UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

May 15, 2023

Mr. R. Keith Brown
Regulatory Affairs Director
Southern Nuclear Operating Co., Inc.
3535 Colonnade Parkway
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SUBJECT: STAFF ASSESSMENT OF UPDATED SEISMIC HAZARD INFORMATION AND LATEST UNDERSTANDING OF SEISMIC HAZARDS AT THE VOGTLE PLANT SITE FOLLOWING THE NRC PROCESS FOR THE ONGOING ASSESSMENT OF NATURAL HAZARDS INFORMATION

Dear Mr. Brown:

The purpose of this letter is to document the U.S. Nuclear Regulatory Commission (NRC) staff's latest understanding of seismic hazards at the Vogtle Electric Generating Plant (Vogtle), following the process for the ongoing assessment of natural hazards information (POANHI). The NRC staff assessment considers new seismic ground motion attenuation models for central and eastern North America and updated seismic site response methods.

Based on its evaluation of updated seismic hazard curves for the Vogtle plant site, using the new ground motion models and updated site response methods, the NRC staff determined that no further regulatory evaluation of the Vogtle, Units 1 to 3, plant seismic risk is warranted at this time.

OVERVIEW

The enclosed seismic hazard report provides the NRC staff's updated seismic hazard curves and response spectrum (GMRS) for the Vogtle plant site that is based on the implementation of (1) a new seismic ground motion model for the central and eastern North America and (2) recent advances in site response analysis. The NRC staff's updated hazard curves, site amplification factors, and GMRS are included in the enclosed seismic hazard report.

The NRC staff conducted a screening evaluation that compared the updated GMRS and seismic hazard curves contained in the attached report with previous GMRS and seismic hazard curves developed by the licensee for Vogtle, Units 1 and 2, in response to NRC's Title 10 of the *Code of Federal Regulations* (10 CFR), 50.54(f) letter, and Vogtle, Units 3 and 4, for its Early Site Permit application. Based on a screening comparison of the GMRS and an evaluation of the change in seismic risk, the NRC staff has determined that no further regulatory evaluation of, or action to modify, the Vogtle, Units 1, 2, and 3, plant seismic risk licensing basis is warranted. Vogtle, Unit 4, was not included in the regulatory evaluation as the unit is currently under construction.

The NRC staff notes that Southern Nuclear Operating Company is responsible for considering the impact of this updated hazard on its plant-specific licensing basis including, approved risk-informed applications, and, if applicable, the approved program for maintaining the plant-specific seismic probabilistic risk assessment supporting such applications.

Although the NRC staff is taking no further action at this time, the control point seismic hazard curves developed by the NRC staff for this report may be considered in the context of potential future evaluations of the Vogtle plant site by the NRC staff (e.g., future license amendment requests) consistent with agency policy procedures (e.g., NRC Management Directive 8.4, Management of Backfitting, Forward Fitting, Issue Finality, and Information Requests).

If you have any questions, please contact me at (301) 415-3100 or via email at John.Lamb@nrc.gov.

Sincerely,

John G. Lamb Digitally signed by John G. Lamb Date: 2023.05.15 11:54:14 -04'00'

John G. Lamb, Senior Project Manager
Plant Licensing Branch II-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-424, 50-425, and 52-25

Enclosure:
Vogtle 2022 Seismic Hazard Report

cc: Listserv

ENCLOSURE

VOGTLE SEISMIC HAZARDS REPORT

Vogtle Seismic Hazard Report

Overview

This report provides the U. S. Nuclear Regulatory Commission (NRC) staff's updated seismic hazard curves and response spectra for the Vogtle Electric Generating Plant (Vogtle) site that are based on the implementation of (1) a new seismic ground motion model for the central and eastern United States (CEUS) and (2) recent advances in site response analysis. The NRC staff's updated hazard curves and site amplification factors are included in an appendix to this report.

Background

In response to the March 11, 2011, Great East Japan Earthquake and tsunami, which triggered an accident at the Fukushima Dai-ichi nuclear power plant, the U.S. Nuclear Regulatory Commission (NRC) established the Near-Term Task Force (NTTF) to conduct a systematic and methodical review of NRC processes and regulations and determine whether the agency should make additional improvements to its regulatory system. In SECY-11-0093, "Near-Term Report and Recommendations for Agency Actions Following the Events in Japan," dated July 12, 2011 (NRC, 2011), the NRC staff recommended a set of actions to clarify and strengthen the regulatory framework for protection against natural hazards. In particular, NTTF Recommendation 2.1 (NTTF R2.1) instructed the NRC staff to issue requests for information to all power reactor licensees pursuant to Title 10 of the *Code of Federal Regulations* 50.54(f) ("50.54(f) letter"). Enclosure 1 to the 50.54(f) letter requested that addressees reevaluate the seismic hazards at their sites, using present day NRC requirements and guidance to perform a probabilistic seismic hazard analysis (PSHA) and develop a site-specific ground motion response spectrum (GMRS). To comply with the 50.54(f) request, the Nuclear Energy Institute submitted Electric Power Research Institute (EPRI) Report 1025287, "Seismic Evaluation Guidance: Screening, Prioritization, and Implementation Details (SPID) for the Resolution of Fukushima NTTF Recommendation 2.1 Seismic," dated November 27, 2012 (EPRI, 2012). Recipients of the 50.54(f) letter committed to following the SPID to develop seismic hazard and screening reports (SHSRs). By December 2017, the NRC staff had finished assessing the SHSRs for all operating U.S. nuclear power plants.

Under the process for the ongoing assessment of natural hazards information (POANHI), described in SECY-16-0144, "Proposed Resolution of Remaining Tier 2 and 3 Recommendations Resulting from the Fukushima Dai-ichi Accident," dated December 26, 2016 (NRC, 2016), the NRC staff continuously seeks out and integrates new natural hazards information for operating plants in the United States. The Office of Nuclear Reactor Regulation's Office Instruction LIC-208, "Process for the Ongoing Assessment of Natural Hazards Information," issued November 2019 (NRC, 2019), provides guidance to the staff on how to collect, integrate, and evaluate new information for consideration in its regulatory decision-making. This report presents the NRC staff's latest understanding of seismic hazards at the Vogtle site following the POANHI framework.

The Vogtle site is located in Georgia along the Savannah River within the Coastal Plain physiographic province and is founded on about 325 meters of soil (sand and clay) over sedimentary rock of Mesozoic age.

Motivation

After evaluating the SHSR submittals, the NRC staff captured in NUREG/KM-0017, "Seismic Hazards Evaluations for U.S. Nuclear Power Plants: Near-Term Task Force

Recommendation 2.1 Results," issued December 2021 (Munson et al., 2021), the information used to develop the GMRS at each of the U.S. nuclear power plants. This includes a compilation and synthesis of (1) information provided by licensees in their SHSRs, (2) information collected by the NRC staff during its reviews of the SHSRs, and (3) information subsequently collected by the NRC staff from the scientific and engineering literature pertaining to several of the nuclear power plant sites. In addition, NUREG/KM-0017 includes updated approaches and relationships, relative to those recommended by the SPID, that the NRC staff used to perform its analyses.

After the development of NUREG/KM-0017, a new Senior Seismic Hazard Analysis Committee (SSHAC) Level 3 ground motion model (GMM) for Eastern North America called NGA-East was published by Goulet et al. (2018). In addition, the NRC staff also participated in a SSHAC Level 2 study, documented in Research Information Letter (RIL) 2021--15, "Documentation Report for SSHAC Level 2: Site Response," issued November 2021 (Rodriguez-Marek et al., 2021). This SSHAC Level 2 study implemented the SSHAC approach to performing site response analyses (SRAs). The SSHAC process, described most recently in NUREG-2213, "Updated Implementation Guidelines for SSHAC Hazard Studies," issued October 2018 (Ake et al., 2018), provides a structured and logical framework for the systematic evaluation of alternative data, models, and methods. This seismic hazard report for the Vogtle site incorporates the NGA-East GMM in place of the EPRI (2013) GMM and lessons learned from the SSHAC Level 2 SRA study (RIL 2021-15) into a PSHA to develop updated seismic hazard curves and a GMRS for the site.

Methods

Reference Rock Hazard

For the reference rock PSHA, the NRC staff used the distributed seismicity zones (DSZs) from the SSHAC Level 3 Central and Eastern United States Seismic Source Characterization for Nuclear Facilities (CEUS-SSC) model in NUREG-2115, "Central and Eastern United States Seismic Source Characterization for Nuclear Facilities, issued January 2012 (NRC, 2012). Specifically, the NRC staff selected the DSZs that are located within 500 kilometers of the site. For this reevaluation, the NRC staff used the SSHAC Level 2 update to the CEUS-SSC seismicity catalog and recurrence parameters (Gatlin, 2015), which primarily impact the DSZs that encompass Monticello Reservoir and Lake Keowee in South Carolina as well as the 1886 Charleston earthquake sequence. In addition to the nearby Charleston CEUS-SSC repeated large-magnitude earthquake (RLME) source, the NRC staff selected additional RLME sources that are within 1,000 kilometers of the site. To develop the reference rock seismic hazard curves for the site, the NRC staff used the NGA-East GMM (2018) to compute the median and logarithmic standard deviation of the spectral accelerations. Because the NGA-East GMM implements the rupture distance parameter, the NRC staff developed virtual rupture planes for each of the distributed source zones surrounding the site. For each virtual rupture, the NRC staff used the CEUS-SSC hazard input document (NRC, 2012) to specify the size of the rupture plane and the orientation of the rupture plane in terms of the strike and dip angles, dip direction, and rupture type (e.g., reverse and strike slip). In contrast, to develop the hazard curves for NUREG/KM-0017, the NRC staff used point source approximations for the CEUS-SSC and EPRI GMM (EPRI, 2013) combination.

Figure 1 shows the distribution of the virtual ruptures for one of the four alternative CEUS-SSC seismotectonic DSZ configurations along with the resulting 10-Hertz (Hz) mean hazard curves developed using the NGA-East GMM. In particular, Figure 1 shows the distribution of the surface projection of the updip segments of the virtual rupture planes for each of the five

seismotectonic DSZs within 500 kilometers of the site. As expected, the Extended Continental Crust—Atlantic Margin (ECC-AM) source zone, which surrounds the site, is the largest contributor to the 10 Hz reference rock mean hazard curves at the 10^{-4} annual frequency of exceedance (AFE) level. Similarly, Figure 2 shows the distribution of the virtual ruptures for one of the three alternative CEUS-SSC maximum-magnitude DSZ configurations along with the resulting 10 Hz mean hazard curves developed using the NGA-East GMM. The Mesozoic-and-Younger Extension—Narrow Configuration (MESE-N) source zone, which surrounds the site, is the largest contributor to the 10 Hz reference rock mean hazard curves at the 10^{-4} AFE level. Figure 3 shows the RLME sources within 1,000 kilometers of the site, and their contribution to the 1 Hz reference rock mean hazard, from using the NGA-East GMM. The Charleston RLME source, which is closest to the site, is the largest contributor to the 1 Hz reference rock mean hazard curves at the 10^{-4} AFE level. Figure 4 shows the contribution from all of the DSZs relative to the RLMEs, as well as the total mean hazard for the 1 and 10 Hz mean reference rock hazard curves, from using the NGA-East GMM. For both the 1 and 10 Hz mean reference rock hazard curves, the RLME sources provide the largest contribution at the 10^{-4} AFE level. Finally, Figure 5 shows the mean 1,000-, 10,000-, and 100,000-year return period mean reference rock uniform hazard response spectra (UHRS) for the Vogtle site from using the EPRI GMM (blue) and the NGA-East GMM (red). For this reevaluation, the NRC staff used the NGA-East single station standard deviation and for the comparison shown in Figure 5, the NRC staff used the EPRI GMM ergodic standard deviation. As shown in Figure 5, the spectral accelerations from using the NGA-East GMM are moderately higher than those from using the EPRI GMM, up to the spectral frequency of about 25 Hz.

Site Response Analysis

SRAs, which are used to develop site adjustment (or amplification) factors $(SAFs)$, depend on several factors, including the site strata (material type, stiffness, and thickness) and their response to dynamic loading. Because this information is site specific, the ability to accurately model the site response depends on the quantity and quality of site-specific geologic and geotechnical data available, and on the interpretation and use of these data to develop input models for assessing amplification (or deamplification) of ground motions. The resulting $SAFs$ are assessed for a wide range of input ground motions as part of understanding the changes in the soil and rock response as input ground motions increase.

The NRC staff followed the site response approach described in RIL 2021-15, which uses a logic tree for systematically identifying and propagating epistemic uncertainties in the SRA. As described in RIL 2021-15, to produce a truly probabilistic estimate of the seismic hazard at the control point elevation, it is necessary to estimate both the epistemic uncertainties and the aleatory variability of the soil and or rock dynamic response, and to propagate these through the SRA and the calculation of the site hazard curves.

Site Exploration

As described in the NTTF R2.1 SHSR submitted by Southern Nuclear Operating Company (Southern; Pierce, 2014) and summarized in section 2.3.17 of NUREG/KM-0017, the field investigations for Vogtle consisted of the siting investigations for Vogtle Units 1 and 2 and the investigations for the early site permit (ESP) for Vogtle Units 3 and 4 (Southern, 2008). These investigations involved numerous geophysical profiles, including crosshole methods and suspension compressional (P)-shear (S) velocity logging to a depth of 408 meters in the deepest borehole for Units 3 and 4. The geophysical investigations from the nearby Savannah River Site were used to determine the shear wave velocity (V_S) for the deeper strata within the Dunbarton Basin.

Basecase Profiles

The Vogtle site consists of sedimentary deposits (primarily sands, silty sands, clayey sands, limestone, marl, and silt) overlying the Triassic-Jurassic sedimentary rock of the Dunbarton Basin, which is part of the South Georgia Rift Basin. Southern stated in its NTTF R2.1 SHSR (Pierce, 2014) that the upper sand stratum and the Utley limestone were removed and replaced with 27 meters of compacted backfill within the powerblock areas. Based on the numerous geotechnical and geophysical investigations, Southern developed a best-estimate basecase profile for its SHSR that extends to a depth of about 671 meters below the control point elevation, which is at the top of the ground surface. The uppermost layers of the profile consist of approximately 27 meters of compacted fill, with a V_S varying from about 180 meters per second (m/s) near the surface to about 350 m/s at its base. Below the compacted fill is about 20 meters of hard calcareous clay marl, referred to as the Blue Bluff Marl. The V_S of the Blue Bluff Marl increases from about 490 m/s to 670 m/s. Beneath the Blue Bluff Marl are 274 meters of dense, coarse-to-fine sand with interbedded silty clay and clayey silt, referred to as the Lower Sand Stratum. The V_S for the Lower Sand Stratum ranges from about 480 m/s to 840 m/s. The V_S for the underlying Triassic-age Dunbarton Basin increases from about 1,340 m/s to about 2,630 m/s, with the reference rock V_S of 3,000 m/s at a depth of about 671 meters.

As multiple geophysical field investigations have characterized the sedimentary strata beneath the Vogtle site, the NRC staff used Southern's layer thicknesses and V_S for its best-estimate basecase profile.

To capture the uncertainty in its basecase profile, the NRC staff developed lower and upper profiles by multiplying its best-estimate basecase profile by scale factors of 0.82 and 1.21, respectively, which corresponds to an epistemic logarithmic standard deviation of 0.15. The weights for the lower, best-estimate, and upper basecase profiles are 0.3, 0.4, and 0.3, respectively. Figure 6 shows the lower, best-estimate, and upper basecase profiles used by the NRC staff. The lower epistemic value used by the NRC staff to determine the lower and upper basecase profiles is due to the results of the abundant geophysical and geotechnical profiling for the Vogtle site.

Site Kappa

To estimate the site kappa (κ_0), which captures the overall attenuation (i.e., intrinsic and scattering attenuation) of the geologic profile, the NRC staff used five empirical relationships: the four Q_{ef}-V_S models from Campbell (2009), where Q_{ef} is the effective quality factor of shear waves, which captures both the frequency-independent component of intrinsic attenuation and small-scale scattering; and the V_{S30}-$Z_{2.5}$-κ_0 correlation model of Xu et al. (2020), where V_{S30} is the average shear-wave velocity over the top 30 meters of a profile, and $Z_{2.5}$ is the depth to the $V_S = 2.5$ kilometers per second horizon. For each of the four Q_{ef}-V_S models, the NRC staff estimated a Q_{ef} for each layer in the three basecase profiles, then used the estimated Q_{ef}, V_S, and layer thickness to determine a κ_0 for each layer. Summing these κ_0 values for each layer and adding the reference value of 6 milliseconds (msec) provides an estimate of the total κ_0. The NRC staff used a weight of 0.125 for each of the four Q_{ef}-V_S models and a weight of 0.5 for the V_{S30}-$Z_{2.5}$-κ_0 correlation model. Assuming a lognormal distribution for κ_0 with a logarithmic standard deviation of 0.2 from Xu et al. (2020), the NRC staff developed a nine-point discrete distribution. This results in 45 κ_0 values and associated weights for each of the three basecase profiles, which the NRC staff then resampled using the approach from Miller and Rice (1983) to reduce the distribution to five representative values and associated weights. These five κ_0 values and weights, which are listed in Table 1, range from 16 msec to 69 msec for the three basecase profiles.

Nonlinear Dynamic Properties
For the equivalent linear (EQL) SRA, nonlinearity is incorporated using strain-compatible site properties (i.e., shear modulus and damping ratio) for each layer. The strain-compatible properties model both the shear modulus reduction and the increased damping that are expected as the intensity of shaking increases. To model the nonlinear response within the upper 323 meters of soil deposits, the NRC staff used the site-specific modulus reduction and damping (MRD) curves developed as part of the investigations for the early site permit, along with several additional published MRD curves (EPRI, 1993; Darendeli, 2001; Peninsular Range [Silva et al., 1997]; Vucetic and Dobry, 1991; Zhang et al., 2005), which are identified in Table 2. The NRC staff used a weight of 0.5 for the site-specific MRD curves and a weight of 0.125 for the other four generic curves. The NRC staff used multiple MRD curves to better capture the epistemic uncertainty in the nonlinear response of the soil to higher dynamic loading.

Table 2 provides the layer depths, lithologies, V_S, unit weights, and dynamic properties for the NRC staff's three basecase profiles. It is important to note that the NRC staff has adjusted the critical damping ratio values in the lower layers of the three profiles, which are treated as having a linear response, so that the profile as a whole has the appropriate κ_0 value. Figure 7, which shows tornado plots for the reference rock peak ground acceleration (PGA) value of 0.8g, shows the site response logic tree nodes that contribute to the variance of the SAF. Each tornado plot in Figure 7 is associated with one of the four oscillator frequencies of 1, 5, 10, and 100 Hz. For the 1, 5, and 10 Hz frequencies, the epistemic uncertainty in the basecase V_S contributes the most to the variance in the SAF. At 100 Hz, the V_S profile, κ_0, and the analysis method (described below) all appear to make similar minor contributions to the SAF variance.
Input Motions. Input motions used for the SRA were generated as outcrop motions at the reference rock horizon, located at the bottom of the basecase profiles. The NRC staff used random vibration theory to generate the input motions after first developing an input Fourier amplitude spectrum (FAS) using seismological source theory (i.e., single-corner frequency Brune source spectrum). To develop the FAS, the NRC staff used the source and regional attenuation parameters recommended in the SPID for Eastern North American rock sites and then used random vibration theory to develop corresponding 5 percent damped acceleration response spectra. The NRC staff developed 12 input FAS assuming a magnitude ($\boldsymbol{M}$) of 6.5 and 12 different source-to-site distances, as recommended in the SPID.

Analysis Methodology
To develop $SAFs$ for the Vogtle site, the NRC staff used traditional EQL analysis and the recently developed kappa-corrected EQL analysis, which adjusts the high-frequency control point (i.e., top of profile) FAS from the EQL SRA to be consistent with the target κ_0 value. In particular, the NRC staff used the kappa-corrected EQL analysis methodology (Xu and Rathje, 2021) with a minor modification in which the EQL control point FAS remains unmodified below a specified transition frequency, and then a slope equal to the target κ_0 value is imposed at frequencies above the transition frequency (RIL 2021-15). To capture the uncertainty in the transition frequency value, the NRC staff selected three frequencies for which the FAS amplitude equals 5 percent, 11 percent, and 17 percent of its peak value, with weights of 0.2, 0.6, and 0.2, respectively.

