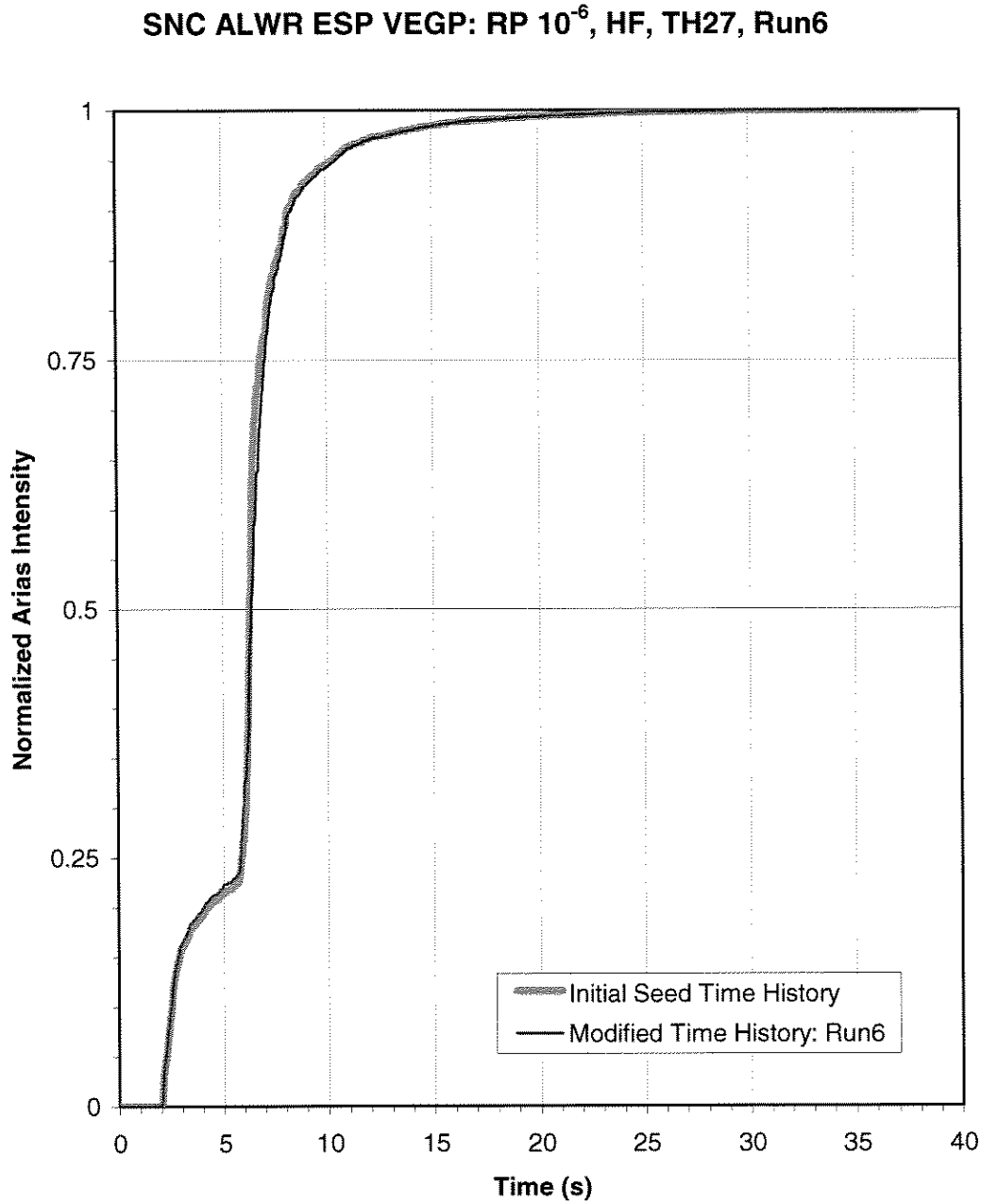


Figure 2.5.2-47 Comparison of Normalized Arias Intensity from Initial Seed Input Time History (Thick Grey Line) and Final Modified Spectrum Compatible (10^{-6} High Frequency Target Spectrum) Time History (Thin Red Line) for an Example Case

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