To capture the spatial variability in site properties across the site, the NRC staff generated randomized V_S profiles around the three basecase profiles using the Toro (1995) model, which quantifies the aleatory variability through a depth-dependent standard deviation of the natural log of the velocities. The logarithmic standard deviation values used by the NRC staff for the Vogtle site were based on site-specific data and are shown in Table 2. In addition to

randomizing the V_S profiles, the NRC staff also randomized the MRD curves following the logit function approach used in the SPID and described in RIL 2021-15.

For each terminal branch of the site response logic tree, the NRC staff developed 60 randomized profiles and then determined the SAF by dividing the computed control point response spectrum by the outcrop response spectrum for the reference condition. Next, the NRC staff computed a median and logarithmic standard deviation for the SAF, using the 60 $SAFs$ from the randomized profiles, for each terminal branch of the logic tree. To facilitate implementing the SAF medians and logarithmic standard deviations into the PSHA seismic hazard integral, the NRC staff reduced the median SAFs from the over 200 logic tree terminal branches to seven discrete fractiles and weights using the resampling procedure outlined by Miller and Rice (1983). As recommended by Rodriguez-Marek et al. (2021), to ensure that estimates of the SRA capture enough epistemic uncertainty in the median SAF, the NRC staff implemented a minimum logarithmic standard deviation value of 0.15, which causes the seven median SAF fractiles to spread apart if necessary.

Finally, because the SAF logarithmic standard deviation for each spectral frequency does not vary significantly across the terminal branches of the logic tree, the NRC staff used a single mean value for each frequency. In addition, to avoid double-counting the aleatory variability already captured by the GMM, the NRC staff adjusted the SAF logarithmic standard deviation to include only the portion of the standard deviation associated with the nonlinear site response. Figure 8 shows the seven median SAF values (top) and the average logarithmic standard deviation (bottom) as a function of input reference rock spectral acceleration for the 1 and 10 Hz spectral frequencies. As shown in Figure 8, the median $SAFs$ range from about 1 to 3 before falling off with higher input spectral accelerations. The lower half of Figure 8 shows both the total and the nonlinear values of the SAF logarithmic standard deviation, the latter of which are implemented into the PSHA hazard integral. Figure 9 shows the seven median SAF values versus frequency at the 10^{-4} AFE spectral acceleration value for each of the 23 NGA-East GMM spectral frequencies as well for PGA, which is plotted at 200 Hz. Overall, the Vogtle site produces a broad SAF peak from about 0.3 Hz to 10 Hz, which then falls off over the higher frequencies out to about 100 Hz.

Control Point Hazard and Ground Motion Response Spectra

The NRC staff calculated the mean control point hazard for the Vogtle site using Convolution Approach 3 from NUREG/CR-6728, “Technical Basis for Revision of Regulatory Guidance on Design Ground Motions: Hazard- and Risk-Consistent Ground Motion Spectra Guidelines,” issued October 2001 (McGuire et al., 2001), which convolves the predetermined mean reference condition hazard with the $SAFs$. For each NGA-East GMM spectral frequency, the NRC staff convolved the mean reference condition hazard curve with the seven $SAFs$ to determine the final mean control point hazard. Using the mean control point hazard curves, the NRC staff then determined the 10^{-4} and 10^{-5} UHRS in order to calculate the final GMRS, which are provided in Table 3. Figure 10 shows this final GMRS (red curve) compared to (1) the GMRS (black curve) developed for NUREG/KM-0017 (2) the GMRS (blue curve) in Southern’s SHSR (Pierce, 2014) and seismic probabilistic risk assessment (SPRA; Hutto, 2017) for Vogtle Units 1 and 2, and (3) the GMRS (green curve) developed by Southern for its ESP (Southern, 2008). The years in the legend for Figure 10 show when the GMRS were developed either by Southern or the NRC staff. As shown in Figure 10, the final GMRS from this study is higher than the previous three GMRS for the low frequencies around 1 Hz and falls below the previous GMRS above 5 Hz. The higher spectral accelerations for the lower frequencies are due to the NGA-East GMM, which predicts higher median ground motions for the lower spectral

frequencies relative to the EPRI GMM (see Figure 5). Based on a sensitivity analysis, the NRC staff found that the lower spectral accelerations in the mid-to-upper frequencies between the updated GMRS developed by this study and the previous GMRS are due to the higher κ_0 values estimated for the Vogtle site (see Table 1), compared to the lower κ_0 values used in previous hazard evaluations.

Data Tables

Appendix A provides the data tables for the Vogtle site. Tables A-1, A-2, and A-3 give the reference rock mean hazard curves for 23 spectral frequencies ranging from 0.1 to 100 Hz and for PGA. Tables A-4 through A-27 give the SAF medians and logarithmic standard deviations for the 23 spectral frequencies and for PGA. Tables A-28, A-29, and A-30 give the control point hazard mean hazard curves for the 23 spectral frequencies and for PGA.

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Table 1 Site Kappa (κ_0) Values for Each Basecase Profile

Profile Kappa Distribution					
Lower Range		Best Estimate		Upper Range	
κ_0 (s)	Weight	κ_0 (s)	Weight	κ_0 (s)	Weight
0.030	0.101	0.022	0.101	0.016	0.101
0.038	0.244	0.029	0.244	0.022	0.244
0.045	0.309	0.036	0.309	0.029	0.309
0.054	0.244	0.046	0.244	0.039	0.244
0.069	0.101	0.057	0.101	0.052	0.101

Table 2 Layer Depths, Shear Wave Velocities (V_S), Unit Weights, and Dynamic Properties for Vogtle

Layer #	Depth (m)	V_S (m/s)			V_S	Unit	Dynamic Properties				
		LR	BC	UR	Sigma	Weight	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5
		(0.3)	(0.4)	(0.3)	(ln)	(kN/m^3)	(0.5)	(0.125)	(0.125)	(0.125)	(0.125)
1	0.6	115	140	169	0.2	19.3	SB	EPRI Soil	Pen.	Darendeli	Zhang
2	1.2	147	179	216	0.2	19.3	SB	EPRI Soil	Pen.	Darendeli	Zhang
3	1.8	177	215	260	0.2	19.3	SB	EPRI Soil	Pen.	Darendeli	Zhang
4	3.0	187	227	275	0.2	19.3	SB	EPRI Soil	Pen.	Darendeli	Zhang
5	4.3	215	261	316	0.2	19.3	SB	EPRI Soil	Pen.	Darendeli	Zhang
6	5.5	235	284	345	0.2	19.3	SB	EPRI Soil	Pen.	Darendeli	Zhang
7	7.0	246	298	361	0.2	19.3	SB	EPRI Soil	Pen.	Darendeli	Zhang
8	8.8	258	313	379	0.2	19.3	DB	EPRI Soil	Pen.	Darendeli	Zhang
9	11.0	264	320	388	0.2	19.3	DB	EPRI Soil	Pen.	Darendeli	Zhang
10	13.1	276	335	406	0.2	19.3	DB	EPRI Soil	Pen.	Darendeli	Zhang
11	15.2	283	343	415	0.15	19.3	DB	EPRI Soil	Pen.	Darendeli	Zhang
12	16.8	294	356	432	0.15	19.3	DB	EPRI Soil	Pen.	Darendeli	Zhang
13	18.3	294	356	432	0.15	20.9	DB	EPRI Soil	Pen.	Darendeli	Zhang
14	21.3	305	369	447	0.15	20.9	DB	EPRI Soil	Pen.	Darendeli	Zhang
15	24.4	310	376	455	0.15	20.9	DB	EPRI Soil	Pen.	Darendeli	Zhang
16	26.8	316	383	465	0.15	20.9	DB	EPRI Soil	Pen.	Darendeli	Zhang
17	28.3	348	421	510	0.15	18.1	BBM HPI	EPRI Clay	V&D	Darendeli	Zhang
18	29.3	384	466	564	0.15	18.1	BBM HPI	EPRI Clay	V&D	Darendeli	Zhang
19	30.5	418	507	614	0.15	18.1	BBM HPI	EPRI Clay	V&D	Darendeli	Zhang
20	32.0	465	564	683	0.15	18.1	BBM HPI	EPRI Clay	V&D	Darendeli	Zhang
21	33.5	486	589	713	0.15	18.1	BBM HPI	EPRI Clay	V&D	Darendeli	Zhang
22	36.6	512	620	752	0.15	18.1	BBM HPI	EPRI Clay	V&D	Darendeli	Zhang
23	39.0	564	683	828	0.15	18.1	BBM LPI	EPRI Clay	V&D	Darendeli	Zhang
24	46.6	577	699	846	0.15	18.1	BBM LPI	EPRI Clay	V&D	Darendeli	Zhang
25	47.5	616	746	904	0.15	18.1	BBM LPI	EPRI Clay	V&D	Darendeli	Zhang
26	50.0	453	549	666	0.15	19.3	BBM LPI	EPRI Clay	V&D	Darendeli	Zhang

Layer #	Depth (m)	V_S (m/s)			V_S Sigma	Unit Weight	Dynamic Properties				
		LR (0.3)	BC (0.4)	UR (0.3)	(ln)	(kN/m^3)	Alt. 1 (0.5)	Alt. 2 (0.125)	Alt. 3 (0.125)	Alt. 4 (0.125)	Alt. 5 (0.125)
27	51.8	392	475	576	0.15	19.3	BBM LPI	EPRI Clay	V&D	Darendeli	Zhang
28	56.4	392	475	576	0.15	19.3	LS	EPRI Soil	Pen.	Darendeli	Zhang
29	59.4	392	475	576	0.15	19.3	LS	EPRI Soil	Pen.	Darendeli	Zhang
30	67.1	392	475	576	0.15	19.3	LS	EPRI Soil	Pen.	Darendeli	Zhang
31	71.9	442	536	649	0.15	20.1	LS	EPRI Soil	Pen.	Darendeli	Zhang
32	85.3	503	610	739	0.15	20.1	LS	EPRI Soil	Pen.	Darendeli	Zhang
33	88.4	484	587	711	0.15	20.1	LS	EPRI Soil	Pen.	Darendeli	Zhang
34	94.5	484	587	711	0.15	20.1	LC	EPRI Clay	V&D	Darendeli	Zhang
35	100.0	484	587	711	0.15	20.1	LC	EPRI Clay	V&D	Darendeli	Zhang
36	103.6	434	526	638	0.15	20.1	LC	EPRI Clay	V&D	Darendeli	Zhang
37	115.8	516	625	757	0.15	19.9	LC	EPRI Clay	V&D	Darendeli	Zhang
38	136.2	516	625	757	0.15	19.9	LS	EPRI Soil	Pen.	Darendeli	Zhang
39	148.1	591	716	868	0.15	19.9	LS	EPRI Soil	Pen.	Darendeli	Zhang
40	181.7	667	808	979	0.15	19.9	LS	EPRI Soil	Pen.	Darendeli	Zhang
41	246.0	717	869	1053	0.15	19.9	LS	EPRI Soil	Pen.	Darendeli	Zhang
42	264.3	722	875	1060	0.15	19.9	LS	EPRI Soil	Pen.	Darendeli	Zhang
43	322.5	682	826	1001	0.15	19.9	LS	EPRI Soil	Pen.	Darendeli	Zhang
44	337.7	1107	1341	1625	0.1	22.0	Linear	Linear	Linear	Linear	Linear
45	360.9	1421	1722	2087	0.1	22.0	Linear	Linear	Linear	Linear	Linear
46	395.0	1673	2027	2456	0.1	22.0	Linear	Linear	Linear	Linear	Linear
47	415.1	1912	2316	2807	0.1	22.0	Linear	Linear	Linear	Linear	Linear
48	415.7	1975	2393	2899	0.1	22.0	Linear	Linear	Linear	Linear	Linear
49	429.2	1975	2393	2900	0.1	22.0	Linear	Linear	Linear	Linear	Linear
50	452.3	2101	2545	3000	0.1	23.6	Linear	Linear	Linear	Linear	Linear
51	459.6	2104	2550	3000	0.1	23.6	Linear	Linear	Linear	Linear	Linear
52	490.1	2117	2565	3000	0.1	23.6	Linear	Linear	Linear	Linear	Linear
53	520.6	2130	2580	3000	0.1	23.6	Linear	Linear	Linear	Linear	Linear

Layer #	Depth (m)	V_S (m/s)			V_S Sigma	Unit Weight	Dynamic Properties				
		LR (0.3)	BC (0.4)	UR (0.3)	(ln)	(kN/m^3)	Alt. 1 (0.5)	Alt. 2 (0.125)	Alt. 3 (0.125)	Alt. 4 (0.125)	Alt. 5 (0.125)
54	545.0	2142	2596	3000	0.1	23.6	Linear	Linear	Linear	Linear	Linear
55	551.1	2149	2603	3000	0.1	23.6	Linear	Linear	Linear	Linear	Linear
56	566.3	2155	2611	3000	0.1	23.6	Linear	Linear	Linear	Linear	Linear
57	581.6	2159	2615	3000	0.1	23.6	Linear	Linear	Linear	Linear	Linear
58	612.0	2165	2623	3000	0.1	23.6	Linear	Linear	Linear	Linear	Linear
59	635.8	2171	2631	3000	0.1	23.6	Linear	Linear	Linear	Linear	Linear
60	644.3	2177	2638	3000	0.1	23.6	Linear	Linear	Linear	Linear	Linear
61	680.9	2181	2643	3000	0.1	23.6	Linear	Linear	Linear	Linear	Linear

LR = lower range; BE = best estimate; UR = upper range; ln = natural log; Alt. = alternative; SB = backfill < 25 feet; DB = backfill > 25 feet;
BBM LPI = Blue Bluff Marl Low Plasticity Index (PI); BBM HPI = Blue Bluff Marl High PI; LS = Lower Sands; LC = Lower Clays; EPRI Soil = EPRI, 1993 soil; EPRI Clay = EPRI, 1993 clay; EPRI Rock = EPRI, 1993 rock; Pen. = Peninsular (Walling et al., 2008); V&D = Vucetic and Dobry, 1991; Zhang = Zhang et al., 2005; Darendeli = Darendeli, 2001
For LR, BC, UR, and Alt.: values in parentheses refer to weights for SRA logic tree branches.

Table 3 UHRS and GMRS for Vogtle

Frequency (Hz)	UHRS 1E-4 (g)	GMRS (g)	UHRS 1E-5 (g)
0.100	0.014197	0.016900	0.033527
0.133	0.021433	0.026100	0.051850
0.200	0.039985	0.049000	0.097697
0.250	0.063257	0.078000	0.155666
0.333	0.124815	0.159100	0.320057
0.500	0.255914	0.284600	0.553461
0.667	0.307752	0.351700	0.688712
1.000	0.387387	0.426300	0.826790
1.333	0.480874	0.507400	0.973795
2.000	0.587484	0.590700	1.120028
2.500	0.671244	0.671200	1.237292
3.333	0.762415	0.762400	1.374975
4.000	0.780253	0.780300	1.403790
5.000	0.726091	0.726100	1.329869
6.667	0.669358	0.669400	1.145590
10.000	0.611856	0.611900	1.109271
13.333	0.520904	0.520900	0.941689
20.000	0.434481	0.434500	0.800744
25.000	0.378323	0.378300	0.697917
33.333	0.315539	0.315500	0.585253
40.000	0.289465	0.289500	0.540221
50.000	0.270690	0.270700	0.500234
100.000	0.267513	0.267500	0.485763
PGA	0.266968	0.276800	0.528842

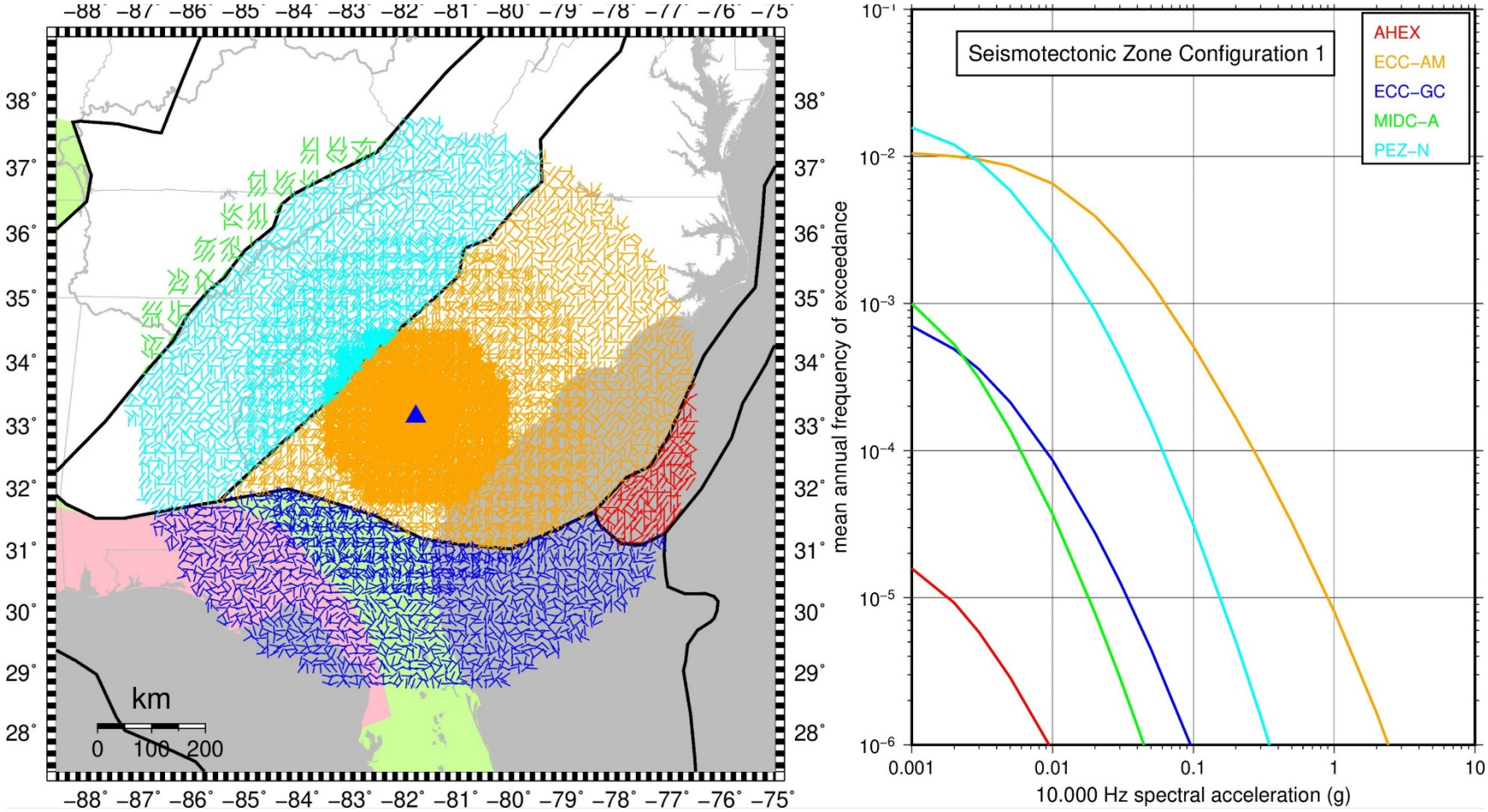

Figure 1 Distribution of virtual ruptures (left) for CEUS-SSC Seismotectonic Configuration 1 DSZs, and associated mean 10 Hz reference rock hazard curves (right) for Vogtle

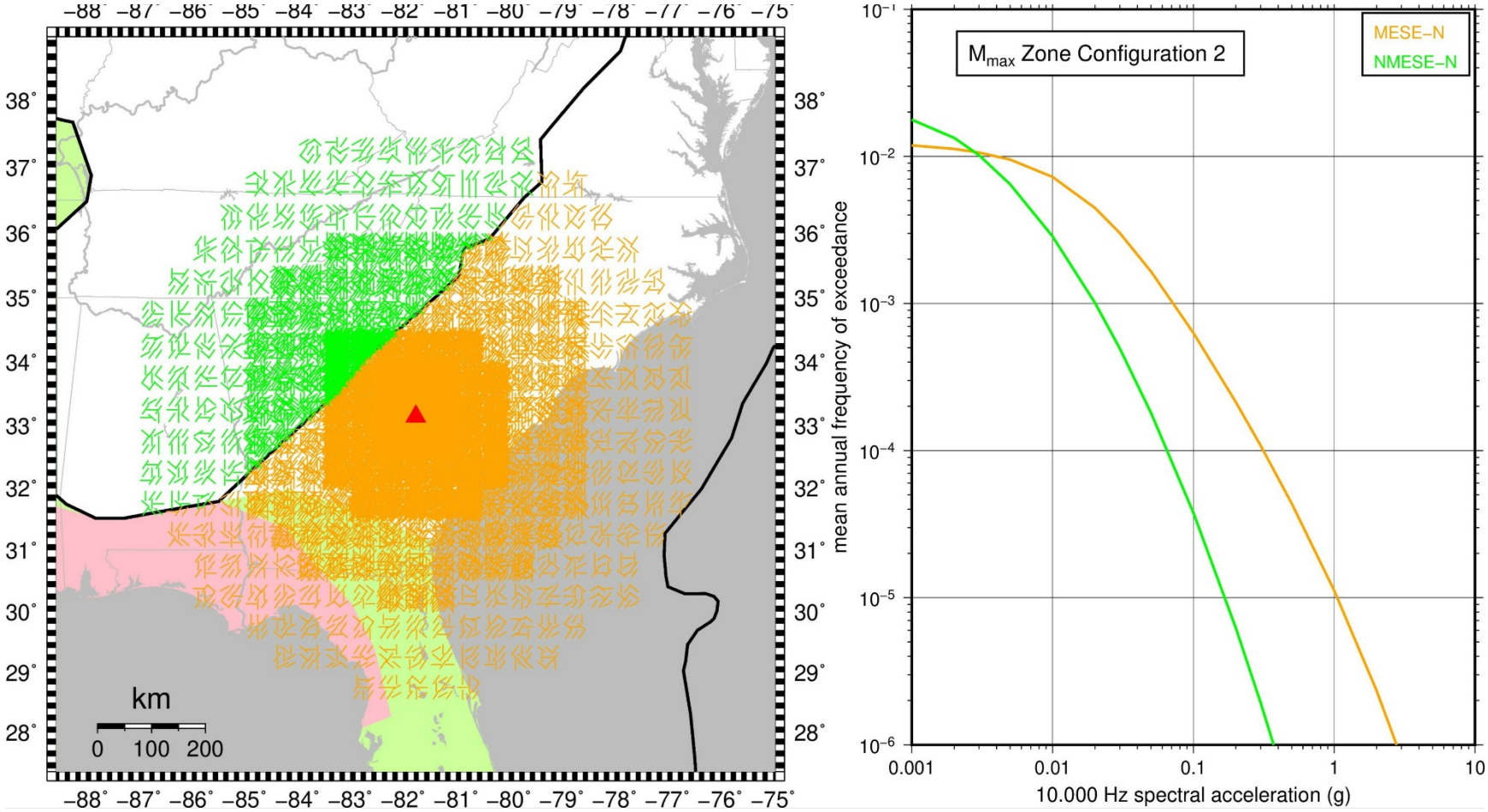

Figure 2 Distribution of virtual ruptures (left) for CEUS-SSC maximum-magnitude narrow-configuration DSZs, and associated mean 10 Hz reference rock hazard curves (right) for Vogtle

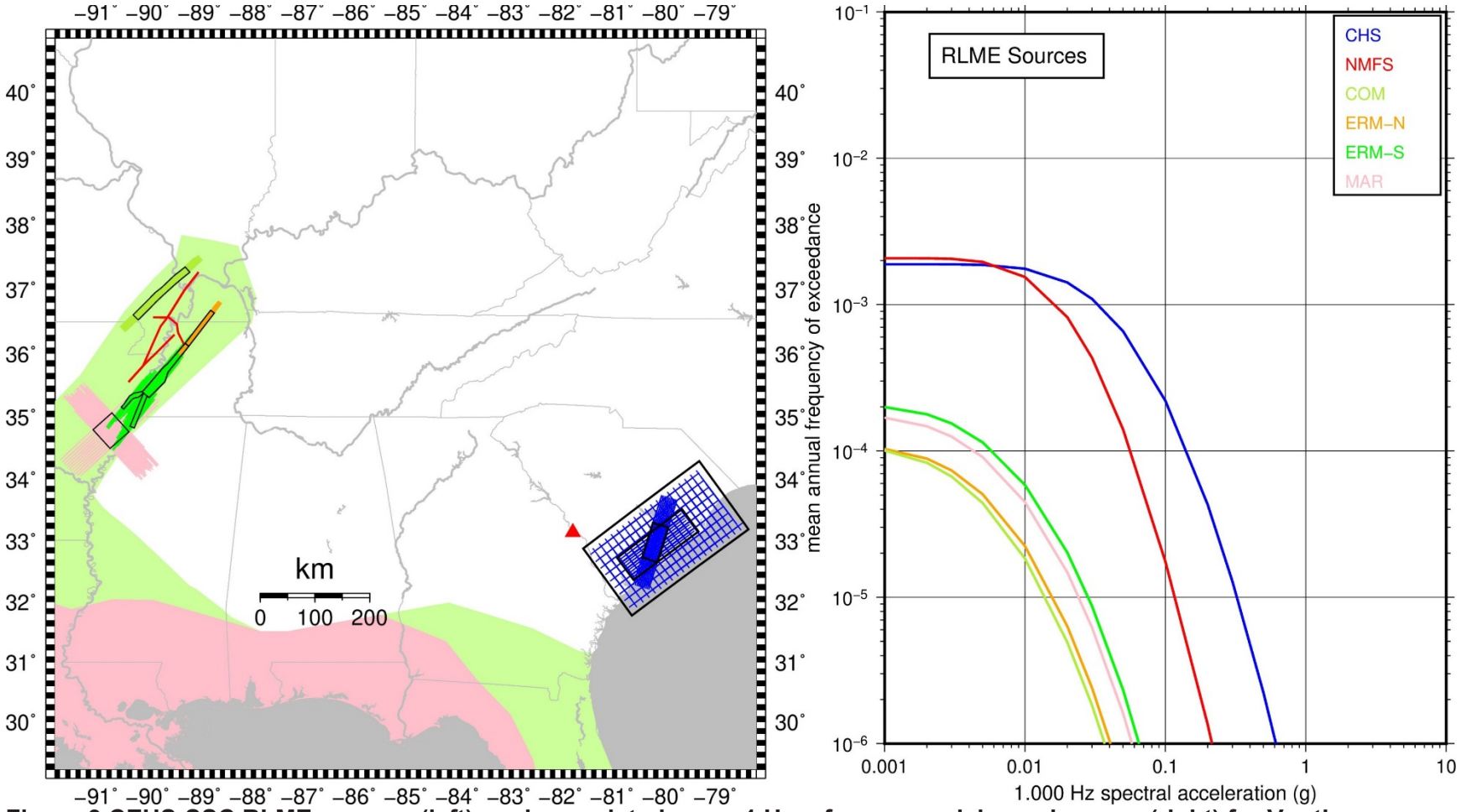

Figure 3 CEUS-SSC RLME sources (left), and associated mean 1 Hz reference rock hazard curves (right) for Vogtle

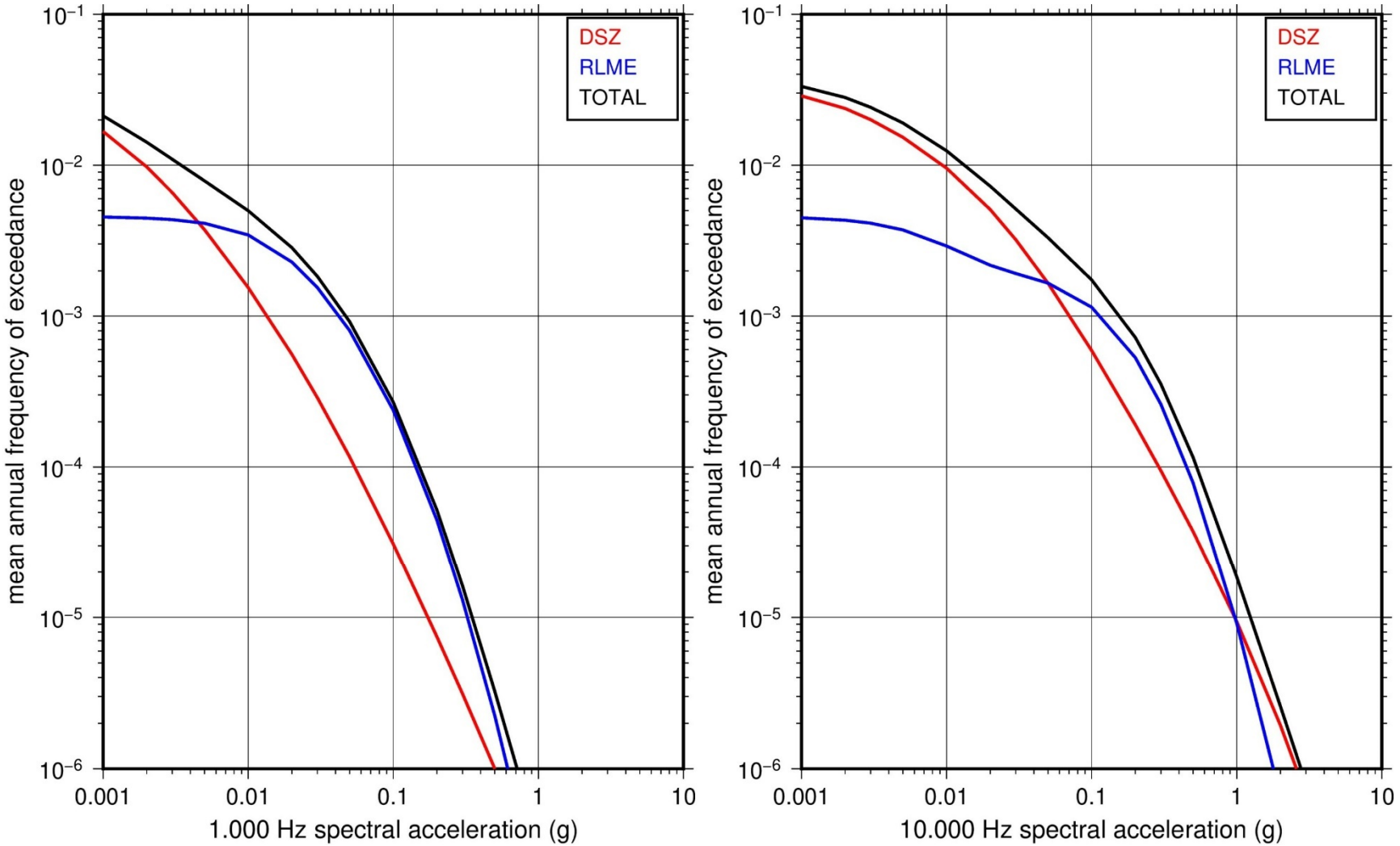

Figure 4 DSZ, RLME, and total mean reference rock hazard curves for 1 Hz (right) and 10 Hz (left) for Vogtle

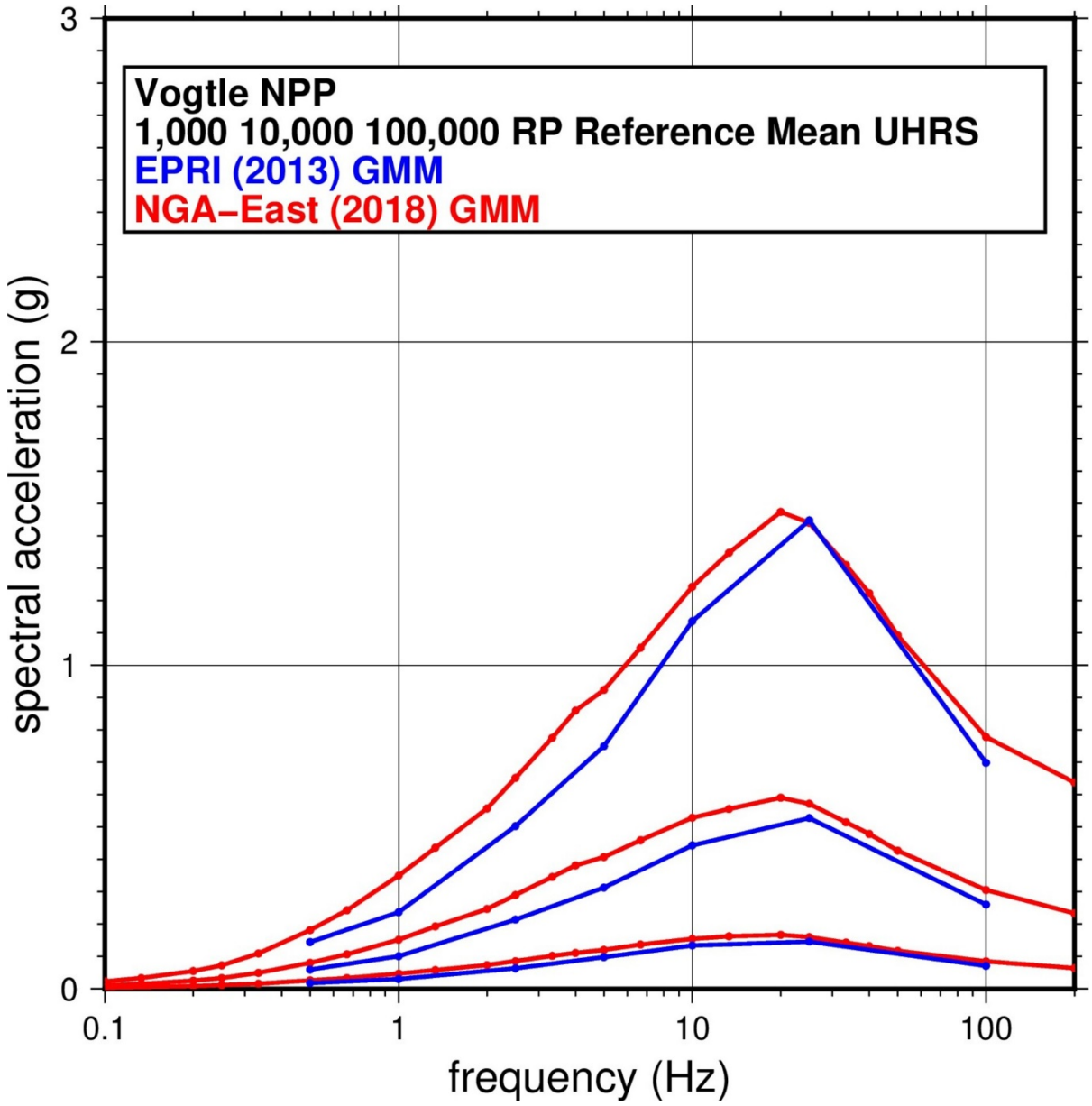

Figure 5 1,000-, 10,000-, and 100,000-year return period mean reference rock UHRS for CEUS-SSC and EPRI GMM (blue curves) and CEUS-SSC and NGA-East GMM (red curves)

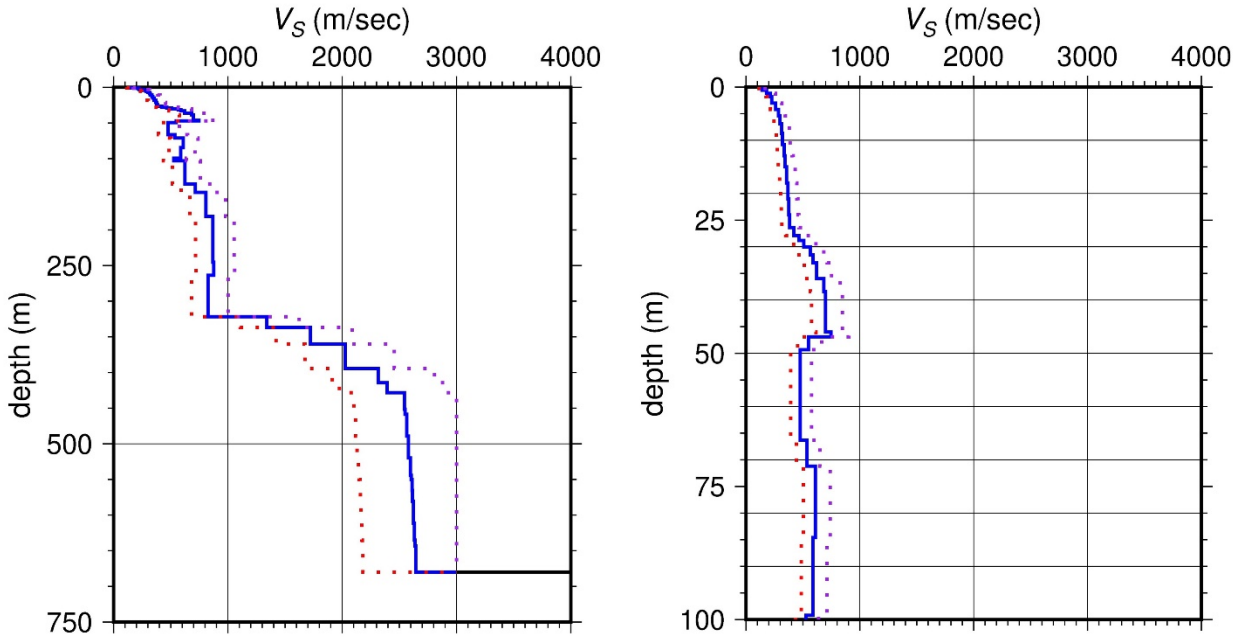

Figure 6 Complete (left) and upper 100 m (right) shear wave velocity (V_S) basecase profiles for Vogtle; best-estimate basecase profile shown as solid blue line; lower and upper range basecase profiles shown as dotted red and purple lines, respectively

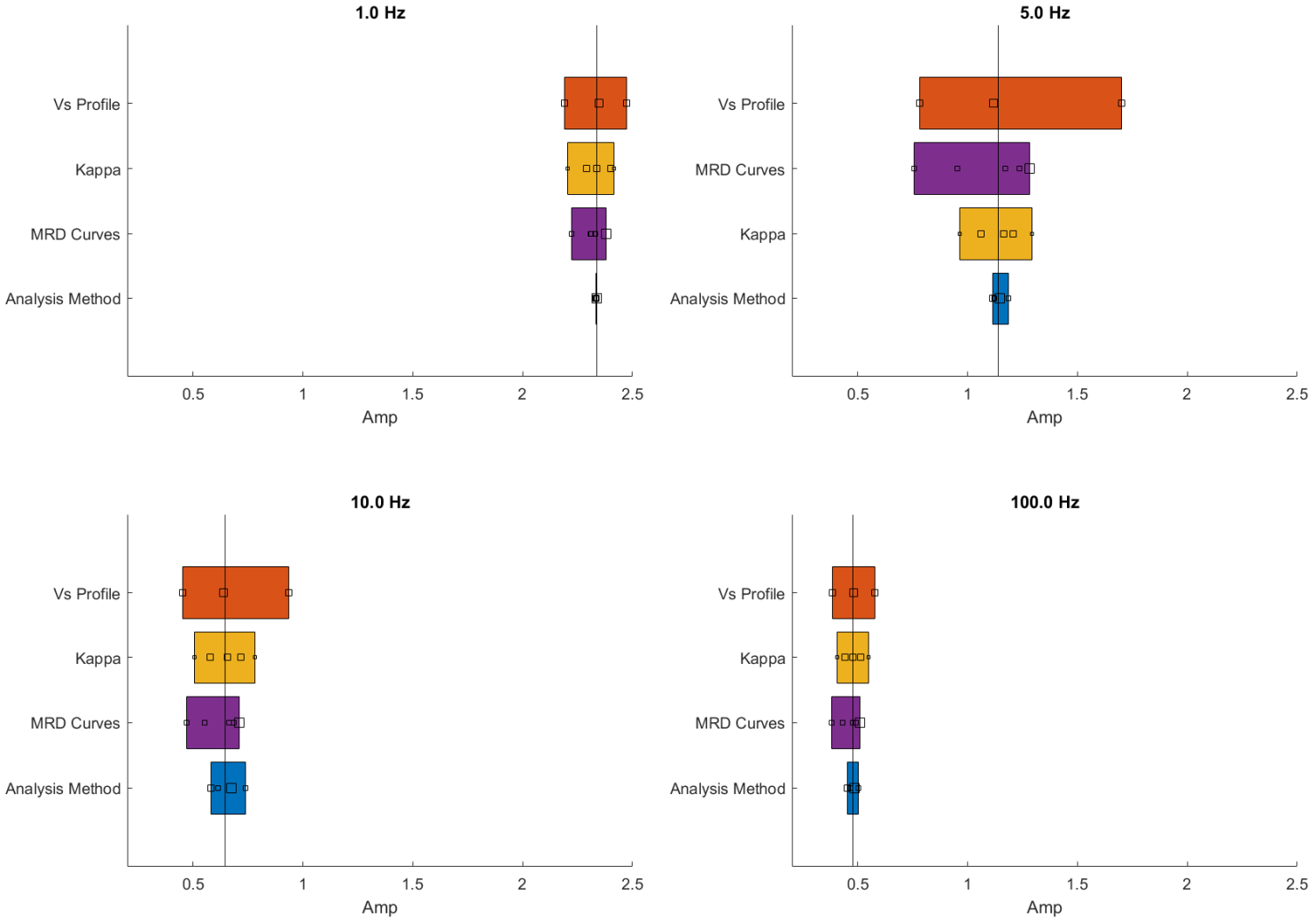

Figure 7 Tornado plots for site response logic tree nodes V_S profile, κ_0, MRD curves, and the analysis method for 1, 5, 10, and 100 Hz spectral frequencies for an input motion with a PGA of 0.8g

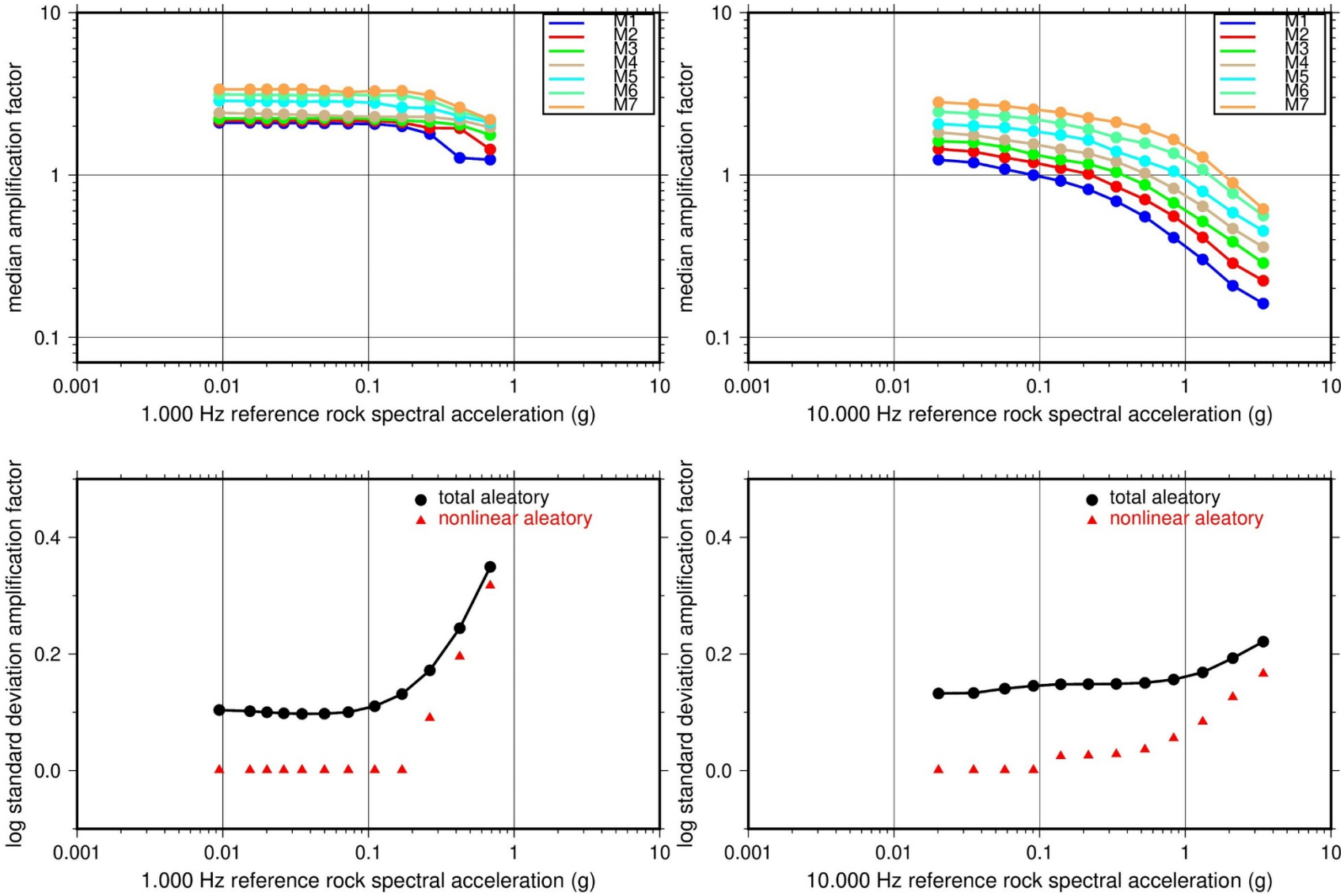

Figure 8 Seven median SAFs (above) and mean log standard deviations of SAF (below) as functions of input acceleration for 1 Hz (left) and 10 Hz (right)

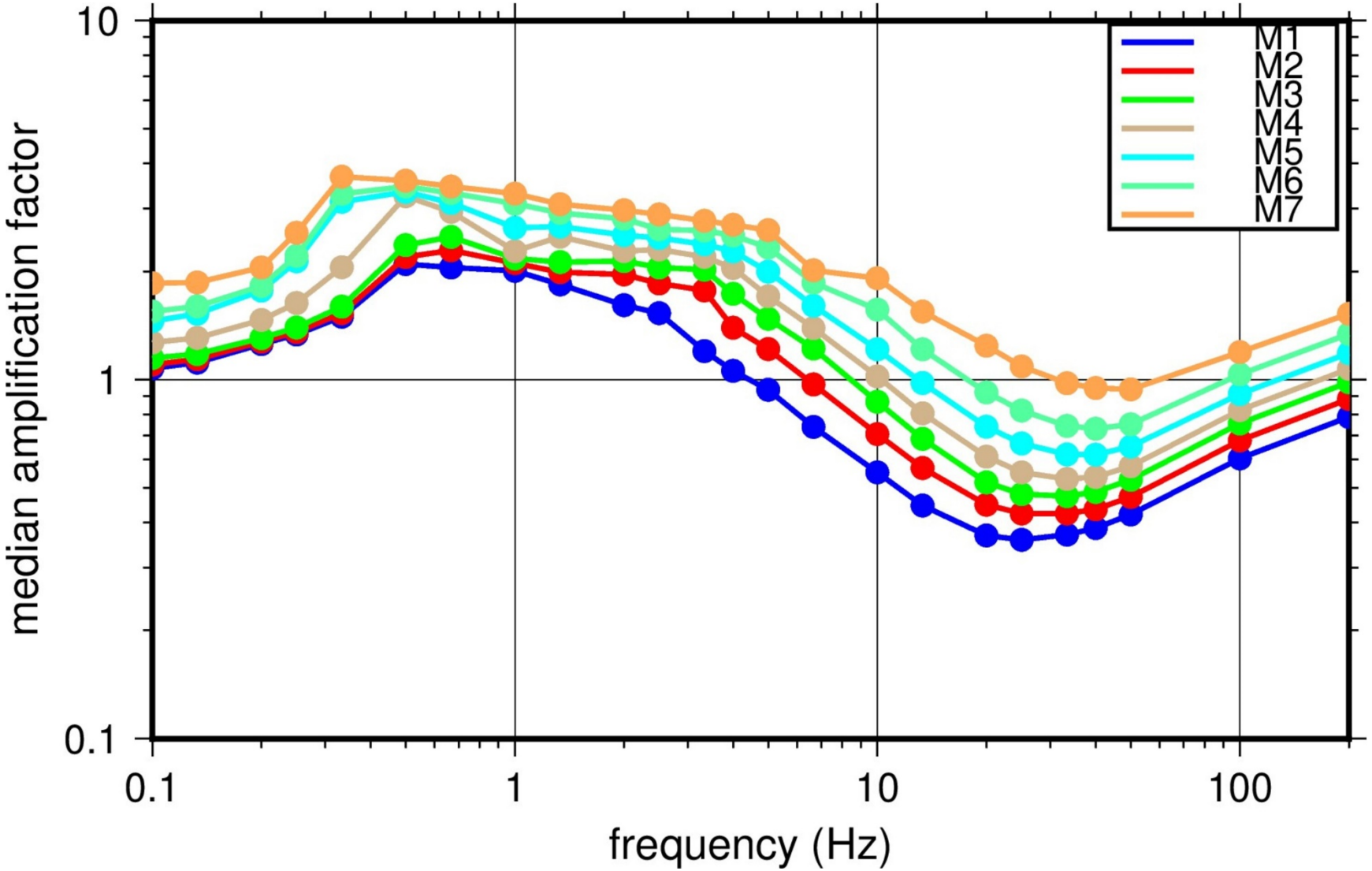

Figure 9 Seven median SAFs as functions of spectral frequency for spectral accelerations at the 10^{-4} AFE level

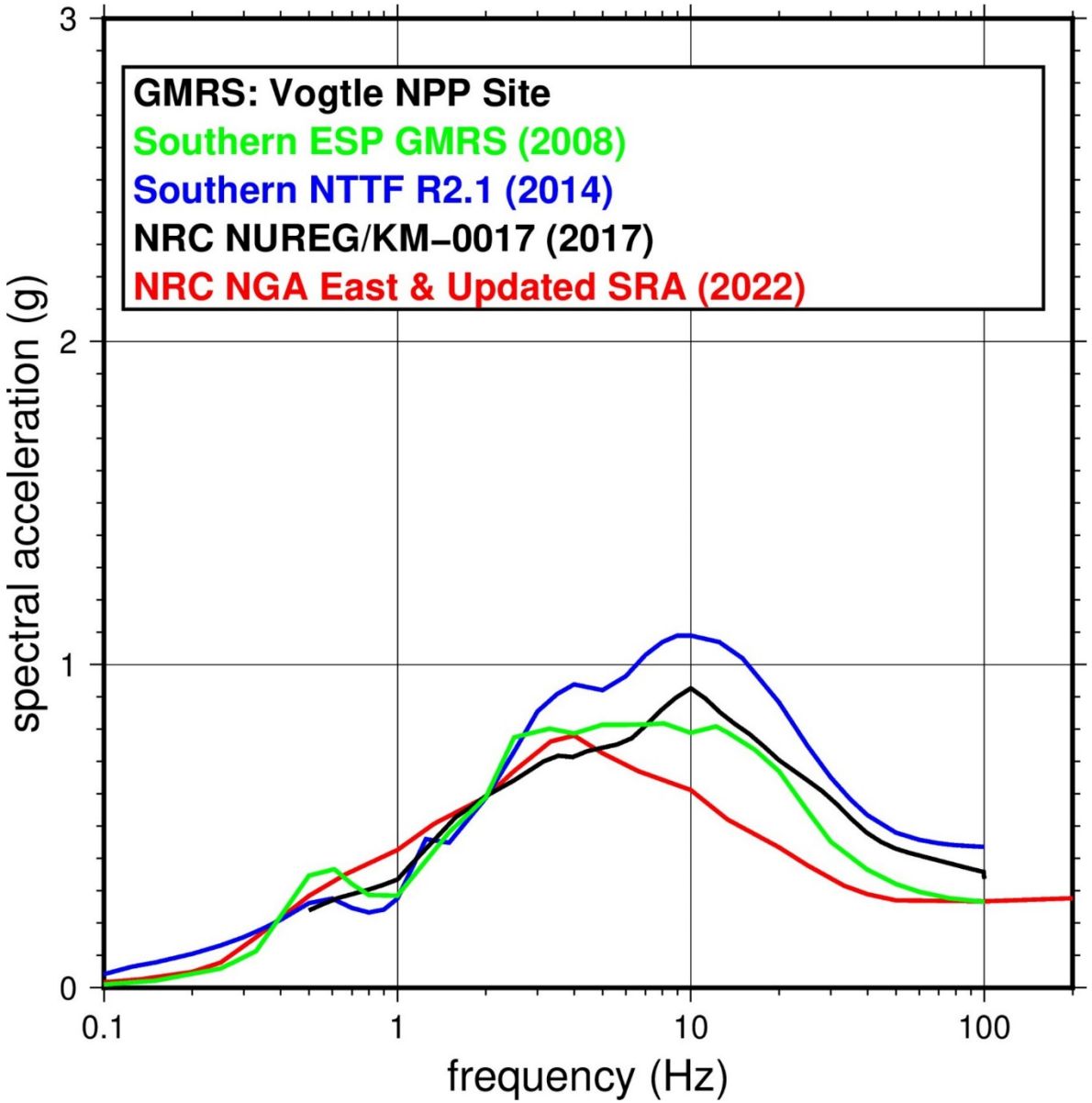

Figure 10 GMRS for the Vogtle site

Appendix A—Data Tables

Table A-1 Reference Rock Total Mean Hazard Curves for F=0.100 to 1.000 Hz								
SA (g)	**F0.100Hz**	**F0.133Hz**	**F0.200Hz**	**F0.250Hz**	**F0.333Hz**	**F0.500Hz**	**F0.667Hz**	**F1.000Hz**
0.00100	3.37384E-03	4.16557E-03	5.23447E-03	6.04250E-03	7.28014E-03	1.09719E-02	1.44975E-02	2.15029E-02
0.00126	2.86414E-03	3.68675E-03	4.76151E-03	5.52032E-03	6.60793E-03	9.69580E-03	1.26348E-02	1.88094E-02
0.00158	2.43973E-03	3.27125E-03	4.33980E-03	5.05274E-03	6.00985E-03	8.59017E-03	1.10428E-02	1.64990E-02
0.00200	2.06440E-03	2.88818E-03	3.94023E-03	4.60778E-03	5.44440E-03	7.57241E-03	9.59761E-03	1.43938E-02
0.00251	1.60348E-03	2.39896E-03	3.46150E-03	4.13148E-03	4.93462E-03	6.78084E-03	8.43869E-03	1.24468E-02
0.00316	1.21036E-03	1.94624E-03	2.99454E-03	3.66261E-03	4.44201E-03	6.06200E-03	7.41473E-03	1.07389E-02
0.00398	8.37687E-04	1.46861E-03	2.47179E-03	3.13827E-03	3.92304E-03	5.41610E-03	6.53855E-03	9.25506E-03
0.00501	5.79492E-04	1.10750E-03	2.03903E-03	2.68758E-03	3.46356E-03	4.83896E-03	5.76686E-03	7.97886E-03
0.00631	3.43285E-04	7.18923E-04	1.48598E-03	2.07504E-03	2.84457E-03	4.18390E-03	5.00625E-03	6.85373E-03
0.00794	2.03784E-04	4.67488E-04	1.08431E-03	1.60376E-03	2.33804E-03	3.61962E-03	4.34842E-03	5.89084E-03
0.01000	1.20727E-04	3.03481E-04	7.90238E-04	1.23828E-03	1.92025E-03	3.12968E-03	3.77496E-03	5.06025E-03
0.01260	6.08061E-05	1.66124E-04	4.87442E-04	8.15145E-04	1.38086E-03	2.45753E-03	3.05621E-03	4.18655E-03
0.01580	3.10651E-05	9.20810E-05	3.03700E-04	5.41281E-04	9.99802E-04	1.93945E-03	2.48518E-03	3.47735E-03
0.02000	1.54337E-05	4.98026E-05	1.85534E-04	3.53360E-04	7.14248E-04	1.51559E-03	2.00354E-03	2.86610E-03
0.02510	7.20204E-06	2.46677E-05	1.02009E-04	2.07002E-04	4.61028E-04	1.07968E-03	1.49701E-03	2.23997E-03
0.03160	3.30077E-06	1.19315E-05	5.45172E-05	1.17759E-04	2.89421E-04	7.50301E-04	1.09469E-03	1.72025E-03
0.03980	1.47250E-06	5.49286E-06	2.71625E-05	6.20676E-05	1.68469E-04	4.86284E-04	7.53324E-04	1.25804E-03
0.05010	6.58156E-07	2.53288E-06	1.35468E-05	3.27355E-05	9.80903E-05	3.15165E-04	5.18368E-04	9.19948E-04
0.06310	2.92860E-07	1.13571E-06	6.23421E-06	1.55773E-05	5.06589E-05	1.80754E-04	3.18710E-04	6.10760E-04
0.07940	1.30737E-07	5.10873E-07	2.87789E-06	7.43451E-06	2.62321E-05	1.03897E-04	1.96335E-04	4.06152E-04
0.10000	5.81798E-08	2.29091E-07	1.32452E-06	3.53804E-06	1.35487E-05	5.95913E-05	1.20721E-04	2.69661E-04
0.12600	2.52251E-08	1.01946E-07	5.94037E-07	1.59641E-06	6.34187E-06	2.98671E-05	6.44443E-05	1.55646E-04
0.15800	1.11283E-08	4.61354E-08	2.70893E-07	7.32325E-07	3.01567E-06	1.51856E-05	3.48536E-05	9.08681E-05
0.20000	4.74516E-09	2.02014E-08	1.19565E-07	3.25231E-07	1.39036E-06	7.50682E-06	1.83744E-05	5.18763E-05
0.25100	1.98834E-09	8.78160E-09	5.38008E-08	1.47986E-07	6.45116E-07	3.55853E-06	9.06239E-06	2.70862E-05
0.31600	8.15454E-10	3.73498E-09	2.37490E-08	6.62926E-08	2.95816E-07	1.66270E-06	4.38830E-06	1.38134E-05
0.39800	3.23262E-10	1.53114E-09	1.01807E-08	2.91796E-08	1.34923E-07	7.65025E-07	2.06066E-06	6.69325E-06

Table A-1 Reference Rock Total Mean Hazard Curves for F=0.100 to 1.000 Hz								
SA (g)	**F0.100Hz**	**F0.133Hz**	**F0.200Hz**	**F0.250Hz**	**F0.333Hz**	**F0.500Hz**	**F0.667Hz**	**F1.000Hz**
0.50100	1.28363E-10	6.28715E-10	4.37088E-09	1.28629E-08	6.16328E-08	3.52606E-07	9.69257E-07	3.24777E-06
0.63100	4.77734E-11	2.43194E-10	1.76517E-09	5.34935E-09	2.69416E-08	1.59729E-07	4.46912E-07	1.51394E-06
0.79400	1.78504E-11	9.44277E-11	7.15450E-10	2.23247E-09	1.18160E-08	7.25857E-08	2.06704E-07	7.07878E-07
1.00000	6.64424E-12	3.65298E-11	2.88965E-10	9.28525E-10	5.16568E-09	3.28841E-08	9.53178E-08	3.30007E-07
1.26000	2.21589E-12	1.29320E-11	1.08424E-10	3.59033E-10	2.09111E-09	1.40708E-08	4.20494E-08	1.48290E-07
1.58000	7.56054E-13	4.67784E-12	4.15185E-11	1.41594E-10	8.62546E-10	6.12780E-09	1.88679E-08	6.77505E-08
2.00000	2.46684E-13	1.62206E-12	1.52766E-11	5.37221E-11	3.42923E-10	2.57799E-09	8.18879E-09	2.99619E-08
2.51000	7.42814E-14	5.29275E-13	5.41909E-12	1.97782E-11	1.32277E-10	1.05465E-09	3.46468E-09	1.30279E-08
3.16000	2.13841E-14	1.65782E-13	1.85806E-12	7.06313E-12	4.96255E-11	4.20397E-10	1.42993E-09	5.53672E-09
3.98000	5.57261E-15	4.74923E-14	5.94387E-13	2.37818E-12	1.76774E-11	1.59677E-10	5.63627E-10	2.25990E-09
5.01000	1.45463E-15	1.36261E-14	1.90418E-13	8.01927E-13	6.30662E-12	6.07412E-11	2.22484E-10	9.23745E-10
6.31000	3.16217E-16	3.28614E-15	5.24459E-14	2.36661E-13	2.01291E-12	2.09924E-11	8.00278E-11	3.47214E-10
7.94000	6.91622E-17	7.97021E-16	1.45196E-14	7.01840E-14	6.45411E-13	7.28592E-12	2.89040E-11	1.31021E-10
10.00000	1.50378E-17	1.92247E-16	3.99968E-15	2.07155E-14	2.06027E-13	2.51836E-12	1.03981E-11	4.92534E-11

Table A-2 Reference Rock Total Mean Hazard Curves for F=1.333 to 10.000 Hz								
SA(g)	**F1.333Hz**	**F2.000Hz**	**F2.500Hz**	**F3.333Hz**	**F4.000Hz**	**F5.000Hz**	**F6.667Hz**	**F10.000Hz**
0.00100	2.62460E-02	3.09329E-02	3.22678E-02	3.34527E-02	3.36973E-02	3.40354E-02	3.40710E-02	3.35928E-02
0.00126	2.33900E-02	2.84021E-02	2.99590E-02	3.14077E-02	3.17388E-02	3.22158E-02	3.22922E-02	3.17458E-02
0.00158	2.08947E-02	2.61247E-02	2.78583E-02	2.95263E-02	2.99314E-02	3.05283E-02	3.06403E-02	3.00356E-02
0.00200	1.85783E-02	2.39465E-02	2.58267E-02	2.76865E-02	2.81581E-02	2.88646E-02	2.90095E-02	2.83522E-02
0.00251	1.61488E-02	2.12658E-02	2.31751E-02	2.51239E-02	2.56556E-02	2.64583E-02	2.66649E-02	2.60491E-02
0.00316	1.39693E-02	1.87463E-02	2.06345E-02	2.26199E-02	2.31957E-02	2.40711E-02	2.43367E-02	2.37806E-02
0.00398	1.19612E-02	1.61986E-02	1.79761E-02	1.99106E-02	2.05094E-02	2.14264E-02	2.17609E-02	2.13201E-02
0.00501	1.02450E-02	1.39990E-02	1.56611E-02	1.75255E-02	1.81334E-02	1.90711E-02	1.94565E-02	1.91138E-02
0.00631	8.70055E-03	1.17923E-02	1.32123E-02	1.48549E-02	1.54163E-02	1.63131E-02	1.67502E-02	1.65874E-02
0.00794	7.39378E-03	9.94027E-03	1.11539E-02	1.25996E-02	1.31148E-02	1.39628E-02	1.44290E-02	1.44031E-02
0.01000	6.27930E-03	8.37354E-03	9.41007E-03	1.06798E-02	1.11499E-02	1.19438E-02	1.24222E-02	1.24995E-02
0.01260	5.19992E-03	6.85774E-03	7.67607E-03	8.67956E-03	9.06277E-03	9.73829E-03	1.02141E-02	1.04253E-02

Table A-2 Reference Rock Total Mean Hazard Curves for F=1.333 to 10.000 Hz								
SA(g)	**F1.333Hz**	**F2.000Hz**	**F2.500Hz**	**F3.333Hz**	**F4.000Hz**	**F5.000Hz**	**F6.667Hz**	**F10.000Hz**
0.01580	4.32297E-03	5.63966E-03	6.28813E-03	7.08439E-03	7.39811E-03	7.97378E-03	8.43274E-03	8.72810E-03
0.02000	3.56643E-03	4.60039E-03	5.10861E-03	5.73377E-03	5.98848E-03	6.47495E-03	6.90679E-03	7.25342E-03
0.02510	2.83314E-03	3.66596E-03	4.07732E-03	4.57108E-03	4.78908E-03	5.19867E-03	5.60926E-03	5.97317E-03
0.03160	2.21851E-03	2.89216E-03	3.23058E-03	3.62814E-03	3.81907E-03	4.16507E-03	4.54717E-03	4.90487E-03
0.03980	1.67098E-03	2.22736E-03	2.52226E-03	2.86604E-03	3.04710E-03	3.34614E-03	3.69824E-03	4.02400E-03
0.05010	1.25854E-03	1.71555E-03	1.96966E-03	2.26480E-03	2.43208E-03	2.68920E-03	3.00886E-03	3.30243E-03
0.06310	8.72259E-04	1.24290E-03	1.47115E-03	1.74352E-03	1.90273E-03	2.11913E-03	2.40625E-03	2.66590E-03
0.07940	6.05427E-04	9.01631E-04	1.10008E-03	1.34362E-03	1.49005E-03	1.67150E-03	1.92605E-03	2.15389E-03
0.10000	4.19625E-04	6.53250E-04	8.21683E-04	1.03440E-03	1.16577E-03	1.31720E-03	1.54035E-03	1.73878E-03
0.12600	2.53600E-04	4.16145E-04	5.45387E-04	7.17140E-04	8.26430E-04	9.39691E-04	1.12012E-03	1.29685E-03
0.15800	1.54873E-04	2.67594E-04	3.65091E-04	5.00984E-04	5.90067E-04	6.75091E-04	8.19939E-04	9.73155E-04
0.20000	9.26618E-05	1.68941E-04	2.40353E-04	3.44800E-04	4.15446E-04	4.78375E-04	5.92471E-04	7.21586E-04
0.25100	5.02393E-05	9.59501E-05	1.41770E-04	2.12353E-04	2.62239E-04	3.03895E-04	3.84631E-04	4.85553E-04
0.31600	2.65467E-05	5.29798E-05	8.11472E-05	1.26718E-04	1.60362E-04	1.87195E-04	2.42362E-04	3.17447E-04
0.39800	1.32050E-05	2.72474E-05	4.29147E-05	6.93624E-05	8.98021E-05	1.05892E-04	1.40583E-04	1.91405E-04
0.50100	6.57668E-06	1.40277E-05	2.27143E-05	3.79891E-05	5.03111E-05	5.99284E-05	8.15795E-05	1.15444E-04
0.63100	3.11081E-06	6.74874E-06	1.10734E-05	1.88029E-05	2.52450E-05	3.05187E-05	4.26769E-05	6.26992E-05
0.79400	1.47585E-06	3.25634E-06	5.41387E-06	9.33278E-06	1.27024E-05	1.55837E-05	2.23836E-05	3.41361E-05
1.00000	6.98148E-07	1.56677E-06	2.63953E-06	4.61969E-06	6.37432E-06	7.93672E-06	1.17105E-05	1.85412E-05
1.26000	3.18369E-07	7.26558E-07	1.24047E-06	2.19517E-06	3.06237E-06	3.87790E-06	5.88771E-06	9.62706E-06
1.58000	1.47568E-07	3.42346E-07	5.92178E-07	1.05933E-06	1.49379E-06	1.92313E-06	3.00274E-06	5.06710E-06
2.00000	6.62480E-08	1.56341E-07	2.74138E-07	4.95954E-07	7.07233E-07	9.26315E-07	1.48913E-06	2.59679E-06
2.51000	2.92917E-08	7.03674E-08	1.25561E-07	2.31130E-07	3.34590E-07	4.45730E-07	7.41496E-07	1.34277E-06
3.16000	1.26649E-08	3.09605E-08	5.62112E-08	1.05273E-07	1.54704E-07	2.09524E-07	3.60899E-07	6.80450E-07
3.98000	5.26386E-09	1.30689E-08	2.41120E-08	4.58941E-08	6.84127E-08	9.39849E-08	1.67689E-07	3.31562E-07
5.01000	2.19092E-09	5.52424E-09	1.03569E-08	2.00335E-08	3.02903E-08	4.22064E-08	7.79910E-08	1.61693E-07
6.31000	8.41204E-10	2.15518E-09	4.10428E-09	8.04817E-09	1.22957E-08	1.72807E-08	3.27626E-08	7.09363E-08
7.94000	3.24218E-10	8.43971E-10	1.63249E-09	3.24503E-09	5.00915E-09	7.10060E-09	1.38108E-08	3.12231E-08
10.00000	1.24498E-10	3.29297E-10	6.47000E-10	1.30379E-09	2.03357E-09	2.90754E-09	5.80225E-09	1.36993E-08

Table A-3 Reference Rock Total Mean Hazard Curves for F=13.333 to 100.000 Hz and PGA								
SA(g)	**F13.333Hz**	**F20.000Hz**	**F25.000Hz**	**F33.333Hz**	**F40.000Hz**	**F50.000Hz**	**F100.000Hz**	**PGA**
0.00100	3.30931E-02	3.24380E-02	3.19093E-02	3.12333E-02	3.07918E-02	3.00893E-02	2.86434E-02	2.84019E-02
0.00126	3.11777E-02	3.04528E-02	2.98567E-02	2.90892E-02	2.85957E-02	2.78193E-02	2.62015E-02	2.59345E-02
0.00158	2.94096E-02	2.86266E-02	2.79748E-02	2.71323E-02	2.65971E-02	2.57624E-02	2.40121E-02	2.37262E-02
0.00200	2.76745E-02	2.68408E-02	2.61407E-02	2.52338E-02	2.46638E-02	2.37815E-02	2.19260E-02	2.16258E-02
0.00251	2.53936E-02	2.46030E-02	2.39119E-02	2.29980E-02	2.24250E-02	2.15351E-02	1.96313E-02	1.93031E-02
0.00316	2.31625E-02	2.24304E-02	2.17596E-02	2.08518E-02	2.02819E-02	1.93942E-02	1.74680E-02	1.71136E-02
0.00398	2.07812E-02	2.01541E-02	1.95294E-02	1.86506E-02	1.80921E-02	1.72175E-02	1.52920E-02	1.49007E-02
0.00501	1.86448E-02	1.81094E-02	1.75284E-02	1.66824E-02	1.61392E-02	1.52856E-02	1.33876E-02	1.29740E-02
0.00631	1.62471E-02	1.58456E-02	1.53238E-02	1.45200E-02	1.39904E-02	1.31694E-02	1.13408E-02	1.08839E-02
0.00794	1.41654E-02	1.38721E-02	1.34036E-02	1.26450E-02	1.21347E-02	1.13530E-02	9.61339E-03	9.13683E-03
0.01000	1.23439E-02	1.21382E-02	1.17180E-02	1.10061E-02	1.05192E-02	9.78142E-03	8.14384E-03	7.66501E-03
0.01260	1.03905E-02	1.02675E-02	9.90375E-03	9.26104E-03	8.81240E-03	8.14496E-03	6.67656E-03	6.15909E-03
0.01580	8.77756E-03	8.71541E-03	8.39968E-03	7.82063E-03	7.40970E-03	6.80812E-03	5.49627E-03	4.97156E-03
0.02000	7.36316E-03	7.34766E-03	7.07540E-03	6.55801E-03	6.18552E-03	5.64844E-03	4.48818E-03	3.97742E-03
0.02510	6.12278E-03	6.13657E-03	5.90932E-03	5.46487E-03	5.14321E-03	4.67380E-03	3.65945E-03	3.13172E-03
0.03160	5.07351E-03	5.10516E-03	4.91657E-03	4.53677E-03	4.26031E-03	3.85108E-03	2.96547E-03	2.44241E-03
0.03980	4.18889E-03	4.22536E-03	4.07067E-03	3.74892E-03	3.51274E-03	3.15488E-03	2.37501E-03	1.86363E-03
0.05010	3.45953E-03	3.49813E-03	3.37115E-03	3.09853E-03	2.89684E-03	2.58490E-03	1.90215E-03	1.42213E-03
0.06310	2.80087E-03	2.83403E-03	2.72692E-03	2.48697E-03	2.30799E-03	2.03586E-03	1.43578E-03	1.01627E-03
0.07940	2.26952E-03	2.29794E-03	2.20767E-03	1.99787E-03	1.84052E-03	1.60498E-03	1.08497E-03	7.27215E-04
0.10000	1.83747E-03	1.86173E-03	1.78583E-03	1.60359E-03	1.46643E-03	1.26412E-03	8.18986E-04	5.19697E-04
0.12600	1.37584E-03	1.40628E-03	1.34182E-03	1.18137E-03	1.06638E-03	9.05812E-04	5.51289E-04	3.35720E-04
0.15800	1.03640E-03	1.06845E-03	1.01421E-03	8.75863E-04	7.80612E-04	6.53573E-04	3.74154E-04	2.18848E-04
0.20000	7.71556E-04	8.02564E-04	7.57719E-04	6.41332E-04	5.64061E-04	4.65218E-04	2.49875E-04	1.40147E-04
0.25100	5.23861E-04	5.56042E-04	5.21543E-04	4.30689E-04	3.74766E-04	3.04666E-04	1.53969E-04	8.52938E-05
0.31600	3.46226E-04	3.75695E-04	3.50198E-04	2.82393E-04	2.43269E-04	1.94864E-04	9.29258E-05	5.12416E-05
0.39800	2.12303E-04	2.36798E-04	2.19671E-04	1.73676E-04	1.48525E-04	1.17161E-04	5.33956E-05	3.01210E-05
0.50100	1.30228E-04	1.49293E-04	1.37841E-04	1.06870E-04	9.07335E-05	7.04883E-05	3.07135E-05	1.77260E-05
0.63100	7.25609E-05	8.53557E-05	7.89403E-05	6.10900E-05	5.16704E-05	3.96903E-05	1.70712E-05	1.02580E-05

Table A-3 Reference Rock Total Mean Hazard Curves for F=13.333 to 100.000 Hz and PGA								
SA(g)	**F13.333Hz**	**F20.000Hz**	**F25.000Hz**	**F33.333Hz**	**F40.000Hz**	**F50.000Hz**	**F100.000Hz**	**PGA**
0.79400	4.05243E-05	4.89099E-05	4.53093E-05	3.49988E-05	2.94913E-05	2.24000E-05	9.51082E-06	5.94929E-06
1.00000	2.25811E-05	2.79653E-05	2.59500E-05	2.00076E-05	1.67957E-05	1.26138E-05	5.28668E-06	3.44307E-06
1.26000	1.20212E-05	1.51621E-05	1.41881E-05	1.10577E-05	9.26603E-06	6.90761E-06	2.85324E-06	1.88253E-06
1.58000	6.48390E-06	8.32564E-06	7.85514E-06	6.18702E-06	5.17551E-06	3.83037E-06	1.55974E-06	1.04228E-06
2.00000	3.40861E-06	4.45915E-06	4.24335E-06	3.37919E-06	2.82161E-06	2.07255E-06	8.31503E-07	5.63051E-07
2.51000	1.80268E-06	2.39450E-06	2.29319E-06	1.83150E-06	1.51857E-06	1.10177E-06	4.24552E-07	2.84266E-07
3.16000	9.35114E-07	1.26210E-06	1.21555E-06	9.71444E-07	7.98563E-07	5.71399E-07	2.10548E-07	1.39099E-07
3.98000	4.67342E-07	6.42025E-07	6.20134E-07	4.92007E-07	3.98957E-07	2.80188E-07	9.74242E-08	6.30727E-08
5.01000	2.33743E-07	3.26836E-07	3.16596E-07	2.49352E-07	1.99451E-07	1.37488E-07	4.51191E-08	2.86262E-08
6.31000	1.05232E-07	1.49973E-07	1.45304E-07	1.12872E-07	8.87994E-08	5.99880E-08	1.86305E-08	1.15970E-08
7.94000	4.75271E-08	6.90319E-08	6.68965E-08	5.12547E-08	3.96633E-08	2.62605E-08	7.72013E-09	4.71518E-09
10.00000	2.13990E-08	3.16792E-08	3.07056E-08	2.32032E-08	1.76606E-08	1.14589E-08	3.18813E-09	1.91042E-09

Table A-4 Site Adjustment Factor Medians and Logarithmic Standard Deviation for F=0.100 Hz									
SA (g)	**SAF-M1**	**SAF-M2**	**SAF-M3**	**SAF-M4**	**SAF-M5**	**SAF-M6**	**SAF-M7**	**LNSTDEV**	**NL-LNSTDEV**
0.000374	1.0296	1.0509	1.0747	1.2262	1.4547	1.5068	1.5435	0.014417	0.000000
0.000605	1.0339	1.0529	1.0786	1.2281	1.4567	1.5126	1.5519	0.014412	0.000000
0.000769	1.0345	1.0556	1.0841	1.2314	1.4598	1.5179	1.5611	0.014437	0.000000
0.001020	1.0341	1.0571	1.0880	1.2337	1.4618	1.5214	1.5667	0.014469	0.000000
0.001393	1.0331	1.0578	1.0902	1.2353	1.4630	1.5230	1.5690	0.014506	0.000000
0.001942	1.0329	1.0588	1.0914	1.2371	1.4651	1.5238	1.5691	0.014555	0.000000
0.002624	1.0343	1.0610	1.0925	1.2392	1.4663	1.5270	1.5718	0.014660	0.000000
0.003530	1.0377	1.0648	1.0954	1.2408	1.4685	1.5322	1.5810	0.015209	0.000000
0.004766	1.0441	1.0713	1.1024	1.2440	1.4720	1.5343	1.6185	0.017715	0.000000
0.006987	1.0558	1.0831	1.1182	1.2514	1.4674	1.5358	1.7176	0.023404	0.000000
0.011085	1.0784	1.1039	1.1529	1.2729	1.4558	1.5497	1.8716	0.034666	0.012959
0.017944	1.1836	1.1964	1.2692	1.3205	1.4464	1.4997	2.0470	0.052232	0.041162

Table A-5 Site Adjustment Factor Medians and Logarithmic Standard Deviation for F=0.133 Hz									
SA (g)	**SAF-M1**	**SAF-M2**	**SAF-M3**	**SAF-M4**	**SAF-M5**	**SAF-M6**	**SAF-M7**	**LNSTDEV**	**NL-LNSTDEV**
0.000644	1.0665	1.0857	1.1076	1.2638	1.5021	1.5573	1.5878	0.017234	0.000000
0.001029	1.0714	1.0884	1.1122	1.2654	1.5104	1.5584	1.5944	0.017219	0.000000
0.001295	1.0715	1.0905	1.1170	1.2680	1.5128	1.5629	1.6026	0.017221	0.000000
0.001691	1.0710	1.0915	1.1204	1.2697	1.5143	1.5659	1.6075	0.017251	0.000000
0.002286	1.0701	1.0921	1.1224	1.2710	1.5154	1.5673	1.6096	0.017309	0.000000
0.003188	1.0703	1.0934	1.1239	1.2727	1.5177	1.5685	1.6103	0.017414	0.000000
0.004347	1.0722	1.0960	1.1262	1.2751	1.5198	1.5711	1.6190	0.017594	0.000000
0.005956	1.0769	1.1010	1.1310	1.2779	1.5221	1.5779	1.6362	0.018184	0.000000
0.008219	1.0856	1.1094	1.1409	1.2827	1.5288	1.5816	1.6803	0.020651	0.000000
0.012218	1.1026	1.1264	1.1580	1.2947	1.5272	1.5886	1.7869	0.026368	0.012000
0.019459	1.1322	1.1554	1.2043	1.3239	1.5286	1.6153	1.9559	0.037825	0.029656
0.031499	1.2106	1.2254	1.3136	1.3808	1.5599	1.6344	2.1476	0.054948	0.049679

Table A-6 Site Adjustment Factor Medians and Logarithmic Standard Deviation for F=0.200 Hz									
SA (g)	**SAF-M1**	**SAF-M2**	**SAF-M3**	**SAF-M4**	**SAF-M5**	**SAF-M6**	**SAF-M7**	**LNSTDEV**	**NL-LNSTDEV**
0.001447	1.2005	1.2158	1.2362	1.4056	1.6868	1.7364	1.7696	0.029078	0.000000
0.002290	1.2045	1.2185	1.2412	1.4087	1.6932	1.7396	1.7777	0.029043	0.000000
0.002853	1.2057	1.2209	1.2458	1.4119	1.6970	1.7442	1.7840	0.029045	0.000000
0.003642	1.2061	1.2226	1.2496	1.4139	1.6994	1.7482	1.7890	0.029149	0.000000
0.004833	1.2067	1.2242	1.2530	1.4159	1.7016	1.7518	1.7935	0.029369	0.000000
0.006749	1.2093	1.2276	1.2572	1.4195	1.7062	1.7563	1.8012	0.029790	0.000000
0.009386	1.2151	1.2338	1.2638	1.4253	1.7123	1.7629	1.8216	0.030426	0.000000
0.013315	1.2256	1.2445	1.2737	1.4342	1.7215	1.7727	1.8582	0.031584	0.000000
0.019080	1.2465	1.2649	1.2920	1.4503	1.7454	1.7854	1.9230	0.034838	0.000000
0.028886	1.2635	1.2831	1.3144	1.4763	1.7835	1.8450	2.1216	0.042443	0.022952
0.046193	1.2759	1.3008	1.3679	1.5298	1.8789	2.0102	2.6009	0.058288	0.046075
0.074776	1.3118	1.3369	1.4915	1.6320	2.0811	2.2883	3.2054	0.080711	0.072385

Table A-7 Site Adjustment Factor Medians and Logarithmic Standard Deviation for F=0.250 Hz									
SA (g)	**SAF-M1**	**SAF-M2**	**SAF-M3**	**SAF-M4**	**SAF-M5**	**SAF-M6**	**SAF-M7**	**LNSTDEV**	**NL-LNSTDEV**
0.002093	1.3155	1.3308	1.3530	1.5536	1.9105	1.9669	2.0100	0.042285	0.000000
0.003308	1.3197	1.3336	1.3586	1.5569	1.9190	1.9708	2.0174	0.042262	0.000000
0.004120	1.3210	1.3358	1.3634	1.5606	1.9253	1.9778	2.0281	0.042330	0.000000
0.005226	1.3206	1.3367	1.3668	1.5638	1.9323	1.9867	2.0406	0.042590	0.000000
0.006882	1.3197	1.3373	1.3693	1.5678	1.9417	1.9982	2.0550	0.043067	0.000000
0.009622	1.3201	1.3386	1.3724	1.5742	1.9579	2.0164	2.0842	0.043933	0.000000
0.013517	1.3220	1.3414	1.3770	1.5837	1.9823	2.0438	2.1354	0.045219	0.000000
0.019493	1.3258	1.3462	1.3815	1.5979	2.0203	2.0848	2.2271	0.047277	0.000000
0.028424	1.3323	1.3534	1.3879	1.6199	2.0962	2.1578	2.4119	0.051930	0.000000
0.043315	1.3422	1.3660	1.4149	1.6616	2.2070	2.3063	2.8343	0.061906	0.031643
0.069342	1.3620	1.3936	1.4962	1.7499	2.3926	2.6448	3.6247	0.079787	0.059455
0.112250	1.4154	1.4527	1.6938	1.9309	2.7375	3.1514	4.6626	0.103452	0.088719

Table A-8 Site Adjustment Factor Medians and Logarithmic Standard Deviation for F=0.333 Hz									
SA (g)	**SAF-M1**	**SAF-M2**	**SAF-M3**	**SAF-M4**	**SAF-M5**	**SAF-M6**	**SAF-M7**	**LNSTDEV**	**NL-LNSTDEV**
0.003130	1.4569	1.4815	1.5154	1.8870	2.6684	2.7945	2.9017	0.072185	0.000000
0.004956	1.4621	1.4846	1.5225	1.8899	2.6685	2.8041	2.9087	0.071965	0.000000
0.006197	1.4640	1.4868	1.5294	1.8946	2.6770	2.8161	2.9307	0.071985	0.000000
0.007838	1.4641	1.4876	1.5352	1.9030	2.6920	2.8342	2.9589	0.072304	0.000000
0.010270	1.4640	1.4900	1.5406	1.9107	2.7177	2.8613	2.9993	0.072896	0.000000
0.014387	1.4663	1.4936	1.5491	1.9235	2.7616	2.9101	3.0650	0.073874	0.000000
0.020431	1.4711	1.4996	1.5561	1.9449	2.8258	2.9739	3.1749	0.074822	0.000000
0.029966	1.4796	1.5104	1.5668	1.9824	2.9342	3.0683	3.3466	0.075696	0.000000
0.044493	1.4932	1.5280	1.5852	2.0328	3.0811	3.2285	3.6040	0.077388	0.000000
0.068207	1.5136	1.5497	1.6419	2.1277	3.2849	3.4856	3.9085	0.083724	0.000000
0.109270	1.5524	1.6023	1.7967	2.3180	3.4512	3.7254	3.9072	0.107710	0.056273
0.176890	1.6505	1.7191	2.2018	2.7084	3.4266	3.6696	3.9059	0.139343	0.104793

Table A-9 Site Adjustment Factor Medians and Logarithmic Standard Deviation for F=0.500 Hz									
SA (g)	**SAF-M1**	**SAF-M2**	**SAF-M3**	**SAF-M4**	**SAF-M5**	**SAF-M6**	**SAF-M7**	**LNSTDEV**	**NL-LNSTDEV**
0.005131	1.9816	2.0524	2.1454	3.2882	3.6120	3.8646	3.9639	0.096989	0.000000
0.008184	1.9880	2.0533	2.1569	3.2706	3.5729	3.8076	3.9164	0.095129	0.000000
0.010361	1.9900	2.0552	2.1707	3.2642	3.5455	3.7590	3.8710	0.093666	0.000000
0.013172	1.9902	2.0562	2.1861	3.2682	3.5238	3.7141	3.8168	0.092699	0.000000
0.017280	1.9926	2.0602	2.2106	3.2768	3.4977	3.6665	3.7559	0.092427	0.000000
0.024317	2.0026	2.0722	2.2291	3.3017	3.4717	3.6189	3.6968	0.093312	0.000000
0.034951	2.0210	2.0937	2.2557	3.3272	3.4370	3.5527	3.6098	0.095105	0.000000
0.052198	2.0506	2.1295	2.2962	3.2848	3.4046	3.4892	3.5733	0.098105	0.000000
0.079010	2.0963	2.1921	2.3646	3.2547	3.3355	3.4544	3.5841	0.107670	0.000000
0.121850	2.1629	2.2713	2.5335	3.0475	3.3691	3.4657	3.5524	0.128020	0.047861
0.195340	2.2420	2.3932	2.5637	2.7969	3.3288	3.4958	3.5398	0.171200	0.123333
0.316200	2.2568	2.4682	2.5822	2.7349	3.1449	3.2610	3.5270	0.230313	0.197347

Table A-10 Site Adjustment Factor Medians and Logarithmic Standard Deviation for F=0.667 Hz									
SA (g)	**SAF-M1**	**SAF-M2**	**SAF-M3**	**SAF-M4**	**SAF-M5**	**SAF-M6**	**SAF-M7**	**LNSTDEV**	**NL-LNSTDEV**
0.006821	2.3179	2.4494	2.5163	3.1169	3.3615	3.4663	3.5456	0.103680	0.000000
0.010956	2.2874	2.4315	2.5122	3.1050	3.3445	3.4407	3.5237	0.101960	0.000000
0.014042	2.2640	2.4132	2.5070	3.0915	3.3232	3.4226	3.5067	0.100650	0.000000
0.018010	2.2478	2.3949	2.4993	3.0859	3.2950	3.4114	3.4830	0.099655	0.000000
0.023762	2.2216	2.3746	2.4830	3.0898	3.2660	3.3614	3.4649	0.099013	0.000000
0.033589	2.2001	2.3480	2.4679	3.0817	3.2313	3.3234	3.4382	0.099155	0.000000
0.048599	2.1673	2.3143	2.4587	3.0491	3.1865	3.3021	3.4061	0.100340	0.000000
0.073209	2.1093	2.3057	2.4495	3.0170	3.1422	3.2800	3.3938	0.103880	0.000000
0.111790	2.0474	2.2920	2.5050	2.9292	3.1051	3.3128	3.4626	0.115090	0.025897
0.172930	2.0214	2.3152	2.4601	2.7362	3.0461	3.3449	3.5268	0.137880	0.080224
0.277300	2.0056	2.2561	2.3603	2.5588	2.9966	3.2485	3.3683	0.193920	0.158208
0.448890	1.9272	2.1060	2.2126	2.3939	2.7876	2.9818	3.2140	0.274608	0.250668

Table A-11 Site Adjustment Factor Medians and Logarithmic Standard Deviation for F=1.000 Hz									
SA (g)	**SAF-M1**	**SAF-M2**	**SAF-M3**	**SAF-M4**	**SAF-M5**	**SAF-M6**	**SAF-M7**	**LNSTDEV**	**NL-LNSTDEV**
0.009462	2.0985	2.1602	2.2242	2.4078	2.8661	3.1312	3.3718	0.103810	0.000000
0.015366	2.0977	2.1622	2.2289	2.3944	2.8535	3.1231	3.3657	0.101760	0.000000
0.020104	2.0894	2.1580	2.2309	2.3818	2.8432	3.1170	3.3693	0.099957	0.000000
0.026218	2.0833	2.1539	2.2339	2.3644	2.8373	3.1080	3.3691	0.098189	0.000000
0.035015	2.0853	2.1564	2.2301	2.3462	2.8290	3.0991	3.3762	0.097154	0.000000
0.049887	2.0795	2.1562	2.2387	2.3197	2.8355	3.1132	3.3105	0.097531	0.000000
0.072771	2.0713	2.1511	2.2414	2.3013	2.8307	3.1299	3.2397	0.100170	0.000000
0.110510	2.0597	2.1447	2.2053	2.2831	2.7777	3.0919	3.2862	0.110390	0.000000
0.170030	1.9926	2.1026	2.1674	2.2824	2.6075	3.0934	3.3003	0.131150	0.000000
0.263830	1.7911	1.9487	2.1269	2.2830	2.5804	2.8823	3.0949	0.171790	0.090260
0.423240	1.2738	1.9388	2.0348	2.1772	2.3080	2.4560	2.6076	0.244170	0.195586
0.685130	1.2419	1.4368	1.7668	1.9624	2.1074	2.1767	2.1898	0.349386	0.317342

Table A-12 Site Adjustment Factor Medians and Logarithmic Standard Deviation for F=1.333 Hz									
SA (g)	**SAF-M1**	**SAF-M2**	**SAF-M3**	**SAF-M4**	**SAF-M5**	**SAF-M6**	**SAF-M7**	**LNSTDEV**	**NL-LNSTDEV**
0.011533	1.8622	1.9497	2.0743	2.9263	3.0659	3.2308	3.3327	0.106320	0.000000
0.018882	1.8726	1.9530	2.0776	2.9087	3.0288	3.2122	3.3041	0.104690	0.000000
0.025132	1.8703	1.9558	2.0796	2.8837	2.9974	3.1632	3.2783	0.103180	0.000000
0.033251	1.8681	1.9589	2.0825	2.8118	2.9598	3.1014	3.2519	0.101760	0.000000
0.044895	1.8675	1.9632	2.0888	2.7744	2.9086	3.0402	3.2229	0.101100	0.000000
0.064392	1.8694	1.9711	2.1008	2.7051	2.8719	3.0074	3.1914	0.102730	0.000000
0.094465	1.8709	1.9902	2.1230	2.6799	2.8281	2.9596	3.1310	0.107780	0.000000
0.144030	1.8727	2.0047	2.1501	2.5810	2.7326	2.9316	3.0755	0.120390	0.000000
0.222340	1.8303	1.9859	2.1167	2.4662	2.6424	2.9048	3.0858	0.145130	0.041412
0.345600	1.5166	1.9305	2.0731	2.2252	2.4443	2.6897	2.9133	0.190160	0.129665
0.554550	1.0271	1.6004	1.7715	2.0777	2.1626	2.2740	2.3666	0.264890	0.225431
0.897680	0.9330	1.1280	1.2677	1.6652	1.9518	2.1564	1.9151	0.371266	0.344225

Table A-13 Site Adjustment Factor Medians and Logarithmic Standard Deviation for F=2.000 Hz									
SA (g)	**SAF-M1**	**SAF-M2**	**SAF-M3**	**SAF-M4**	**SAF-M5**	**SAF-M6**	**SAF-M7**	**LNSTDEV**	**NL-LNSTDEV**
0.014514	2.0100	2.2091	2.3003	2.7918	3.0613	3.5170	3.7353	0.126710	0.000000
0.024044	2.0077	2.2030	2.2982	2.7507	3.0223	3.4225	3.6580	0.126750	0.000000
0.032921	2.0012	2.1859	2.2880	2.7077	2.9838	3.3579	3.5871	0.127400	0.000000
0.044610	1.9935	2.1686	2.2843	2.6511	2.9368	3.2825	3.4986	0.128620	0.000000
0.061344	1.9867	2.1572	2.2810	2.5816	2.8476	3.1957	3.3626	0.131310	0.000000
0.088954	1.9495	2.1197	2.2658	2.5126	2.7961	3.1402	3.2858	0.136920	0.000000
0.131610	1.8721	2.0553	2.2281	2.4336	2.6498	3.0708	3.2507	0.145790	0.000000
0.201590	1.7654	1.9921	2.1912	2.3312	2.5705	2.9767	3.1042	0.159430	0.008984
0.312160	1.4534	1.9339	2.0840	2.2260	2.4806	2.6213	2.8139	0.184890	0.094059
0.486300	1.1231	1.7613	1.9452	2.0271	2.1735	2.2651	2.5072	0.225110	0.159177
0.780610	0.6721	1.1863	1.3825	1.7339	1.8344	2.0135	2.0738	0.280920	0.231471
1.263600	0.6206	0.7759	0.9937	1.1823	1.4969	1.6768	1.7096	0.351947	0.313894

Table A-14 Site Adjustment Factor Medians and Logarithmic Standard Deviation for F=2.500 Hz									
SA (g)	**SAF-M1**	**SAF-M2**	**SAF-M3**	**SAF-M4**	**SAF-M5**	**SAF-M6**	**SAF-M7**	**LNSTDEV**	**NL-LNSTDEV**
0.016079	1.7240	1.9523	2.1851	2.9065	3.1189	3.2953	3.6048	0.139160	0.000000
0.026809	1.7428	1.9485	2.1816	2.8720	3.0789	3.2510	3.5423	0.138810	0.000000
0.037361	1.7359	1.9426	2.1784	2.8289	3.0439	3.2176	3.4796	0.139020	0.000000
0.051385	1.7278	1.9309	2.1748	2.7820	3.0043	3.1880	3.3951	0.139240	0.000000
0.071463	1.7184	1.9151	2.1740	2.7317	2.9530	3.1379	3.2940	0.139800	0.000000
0.104330	1.7053	1.8983	2.1681	2.7124	2.8890	2.9893	3.2461	0.141260	0.000000
0.155130	1.6889	1.8968	2.1437	2.5800	2.7995	2.8978	3.1702	0.146320	0.000000
0.238150	1.6826	1.8806	2.1099	2.4143	2.5979	2.7485	3.0030	0.160000	0.041856
0.369320	1.3652	1.8259	1.9865	2.1794	2.3495	2.4743	2.7505	0.184760	0.101431
0.576060	0.8918	1.5095	1.7479	1.8877	2.0529	2.2472	2.3677	0.221880	0.159319
0.924930	0.5503	0.9755	1.1733	1.5711	1.8076	1.9774	2.2026	0.266580	0.217294
1.497200	0.4868	0.5999	0.7720	1.0508	1.3942	1.6716	2.0465	0.321296	0.281750

Table A-15 Site Adjustment Factor Medians and Logarithmic Standard Deviation for F=3.333 Hz									
SA (g)	**SAF-M1**	**SAF-M2**	**SAF-M3**	**SAF-M4**	**SAF-M5**	**SAF-M6**	**SAF-M7**	**LNSTDEV**	**NL-LNSTDEV**
0.017910	2.1486	2.3671	2.6924	2.8600	3.1766	3.4336	3.9545	0.147000	0.000000
0.030112	2.1056	2.3255	2.6676	2.8295	3.1633	3.3842	3.8256	0.145890	0.000000
0.043043	2.0867	2.2911	2.6104	2.8018	3.1308	3.3703	3.6883	0.145670	0.000000
0.060468	2.0688	2.2697	2.5178	2.7528	3.0573	3.3346	3.6270	0.145580	0.000000
0.085457	2.0054	2.2381	2.4212	2.7273	2.9512	3.2229	3.6100	0.146370	0.000000
0.125940	1.8917	2.1773	2.4074	2.6435	2.8315	3.1443	3.5289	0.149850	0.000000
0.188590	1.6538	2.1118	2.2856	2.5029	2.6966	2.9471	3.1576	0.158050	0.000000
0.290420	1.3547	1.9281	2.1538	2.2984	2.4538	2.6755	2.8717	0.171800	0.062774
0.451270	1.0023	1.5635	1.8450	2.0582	2.2829	2.4990	2.6260	0.189900	0.102408
0.705190	0.6798	1.1478	1.3430	1.8051	1.9873	2.1489	2.3052	0.215710	0.144762
1.132700	0.4825	0.7102	0.8332	1.3228	1.4863	1.7707	1.9771	0.249200	0.191118
1.833500	0.3727	0.4562	0.5781	0.8059	1.0577	1.4488	1.6915	0.288568	0.240202

Table A-16 Site Adjustment Factor Medians and Logarithmic Standard Deviation for F=4.000 Hz									
SA (g)	**SAF-M1**	**SAF-M2**	**SAF-M3**	**SAF-M4**	**SAF-M5**	**SAF-M6**	**SAF-M7**	**LNSTDEV**	**NL-LNSTDEV**
0.018906	1.8334	2.1831	2.4161	2.6760	2.8132	3.1385	3.4438	0.148460	0.000000
0.031962	1.8419	2.1629	2.3628	2.6405	2.7884	3.1064	3.4317	0.148860	0.000000
0.046521	1.8217	2.1240	2.3286	2.5514	2.7411	3.0496	3.4235	0.150580	0.000000
0.066342	1.8073	2.0897	2.3015	2.4967	2.7311	3.0083	3.3593	0.152110	0.000000
0.094827	1.7480	2.0477	2.2377	2.4515	2.6932	2.9133	3.2513	0.154120	0.000000
0.140680	1.6547	1.9657	2.1751	2.3579	2.6343	2.7974	3.0621	0.157210	0.000000
0.211690	1.4749	1.7983	2.0980	2.2727	2.5220	2.6741	2.9075	0.162520	0.015472
0.326740	1.1833	1.4927	1.8737	2.1274	2.3508	2.6229	2.7791	0.172060	0.058577
0.508480	0.8614	1.2313	1.5052	1.9063	2.1479	2.3434	2.5648	0.186110	0.091998
0.795670	0.6234	0.9086	1.0940	1.5487	1.7960	2.1312	2.3622	0.209640	0.133325
1.278400	0.4142	0.5817	0.7003	1.0279	1.2338	1.7437	1.9224	0.241630	0.179476
2.069400	0.3196	0.3978	0.5085	0.6658	0.8537	1.2827	1.5594	0.279125	0.227459

Table A-17 Site Adjustment Factor Medians and Logarithmic Standard Deviation for F=5.000 Hz									
SA (g)	**SAF-M1**	**SAF-M2**	**SAF-M3**	**SAF-M4**	**SAF-M5**	**SAF-M6**	**SAF-M7**	**LNSTDEV**	**NL-LNSTDEV**
0.019862	1.7015	1.9900	2.1740	2.3919	2.6254	2.8987	3.0281	0.147120	0.000000
0.033808	1.6649	1.9736	2.1431	2.3549	2.5768	2.8522	3.0121	0.148670	0.000000
0.050419	1.6232	1.9410	2.1065	2.2915	2.5287	2.8158	2.9835	0.152600	0.000000
0.073358	1.5754	1.8972	2.0589	2.2459	2.5137	2.7476	2.9611	0.155980	0.000000
0.106450	1.5270	1.8154	1.9926	2.1929	2.4596	2.6629	2.9338	0.159090	0.000000
0.159330	1.4143	1.6797	1.8906	2.1084	2.3406	2.5954	2.8880	0.162910	0.000000
0.241300	1.2090	1.4700	1.7675	1.9545	2.1828	2.4421	2.7721	0.167310	0.025728
0.373650	0.9965	1.2667	1.5387	1.7782	2.0532	2.3650	2.6461	0.174010	0.054303
0.582760	0.7270	1.0352	1.2571	1.4483	1.7966	2.2141	2.4727	0.188540	0.090646
0.913690	0.5244	0.7518	0.8828	1.1566	1.4243	1.8446	2.1358	0.203540	0.118734
1.468600	0.3535	0.4914	0.5988	0.8142	0.9656	1.4687	1.6019	0.227430	0.156185
2.377300	0.2613	0.3458	0.4443	0.5532	0.7015	0.9759	1.1963	0.254545	0.193553

Table A-18 Site Adjustment Factor Medians and Logarithmic Standard Deviation for F=6.667 Hz									
SA (g)	**SAF-M1**	**SAF-M2**	**SAF-M3**	**SAF-M4**	**SAF-M5**	**SAF-M6**	**SAF-M7**	**LNSTDEV**	**NL-LNSTDEV**
0.020565	1.4973	1.7104	1.8639	2.1583	2.3457	2.4733	2.7693	0.146420	0.000000
0.035332	1.5018	1.6699	1.8260	2.0814	2.3035	2.4202	2.6114	0.148210	0.000000
0.054596	1.4305	1.6060	1.7884	2.0037	2.1948	2.3866	2.5725	0.154110	0.000000
0.081799	1.3569	1.5373	1.7298	1.9464	2.0847	2.3415	2.5279	0.159070	0.000000
0.121330	1.3018	1.4585	1.6417	1.8863	2.0308	2.2462	2.4180	0.163850	0.000000
0.183950	1.1686	1.3571	1.5526	1.7282	1.9296	2.1528	2.3295	0.167860	0.000000
0.281250	0.9916	1.2015	1.4177	1.5727	1.7880	2.0641	2.2244	0.170900	0.028782
0.437770	0.7618	0.9962	1.2589	1.4226	1.6365	1.8979	2.0419	0.173570	0.041811
0.685260	0.5811	0.7841	0.9546	1.1728	1.3917	1.6009	1.8306	0.180100	0.063699
1.077700	0.4115	0.5730	0.6825	0.9329	1.1060	1.3295	1.5583	0.192030	0.092180
1.733400	0.2767	0.3873	0.5079	0.6497	0.7672	1.0278	1.1832	0.212320	0.129234
2.805900	0.2074	0.2838	0.3711	0.4600	0.5852	0.7527	0.8951	0.235071	0.163951

Table A-19 Site Adjustment Factor Medians and Logarithmic Standard Deviation for F=10.000 Hz									
SA (g)	**SAF-M1**	**SAF-M2**	**SAF-M3**	**SAF-M4**	**SAF-M5**	**SAF-M6**	**SAF-M7**	**LNSTDEV**	**NL-LNSTDEV**
0.020200	1.2414	1.4468	1.6156	1.8276	2.0650	2.4556	2.8047	0.132250	0.000000
0.035192	1.1930	1.3917	1.5853	1.7580	2.0069	2.3810	2.7331	0.132930	0.000000
0.057653	1.0869	1.2803	1.4839	1.6448	1.9573	2.3045	2.6606	0.140480	0.000000
0.090694	0.9984	1.1944	1.3401	1.5517	1.8621	2.2100	2.5383	0.145390	0.000000
0.139540	0.9185	1.1011	1.2432	1.4403	1.7633	2.0758	2.4242	0.148080	0.024733
0.216130	0.8150	1.0153	1.1691	1.3576	1.6414	1.9123	2.2500	0.148260	0.025789
0.335820	0.6887	0.8466	1.0432	1.2095	1.3957	1.7026	2.1159	0.148700	0.028209
0.527800	0.5532	0.7065	0.8695	1.0225	1.2175	1.5694	1.9199	0.150410	0.036155
0.832030	0.4112	0.5575	0.6734	0.8266	1.0544	1.3616	1.6529	0.156220	0.055576
1.315900	0.3017	0.4125	0.5170	0.6405	0.7916	1.0769	1.2904	0.168360	0.083840
2.119000	0.2081	0.2859	0.3878	0.4667	0.5866	0.7701	0.8938	0.192840	0.125981
3.430200	0.1615	0.2230	0.2865	0.3592	0.4519	0.5615	0.6166	0.221210	0.166187

Table A-20 Site Adjustment Factor Medians and Logarithmic Standard Deviation for F=13.333 Hz									
SA (g)	**SAF-M1**	**SAF-M2**	**SAF-M3**	**SAF-M4**	**SAF-M5**	**SAF-M6**	**SAF-M7**	**LNSTDEV**	**NL-LNSTDEV**
0.018911	1.0923	1.2938	1.3882	1.6962	1.7900	2.1117	2.4919	0.106580	0.000000
0.033283	1.0521	1.2169	1.3385	1.6353	1.7074	2.0515	2.4046	0.108730	0.000000
0.057143	0.8951	1.0497	1.2100	1.4713	1.5894	1.9365	2.2764	0.118650	0.000000
0.093607	0.7814	0.9502	1.1101	1.3311	1.5090	1.8538	2.1790	0.125710	0.000000
0.148540	0.6940	0.8598	1.0251	1.2021	1.4343	1.7579	2.0388	0.129870	0.030219
0.234280	0.6226	0.7799	0.9294	1.0606	1.3254	1.5787	1.8734	0.130710	0.033647
0.369080	0.5336	0.6707	0.7892	0.9463	1.1518	1.4426	1.7151	0.131580	0.036882
0.585370	0.4368	0.5566	0.6722	0.7904	0.9606	1.1900	1.5280	0.133250	0.042457
0.928950	0.3406	0.4390	0.5412	0.6566	0.7839	1.0165	1.2917	0.138850	0.057674
1.476800	0.2541	0.3373	0.4304	0.5165	0.6316	0.7885	1.0123	0.153800	0.087758
2.380600	0.1824	0.2417	0.3208	0.3898	0.4879	0.6012	0.7343	0.183340	0.132893
3.853700	0.1423	0.1924	0.2419	0.3043	0.3794	0.4889	0.5311	0.218892	0.178776

Table A-21 Site Adjustment Factor Medians and Logarithmic Standard Deviation for F=20.000 Hz									
SA (g)	**SAF-M1**	**SAF-M2**	**SAF-M3**	**SAF-M4**	**SAF-M5**	**SAF-M6**	**SAF-M7**	**LNSTDEV**	**NL-LNSTDEV**
0.016034	1.1051	1.2925	1.3444	1.5775	1.6845	2.0086	2.3794	0.079838	0.000000
0.028572	1.0773	1.2177	1.2675	1.4995	1.5992	1.9459	2.3096	0.082192	0.000000
0.052416	0.8541	0.9564	1.0623	1.2497	1.3953	1.7626	2.1445	0.089674	0.034448
0.091524	0.6885	0.7761	0.8805	1.0560	1.2503	1.5986	1.9915	0.095589	0.047776
0.152800	0.5786	0.6682	0.7678	0.9108	1.1180	1.4488	1.8397	0.099622	0.055406
0.248440	0.5074	0.5997	0.6818	0.7875	0.9885	1.2617	1.6487	0.101180	0.058161
0.400750	0.4289	0.5197	0.5904	0.6970	0.8559	1.0855	1.4518	0.103520	0.062142
0.646150	0.3561	0.4343	0.5029	0.5926	0.7163	0.8887	1.2014	0.108480	0.070094
1.038000	0.2873	0.3544	0.4181	0.4913	0.5843	0.7496	0.9712	0.119920	0.086753
1.665300	0.2188	0.2795	0.3374	0.3972	0.4790	0.6065	0.7749	0.141650	0.114935
2.689800	0.1594	0.2055	0.2616	0.3117	0.3827	0.4779	0.6153	0.176880	0.156307
4.354200	0.1256	0.1619	0.2000	0.2463	0.3085	0.3955	0.4880	0.221099	0.205012

Table A-22 Site Adjustment Factor Medians and Logarithmic Standard Deviation for F=25.000 Hz									
SA (g)	**SAF-M1**	**SAF-M2**	**SAF-M3**	**SAF-M4**	**SAF-M5**	**SAF-M6**	**SAF-M7**	**LNSTDEV**	**NL-LNSTDEV**
0.014262	1.1833	1.3753	1.4296	1.6298	1.7773	1.9943	2.3296	0.075034	0.000000
0.025505	1.1434	1.3070	1.3445	1.5448	1.6712	1.9095	2.2533	0.077199	0.000000
0.048104	0.8966	0.9974	1.0585	1.2372	1.3369	1.6386	2.0369	0.083518	0.027629
0.086996	0.7009	0.7721	0.8641	1.0034	1.1442	1.4300	1.8249	0.088836	0.040987
0.149780	0.5700	0.6354	0.7165	0.8328	0.9895	1.2559	1.6394	0.092991	0.049350
0.248220	0.4867	0.5558	0.6278	0.7115	0.8653	1.1129	1.4532	0.095469	0.053874
0.406510	0.4118	0.4789	0.5407	0.6112	0.7498	0.9483	1.2468	0.098705	0.059420
0.662730	0.3376	0.4032	0.4562	0.5285	0.6310	0.7716	1.0289	0.104260	0.068251
1.073400	0.2728	0.3339	0.3823	0.4440	0.5150	0.6476	0.8556	0.116490	0.085779
1.732700	0.2089	0.2597	0.3105	0.3614	0.4279	0.5423	0.6665	0.139070	0.114580
2.802400	0.1528	0.1951	0.2412	0.2854	0.3438	0.4289	0.5598	0.174440	0.155619
4.536400	0.1205	0.1516	0.1898	0.2268	0.2774	0.3590	0.4699	0.218895	0.204213

Table A-23 Site Adjustment Factor Medians and Logarithmic Standard Deviation for F=33.333 Hz									
SA (g)	**SAF-M1**	**SAF-M2**	**SAF-M3**	**SAF-M4**	**SAF-M5**	**SAF-M6**	**SAF-M7**	**LNSTDEV**	**NL-LNSTDEV**
0.012248	1.3072	1.5044	1.6060	1.8027	1.9891	2.1028	2.4139	0.071810	0.000000
0.021866	1.2704	1.4349	1.5049	1.7069	1.8678	2.0173	2.3174	0.073547	0.006265
0.041669	0.9918	1.1183	1.1637	1.3336	1.4320	1.6536	1.9616	0.078205	0.027315
0.078128	0.7603	0.8328	0.8958	1.0254	1.1148	1.3583	1.6891	0.082369	0.037613
0.139880	0.5985	0.6522	0.7209	0.8152	0.9285	1.1370	1.4562	0.085774	0.044579
0.237930	0.4973	0.5428	0.6160	0.6779	0.7960	0.9687	1.2629	0.088252	0.049178
0.398130	0.4125	0.4636	0.5179	0.5725	0.6779	0.8228	1.0743	0.091828	0.055340
0.659690	0.3343	0.3895	0.4355	0.4915	0.5691	0.6750	0.8948	0.097722	0.064650
1.081700	0.2640	0.3174	0.3677	0.4078	0.4688	0.5689	0.7440	0.109740	0.081688
1.761800	0.2037	0.2493	0.2923	0.3368	0.3848	0.4813	0.6015	0.130880	0.108442
2.855000	0.1494	0.1881	0.2261	0.2666	0.3162	0.3854	0.4904	0.165970	0.148917
4.621600	0.1183	0.1449	0.1795	0.2131	0.2629	0.3206	0.4000	0.210357	0.197181

Table A-24 Site Adjustment Factor Medians and Logarithmic Standard Deviation for F=40.000 Hz									
SA (g)	**SAF-M1**	**SAF-M2**	**SAF-M3**	**SAF-M4**	**SAF-M5**	**SAF-M6**	**SAF-M7**	**LNSTDEV**	**NL-LNSTDEV**
0.011283	1.3783	1.5909	1.7244	1.9198	2.1459	2.2172	2.5305	0.071304	0.000000
0.020050	1.3427	1.5213	1.6139	1.8242	2.0203	2.1330	2.4351	0.072939	0.000000
0.037684	1.0830	1.2243	1.2708	1.4350	1.5526	1.7345	2.0054	0.077060	0.024883
0.071393	0.8246	0.9038	0.9641	1.0892	1.1732	1.3792	1.6809	0.080651	0.034431
0.130500	0.6356	0.6913	0.7561	0.8461	0.9389	1.1225	1.4132	0.083665	0.040997
0.225600	0.5214	0.5652	0.6374	0.6969	0.7925	0.9471	1.2129	0.086071	0.045707
0.382860	0.4266	0.4720	0.5280	0.5765	0.6690	0.7915	1.0271	0.089569	0.051996
0.641470	0.3400	0.3933	0.4387	0.4875	0.5592	0.6584	0.8551	0.095359	0.061435
1.060800	0.2673	0.3191	0.3681	0.4065	0.4597	0.5470	0.6986	0.107120	0.078458
1.738900	0.2037	0.2489	0.2908	0.3338	0.3778	0.4604	0.5596	0.127890	0.105056
2.821700	0.1512	0.1874	0.2260	0.2638	0.3093	0.3713	0.4621	0.162710	0.145449
4.567700	0.1197	0.1450	0.1795	0.2093	0.2543	0.3109	0.3820	0.206762	0.193472

Table A-25 Site Adjustment Factor Medians and Logarithmic Standard Deviation for F=50.000 Hz									
SA (g)	**SAF-M1**	**SAF-M2**	**SAF-M3**	**SAF-M4**	**SAF-M5**	**SAF-M6**	**SAF-M7**	**LNSTDEV**	**NL-LNSTDEV**
0.010462	1.4603	1.6890	1.8482	2.0575	2.2839	2.3687	2.6753	0.071069	0.000000
0.018464	1.4296	1.6242	1.7357	1.9514	2.1772	2.2817	2.5773	0.072638	0.000000
0.033540	1.1793	1.3452	1.4039	1.5919	1.7325	1.8965	2.1559	0.076494	0.022356
0.063036	0.9247	1.0188	1.0823	1.2115	1.3113	1.4894	1.7350	0.079785	0.031845
0.116930	0.7038	0.7669	0.8311	0.9270	1.0055	1.1714	1.4218	0.082599	0.038354
0.205470	0.5698	0.6171	0.6869	0.7537	0.8407	0.9743	1.2004	0.085061	0.043403
0.354360	0.4591	0.5051	0.5652	0.6127	0.6976	0.8038	1.0061	0.088663	0.050096
0.601820	0.3607	0.4165	0.4632	0.5116	0.5765	0.6665	0.8327	0.094559	0.059915
1.006000	0.2815	0.3341	0.3817	0.4235	0.4725	0.5502	0.6885	0.106320	0.077152
1.662500	0.2119	0.2601	0.2997	0.3438	0.3891	0.4605	0.5513	0.126920	0.103717
2.702600	0.1578	0.1950	0.2347	0.2721	0.3183	0.3720	0.4519	0.161320	0.143780
4.374800	0.1250	0.1507	0.1847	0.2170	0.2616	0.3129	0.3711	0.204614	0.191090

Table A-26 Site Adjustment Factor Medians and Logarithmic Standard Deviation for F=100.000 Hz									
SA (g)	**SAF-M1**	**SAF-M2**	**SAF-M3**	**SAF-M4**	**SAF-M5**	**SAF-M6**	**SAF-M7**	**LNSTDEV**	**NL-LNSTDEV**
0.009464	1.5939	1.8444	2.0335	2.2619	2.5018	2.5950	2.9156	0.070909	0.000000
0.016487	1.5801	1.7964	1.9301	2.1736	2.4146	2.5339	2.8392	0.072453	0.000000
0.027389	1.4024	1.6100	1.6944	1.9217	2.1107	2.2619	2.5514	0.076268	0.018838
0.046471	1.2208	1.3598	1.4458	1.6246	1.7631	1.9648	2.1842	0.079507	0.029316
0.080508	1.0157	1.1059	1.1987	1.3277	1.4259	1.6189	1.8275	0.082248	0.036094
0.138650	0.8415	0.9112	1.0076	1.1026	1.2061	1.3581	1.5563	0.084668	0.041313
0.239320	0.6763	0.7442	0.8311	0.8999	0.9987	1.1307	1.3006	0.088261	0.048250
0.411280	0.5263	0.6055	0.6731	0.7395	0.8190	0.9301	1.0768	0.094080	0.058216
0.698630	0.4049	0.4776	0.5433	0.6021	0.6666	0.7606	0.8858	0.105450	0.075218
1.172500	0.3023	0.3679	0.4238	0.4802	0.5375	0.6219	0.7233	0.125560	0.101506
1.912900	0.2231	0.2752	0.3283	0.3809	0.4324	0.5041	0.5804	0.159690	0.141559
3.096600	0.1768	0.2118	0.2553	0.3028	0.3591	0.4148	0.4674	0.202321	0.188340

Table A-27 Site Adjustment Factor Medians and Logarithmic Standard Deviation for PGA									
SA (g)	**SAF-M1**	**SAF-M2**	**SAF-M3**	**SAF-M4**	**SAF-M5**	**SAF-M6**	**SAF-M7**	**LNSTDEV**	**NL-LNSTDEV**
0.009337	1.6118	1.8655	2.0601	2.2911	2.5284	2.6275	2.9522	0.119600	0.000000
0.016224	1.6031	1.8224	1.9607	2.2076	2.4500	2.5716	2.8828	0.118027	0.000000
0.026327	1.4541	1.6702	1.7602	1.9958	2.1934	2.3464	2.6441	0.124829	0.030811
0.042833	1.3194	1.4727	1.5657	1.7613	1.9133	2.1269	2.3575	0.137322	0.064996
0.069979	1.1636	1.2682	1.3772	1.5285	1.6413	1.8606	2.0845	0.145677	0.081172
0.114444	1.0200	1.1043	1.2200	1.3352	1.4567	1.6363	1.8601	0.153686	0.094797
0.187600	0.8633	0.9493	1.0589	1.1474	1.2698	1.4365	1.6291	0.161486	0.106980
0.307924	0.7030	0.8080	0.8988	0.9859	1.0895	1.2310	1.4078	0.170164	0.119678
0.504877	0.5603	0.6604	0.7518	0.8291	0.9211	1.0471	1.2126	0.186773	0.142307
0.826150	0.4285	0.5220	0.5988	0.6796	0.7616	0.8746	1.0261	0.211627	0.173646
1.340724	0.3189	0.3931	0.4665	0.5431	0.6152	0.7167	0.8167	0.237979	0.204942
2.170321	0.2523	0.3019	0.3636	0.4318	0.5109	0.5907	0.6507	0.267400	0.238474

Table A-28 Control Point Total Mean Hazard Curves for F=0.100 to 1.000 Hz								
SA(g)	**F0.100Hz**	**F0.133Hz**	**F0.200Hz**	**F0.250Hz**	**F0.333Hz**	**F0.500Hz**	**F0.667Hz**	**F1.000Hz**
0.00100	3.24023E-03	4.01192E-03	5.04691E-03	5.82756E-03	7.02538E-03	1.05992E-02	1.40222E-02	2.08732E-02
0.00130	3.13107E-03	3.90939E-03	5.04691E-03	5.82756E-03	7.02538E-03	1.05992E-02	1.40222E-02	2.08732E-02
0.00160	2.85686E-03	3.72170E-03	4.75791E-03	5.71475E-03	7.02538E-03	1.05992E-02	1.40222E-02	2.08732E-02
0.00200	2.37519E-03	3.28450E-03	4.42904E-03	5.42381E-03	6.69207E-03	1.05992E-02	1.40222E-02	2.08732E-02
0.00250	1.97379E-03	2.88773E-03	4.04740E-03	4.91815E-03	6.28104E-03	1.02682E-02	1.40222E-02	2.02789E-02
0.00320	1.55785E-03	2.45213E-03	3.62213E-03	4.47947E-03	5.82640E-03	9.90727E-03	1.35384E-02	1.87715E-02
0.00400	1.16340E-03	1.99533E-03	3.16872E-03	4.02901E-03	5.31540E-03	9.34722E-03	1.21132E-02	1.64543E-02
0.00500	8.25549E-04	1.55531E-03	2.70238E-03	3.55899E-03	4.79771E-03	8.34651E-03	1.04834E-02	1.41365E-02
0.00630	5.71394E-04	1.15623E-03	2.22312E-03	3.08418E-03	4.30265E-03	7.44916E-03	9.15538E-03	1.24485E-02
0.00790	3.58276E-04	8.03980E-04	1.75634E-03	2.58199E-03	3.80567E-03	6.62041E-03	8.02189E-03	1.05607E-02
0.01000	2.23402E-04	5.26980E-04	1.37775E-03	2.05695E-03	3.28528E-03	5.80924E-03	7.05866E-03	9.10253E-03
0.01260	1.35754E-04	3.36647E-04	1.00823E-03	1.60819E-03	2.80304E-03	5.16721E-03	6.20707E-03	7.83980E-03
0.01580	7.60428E-05	2.15028E-04	7.04161E-04	1.25004E-03	2.31510E-03	4.57832E-03	5.45641E-03	6.74533E-03
0.02000	4.00806E-05	1.19174E-04	4.58973E-04	8.83016E-04	1.81946E-03	3.97464E-03	4.64959E-03	5.80105E-03

Table A-28 Control Point Total Mean Hazard Curves for F=0.100 to 1.000 Hz								
SA(g)	**F0.100Hz**	**F0.133Hz**	**F0.200Hz**	**F0.250Hz**	**F0.333Hz**	**F0.500Hz**	**F0.667Hz**	**F1.000Hz**
0.02510	2.21582E-05	6.70107E-05	2.96756E-04	6.38961E-04	1.41398E-03	3.39646E-03	4.10544E-03	4.94023E-03
0.03160	1.19348E-05	3.81693E-05	1.78683E-04	4.33960E-04	1.05343E-03	2.85694E-03	3.46305E-03	4.13834E-03
0.03980	5.98943E-06	2.09909E-05	1.01144E-04	2.98051E-04	7.34986E-04	2.35465E-03	2.78744E-03	3.43682E-03
0.05010	2.87805E-06	1.11052E-05	5.75107E-05	1.79291E-04	5.03143E-04	1.83214E-03	2.23691E-03	2.80519E-03
0.06310	1.38058E-06	5.49018E-06	3.02465E-05	1.00629E-04	3.44481E-04	1.40137E-03	1.75257E-03	2.22027E-03
0.07940	6.77055E-07	2.65047E-06	1.64626E-05	5.62556E-05	2.48089E-04	1.02730E-03	1.31972E-03	1.70084E-03
0.10000	3.34958E-07	1.27856E-06	9.45520E-06	3.05604E-05	1.48240E-04	7.11437E-04	9.51587E-04	1.26496E-03
0.12600	1.64389E-07	6.26232E-07	5.53770E-06	1.61546E-05	9.83365E-05	4.72289E-04	6.60521E-04	9.09244E-04
0.15800	8.15666E-08	3.15246E-07	2.83540E-06	9.66800E-06	5.52943E-05	2.99160E-04	4.38807E-04	6.23838E-04
0.20000	3.92575E-08	1.51921E-07	1.44907E-06	5.80728E-06	3.67062E-05	1.82733E-04	2.48792E-04	4.17032E-04
0.25100	1.94135E-08	7.41441E-08	8.20055E-07	3.10382E-06	1.90953E-05	1.05457E-04	1.56612E-04	2.69999E-04
0.31600	9.51172E-09	3.61766E-08	4.33864E-07	1.77190E-06	1.03623E-05	5.61072E-05	9.43455E-05	1.64417E-04
0.39800	4.64212E-09	1.75778E-08	2.27246E-07	1.03174E-06	5.44371E-06	2.84404E-05	5.17718E-05	9.36150E-05
0.50100	2.24110E-09	8.45308E-09	1.25037E-07	5.49224E-07	2.76247E-06	1.35641E-05	2.65204E-05	4.97571E-05
0.63100	1.07376E-09	4.05120E-09	6.62429E-08	3.16709E-07	1.38208E-06	6.69410E-06	1.32221E-05	2.52419E-05
0.79400	5.11540E-10	1.90510E-09	3.49788E-08	1.78218E-07	6.98933E-07	3.27463E-06	6.35074E-06	1.16050E-05
1.00000	2.39986E-10	8.84339E-10	1.90050E-08	9.72128E-08	3.50275E-07	1.53582E-06	2.96237E-06	4.96764E-06
1.26000	1.11368E-10	4.05422E-10	1.00162E-08	5.57200E-08	1.77655E-07	7.22057E-07	1.36941E-06	2.13740E-06
1.58000	5.19681E-11	1.86671E-10	5.34480E-09	3.11556E-08	9.22608E-08	3.47110E-07	6.45629E-07	9.69434E-07
2.00000	2.32124E-11	8.24110E-11	2.79920E-09	1.71278E-08	4.68817E-08	1.62936E-07	2.98063E-07	4.37479E-07
2.51000	1.05566E-11	3.70224E-11	1.48212E-09	9.70983E-09	2.44743E-08	7.90798E-08	1.42828E-07	2.07655E-07
3.16000	4.69174E-12	1.61675E-11	7.73589E-10	5.36511E-09	1.26821E-08	3.81618E-08	6.82650E-08	9.92714E-08
3.98000	2.05243E-12	6.98002E-12	4.03671E-10	2.97692E-09	6.58480E-09	1.84267E-08	3.27709E-08	4.80712E-08
5.01000	8.85525E-13	2.98775E-12	2.09147E-10	1.64301E-09	3.43424E-09	8.90696E-09	1.58180E-08	2.35797E-08
6.31000	3.74851E-13	1.25165E-12	1.07229E-10	9.00924E-10	1.78563E-09	4.28860E-09	7.63882E-09	1.16534E-08
7.94000	1.56352E-13	5.14344E-13	5.49623E-11	4.93767E-10	9.27124E-10	2.06611E-09	3.70417E-09	5.81864E-09
10.00000	6.37298E-14	2.07952E-13	2.80603E-11	2.67098E-10	4.78831E-10	9.90029E-10	1.79138E-09	2.91354E-09

Table A-29 Control Point Total Mean Hazard Curves for F=1.333 to 10.000 Hz								
SA(g)	**F1.333Hz**	**F2.000Hz**	**F2.500Hz**	**F3.333Hz**	**F4.000Hz**	**F5.000Hz**	**F6.667Hz**	**F10.000Hz**
0.00100	2.55679E-02	3.02733E-02	3.16302E-02	3.28429E-02	3.30977E-02	3.34530E-02	3.34953E-02	3.30163E-02
0.00130	2.55679E-02	3.02733E-02	3.16302E-02	3.28429E-02	3.30977E-02	3.34530E-02	3.34953E-02	3.30163E-02
0.00160	2.55679E-02	3.02733E-02	3.16302E-02	3.28429E-02	3.30977E-02	3.34530E-02	3.34953E-02	3.30163E-02
0.00200	2.54792E-02	3.02733E-02	3.15576E-02	3.28429E-02	3.30360E-02	3.34530E-02	3.33665E-02	3.25300E-02
0.00250	2.45452E-02	2.99974E-02	3.07916E-02	3.28429E-02	3.29561E-02	3.31793E-02	3.27565E-02	3.17451E-02
0.00320	2.36842E-02	2.89911E-02	3.00646E-02	3.23033E-02	3.22656E-02	3.21961E-02	3.15983E-02	3.02926E-02
0.00400	2.13144E-02	2.71137E-02	2.81040E-02	3.08648E-02	3.03418E-02	3.03010E-02	3.01471E-02	2.84226E-02
0.00500	1.90855E-02	2.50455E-02	2.59668E-02	2.90550E-02	2.85475E-02	2.84846E-02	2.82835E-02	2.63251E-02
0.00630	1.67872E-02	2.24201E-02	2.36577E-02	2.69448E-02	2.64316E-02	2.63319E-02	2.56259E-02	2.41034E-02
0.00790	1.46028E-02	1.99486E-02	2.12080E-02	2.43450E-02	2.40324E-02	2.39246E-02	2.23717E-02	2.18027E-02
0.01000	1.24252E-02	1.74864E-02	1.87021E-02	2.17170E-02	2.15183E-02	2.09103E-02	1.99471E-02	1.91720E-02
0.01260	1.04154E-02	1.46492E-02	1.62651E-02	1.91864E-02	1.90123E-02	1.84015E-02	1.75046E-02	1.63913E-02
0.01580	8.88225E-03	1.23944E-02	1.39863E-02	1.66917E-02	1.65293E-02	1.59002E-02	1.51661E-02	1.42609E-02
0.02000	7.54327E-03	1.04783E-02	1.18760E-02	1.43038E-02	1.37034E-02	1.36046E-02	1.28530E-02	1.21471E-02
0.02510	6.37713E-03	8.79438E-03	9.95794E-03	1.21174E-02	1.15732E-02	1.14944E-02	1.08164E-02	1.02912E-02
0.03160	5.35234E-03	7.30842E-03	8.00351E-03	1.01408E-02	9.62406E-03	9.29380E-03	8.95999E-03	8.62983E-03
0.03980	4.44318E-03	6.01815E-03	6.52120E-03	8.35417E-03	7.86419E-03	7.65433E-03	7.13453E-03	6.95556E-03
0.05010	3.64962E-03	4.91340E-03	5.29933E-03	6.80214E-03	6.18648E-03	6.13997E-03	5.81752E-03	5.74113E-03
0.06310	2.94617E-03	3.96229E-03	4.26600E-03	5.41745E-03	4.97475E-03	4.94425E-03	4.72531E-03	4.55968E-03
0.07940	2.27724E-03	3.13658E-03	3.39412E-03	4.31447E-03	3.97643E-03	3.96867E-03	3.83822E-03	3.63658E-03
0.10000	1.70489E-03	2.42988E-03	2.66871E-03	3.27590E-03	3.17302E-03	3.18347E-03	3.04036E-03	2.82275E-03
0.12600	1.26805E-03	1.86275E-03	2.07217E-03	2.58202E-03	2.52482E-03	2.52090E-03	2.32836E-03	2.17064E-03
0.15800	9.13900E-04	1.39428E-03	1.58541E-03	1.99701E-03	1.94659E-03	1.99466E-03	1.85342E-03	1.69109E-03
0.20000	6.33290E-04	1.01925E-03	1.12786E-03	1.47385E-03	1.47687E-03	1.47941E-03	1.42670E-03	1.25588E-03
0.25100	4.37919E-04	6.37178E-04	8.25795E-04	1.11853E-03	1.08959E-03	1.05972E-03	9.94809E-04	9.02515E-04
0.31600	2.74805E-04	4.22605E-04	5.79921E-04	8.20294E-04	7.89202E-04	7.40023E-04	6.35941E-04	6.13667E-04
0.39800	1.64664E-04	2.65190E-04	3.85479E-04	5.34529E-04	5.37656E-04	5.04584E-04	4.19614E-04	3.30212E-04
0.50100	8.97530E-05	1.59619E-04	2.23562E-04	3.25045E-04	3.40399E-04	2.92553E-04	2.42596E-04	1.84681E-04
0.63100	4.54437E-05	8.10721E-05	1.22242E-04	1.80376E-04	1.87626E-04	1.56345E-04	1.24492E-04	9.09778E-05

Table A-29 Control Point Total Mean Hazard Curves for F=1.333 to 10.000 Hz								
SA(g)	**F1.333Hz**	**F2.000Hz**	**F2.500Hz**	**F3.333Hz**	**F4.000Hz**	**F5.000Hz**	**F6.667Hz**	**F10.000Hz**
0.79400	2.10122E-05	3.93267E-05	5.79515E-05	8.81118E-05	9.49550E-05	7.52279E-05	5.30504E-05	4.21472E-05
1.00000	9.07922E-06	1.62389E-05	2.42996E-05	3.85459E-05	4.29652E-05	3.29883E-05	2.00255E-05	1.58551E-05
1.26000	3.68955E-06	6.04312E-06	9.26969E-06	1.52479E-05	1.66751E-05	1.29416E-05	6.14872E-06	5.67638E-06
1.58000	1.54176E-06	2.20122E-06	3.49172E-06	5.10966E-06	5.71482E-06	4.38915E-06	1.79854E-06	1.50668E-06
2.00000	6.51227E-07	7.54165E-07	1.23374E-06	1.42639E-06	1.73576E-06	1.24331E-06	4.28857E-07	2.54181E-07
2.51000	2.96403E-07	2.71440E-07	4.49508E-07	4.29841E-07	5.14139E-07	2.78372E-07	9.40483E-08	4.28240E-08
3.16000	1.37828E-07	9.96087E-08	1.65561E-07	1.37243E-07	1.39506E-07	4.71111E-08	1.90374E-08	6.63127E-09
3.98000	6.54664E-08	3.76358E-08	6.32442E-08	4.58415E-08	3.74809E-08	8.01791E-09	3.50379E-09	8.10291E-10
5.01000	3.16926E-08	1.45500E-08	2.49588E-08	1.56122E-08	1.03894E-08	1.45220E-09	5.46535E-10	6.63845E-11
6.31000	1.55305E-08	5.67564E-09	1.00039E-08	5.28353E-09	2.90516E-09	2.54199E-10	6.46792E-11	3.12827E-12
7.94000	7.71608E-09	2.22981E-09	4.05581E-09	1.76220E-09	8.06953E-10	3.91196E-11	5.17597E-12	7.84788E-14
10.00000	3.85379E-09	8.70379E-10	1.63981E-09	5.62738E-10	2.13422E-10	4.65117E-12	2.39378E-13	9.55974E-16

Table A-30 Control Point Total Mean Hazard Curves for F=13.333 to 100.000 Hz and PGA								
SA(g)	**F13.333Hz**	**F20.000Hz**	**F25.000Hz**	**F33.333Hz**	**F40.000Hz**	**F50.000Hz**	**F100.000Hz**	**PGA**
0.00100	3.25143E-02	3.18513E-02	3.13177E-02	3.06353E-02	3.01899E-02	2.94838E-02	2.80258E-02	2.96356E-02
0.00130	3.25143E-02	3.18513E-02	3.13177E-02	3.06353E-02	3.01899E-02	2.94838E-02	2.80258E-02	2.96356E-02
0.00160	3.24542E-02	3.17087E-02	3.12534E-02	3.06353E-02	3.01899E-02	2.94838E-02	2.80258E-02	2.96356E-02
0.00200	3.20108E-02	3.12323E-02	3.10113E-02	3.04819E-02	3.00329E-02	2.93219E-02	2.79497E-02	2.95002E-02
0.00250	3.09823E-02	2.98311E-02	2.99133E-02	2.94839E-02	2.92901E-02	2.88119E-02	2.76640E-02	2.90333E-02
0.00320	2.88546E-02	2.80161E-02	2.74989E-02	2.77631E-02	2.75417E-02	2.68452E-02	2.59765E-02	2.62763E-02
0.00400	2.64793E-02	2.58260E-02	2.55646E-02	2.51353E-02	2.56360E-02	2.48029E-02	2.37374E-02	2.39174E-02
0.00500	2.40506E-02	2.32065E-02	2.31891E-02	2.30641E-02	2.33320E-02	2.27459E-02	2.16123E-02	2.15039E-02
0.00630	2.18334E-02	2.07335E-02	2.09742E-02	2.09292E-02	2.06771E-02	2.06312E-02	1.88535E-02	1.87208E-02
0.00790	1.95935E-02	1.86015E-02	1.88405E-02	1.88263E-02	1.82715E-02	1.85157E-02	1.67181E-02	1.64683E-02
0.01000	1.73779E-02	1.65023E-02	1.58555E-02	1.63216E-02	1.62372E-02	1.60612E-02	1.46690E-02	1.43591E-02
0.01260	1.48418E-02	1.45090E-02	1.39136E-02	1.40938E-02	1.42457E-02	1.34275E-02	1.27099E-02	1.23439E-02
0.01580	1.28854E-02	1.25341E-02	1.21062E-02	1.22655E-02	1.19888E-02	1.15889E-02	1.08636E-02	1.04494E-02
0.02000	1.10401E-02	1.07855E-02	1.04084E-02	1.04724E-02	1.00945E-02	9.93630E-03	9.14757E-03	8.74274E-03

Table A-30 Control Point Total Mean Hazard Curves for F=13.333 to 100.000 Hz and PGA								
SA(g)	**F13.333Hz**	**F20.000Hz**	**F25.000Hz**	**F33.333Hz**	**F40.000Hz**	**F50.000Hz**	**F100.000Hz**	**PGA**
0.02510	9.35862E-03	8.85080E-03	8.84544E-03	8.31573E-03	8.54950E-03	8.39568E-03	7.10294E-03	7.23401E-03
0.03160	7.72125E-03	7.30942E-03	7.12180E-03	6.93507E-03	7.12406E-03	6.69502E-03	5.85636E-03	5.34875E-03
0.03980	6.38260E-03	5.71632E-03	5.51753E-03	5.68527E-03	5.68355E-03	5.26544E-03	4.79740E-03	4.28106E-03
0.05010	5.25148E-03	4.47218E-03	4.30444E-03	4.15870E-03	4.03887E-03	4.06501E-03	3.53929E-03	3.17718E-03
0.06310	4.02229E-03	3.51130E-03	3.26075E-03	3.03897E-03	2.95866E-03	2.86210E-03	2.68158E-03	2.29235E-03
0.07940	3.20783E-03	2.69774E-03	2.45589E-03	2.13357E-03	2.04017E-03	1.98033E-03	1.90556E-03	1.59657E-03
0.10000	2.39289E-03	2.05924E-03	1.73136E-03	1.47200E-03	1.36906E-03	1.27494E-03	1.25761E-03	1.05533E-03
0.12600	1.90742E-03	1.48615E-03	1.23300E-03	9.74115E-04	8.71230E-04	7.92623E-04	8.07024E-04	6.66917E-04
0.15800	1.39589E-03	1.05204E-03	8.34270E-04	6.19955E-04	5.40490E-04	4.75746E-04	4.71502E-04	4.05864E-04
0.20000	9.81472E-04	6.93791E-04	5.24712E-04	3.58173E-04	2.97293E-04	2.55996E-04	2.54986E-04	2.25685E-04
0.25100	6.93167E-04	4.37378E-04	3.14661E-04	1.96377E-04	1.58318E-04	1.28821E-04	1.24507E-04	1.20649E-04
0.31600	4.25014E-04	2.54394E-04	1.72737E-04	9.95700E-05	7.53801E-05	5.95113E-05	5.63806E-05	5.98585E-05
0.39800	2.24240E-04	1.33687E-04	8.57301E-05	4.45310E-05	3.36276E-05	2.51206E-05	2.28160E-05	2.77198E-05
0.50100	1.13991E-04	6.24003E-05	3.75382E-05	1.86635E-05	1.36424E-05	9.93855E-06	8.79982E-06	1.22332E-05
0.63100	5.24947E-05	2.64899E-05	1.51622E-05	7.39243E-06	5.27250E-06	3.76319E-06	3.21304E-06	5.17751E-06
0.79400	2.09014E-05	1.03946E-05	5.87062E-06	2.86124E-06	1.95535E-06	1.37255E-06	1.14563E-06	2.11260E-06
1.00000	7.71329E-06	3.61735E-06	2.09446E-06	1.03243E-06	6.85183E-07	4.73936E-07	3.95846E-07	8.20368E-07
1.26000	2.42702E-06	1.18149E-06	6.98048E-07	3.60484E-07	2.37744E-07	1.61932E-07	1.33696E-07	3.03468E-07
1.58000	6.62937E-07	3.94304E-07	2.51037E-07	1.25929E-07	8.20273E-08	5.45271E-08	4.43353E-08	1.09655E-07
2.00000	1.63542E-07	1.24931E-07	8.56536E-08	3.94231E-08	2.51391E-08	1.61723E-08	1.31913E-08	3.58109E-08
2.51000	4.27560E-08	3.90290E-08	2.85859E-08	1.14442E-08	7.11388E-09	4.38579E-09	3.75240E-09	1.13684E-08
3.16000	1.02160E-08	1.06871E-08	8.45160E-09	2.70086E-09	1.62564E-09	9.41096E-10	9.08982E-10	3.26652E-09
3.98000	2.05859E-09	2.40701E-09	2.10412E-09	4.80242E-10	2.75922E-10	1.45505E-10	1.75420E-10	8.34324E-10
5.01000	3.11901E-10	4.09119E-10	4.08129E-10	5.89098E-11	3.15501E-11	1.46513E-11	2.48449E-11	1.81254E-10
6.31000	3.07649E-11	4.73809E-11	5.55650E-11	4.50699E-12	2.18598E-12	8.68548E-13	2.36512E-12	3.13109E-11
7.94000	1.79223E-12	3.51331E-12	4.90402E-12	2.02866E-13	8.66844E-14	2.89781E-14	1.45019E-13	4.11152E-12
10.00000	5.57687E-14	1.54520E-13	2.54962E-13	4.94715E-15	1.81540E-15	5.07090E-16	5.37834E-15	3.85651E-13

SUBJECT: STAFF ASSESSMENT OF UPDATED SEISMIC HAZARD INFORMATION AND LATEST UNDERSTANDING OF SEISMIC HAZARDS AT THE VOGTLE PLANT SITE FOLLOWING THE NRC PROCESS FOR THE ONGOING ASSESSMENT OF NATURAL HAZARDS INFORMATION DATED MAY 15, 2023

DISTRIBUTION:
PUBLIC
LPL2-1 R/F
RidsAcrs_MailCTR Resource
RidsNrrDorl Resource
RidsNrrDorlLpl2-1 Resource
RidsNrrLAKGoldstein Resource
RidsNrrPMVogtle Resource
RidsRgn2MailCenter Resource
LBauer, NRR
CMunson, NRR
EMiller, NRR

ADAMS Accession No.: ML23006A091 NRR-106

OFFICE	NRR/DORL/LPL2-1/PM	NRR/DORL/LPL2-1/LA	NRR/DEX/EXHB/BC
NAME	JLamb	KGoldstein	BHayes
DATE	04/07/2023	04/11/2023	04/11/2023
OFFICE	NRR/DORL/LPL2-1/BC	NRR/DEX/D	NRR/DORL/D
NAME	MMarkley	EBenner	BPham
DATE	04/12/2023	04/13/2023	04/13/2023
OFFICE	NRR/VPO/D	OGC - NLO	NRR/DORL/LPL2-1/PM
NAME	LNist (A)	DRoth	JLamb
DATE	05/04/2023	05/12/2023	05/15/2023

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