

Fermi (41.96° N, 83.26° E), Control Point Hazard

| SA (g) | AFE 0.5 Hz | AFE 1 Hz | AFE 2.5 Hz | AFE 5 Hz | AFE 10 Hz | AFE 25 Hz | AFE 100 Hz |
|----------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| 0.001000 | 4.752074e-03 | 7.824070e-03 | 1.142228e-02 | 1.205579e-02 | 1.216396e-02 | 1.201809e-02 | 1.128545e-02 |
| 0.001122 | 4.502037e-03 | 7.504474e-03 | 1.141801e-02 | 1.205579e-02 | 1.213958e-02 | 1.201151e-02 | 1.128545e-02 |
| 0.001259 | 4.258756e-03 | 7.120303e-03 | 1.135449e-02 | 1.205572e-02 | 1.206340e-02 | 1.192864e-02 | 1.127638e-02 |
| 0.001413 | 4.027696e-03 | 6.742130e-03 | 1.122577e-02 | 1.205435e-02 | 1.196419e-02 | 1.180967e-02 | 1.115079e-02 |
| 0.001585 | 3.808169e-03 | 6.369117e-03 | 1.103836e-02 | 1.204337e-02 | 1.184353e-02 | 1.166632e-02 | 1.089725e-02 |
| 0.001778 | 3.598071e-03 | 6.004357e-03 | 1.080568e-02 | 1.200326e-02 | 1.169852e-02 | 1.149810e-02 | 1.060651e-02 |
| 0.001995 | 3.397109e-03 | 5.649067e-03 | 1.053005e-02 | 1.191236e-02 | 1.152563e-02 | 1.130038e-02 | 1.028360e-02 |
| 0.002239 | 3.202329e-03 | 5.304810e-03 | 1.021999e-02 | 1.177843e-02 | 1.132319e-02 | 1.107267e-02 | 9.925287e-03 |
| 0.002512 | 3.013525e-03 | 4.971651e-03 | 9.881950e-03 | 1.162175e-02 | 1.108806e-02 | 1.081222e-02 | 9.533069e-03 |
| 0.002818 | 2.827398e-03 | 4.649453e-03 | 9.518324e-03 | 1.143780e-02 | 1.081830e-02 | 1.051804e-02 | 9.109386e-03 |
| 0.003162 | 2.644417e-03 | 4.338330e-03 | 9.130745e-03 | 1.122380e-02 | 1.051202e-02 | 1.018861e-02 | 8.656105e-03 |
| 0.003548 | 2.461586e-03 | 4.036711e-03 | 8.721449e-03 | 1.097807e-02 | 1.016952e-02 | 9.825371e-03 | 8.176452e-03 |
| 0.003981 | 2.279800e-03 | 3.744457e-03 | 8.292851e-03 | 1.069905e-02 | 9.790827e-03 | 9.429635e-03 | 7.675164e-03 |
| 0.004467 | 2.097254e-03 | 3.459232e-03 | 7.847594e-03 | 1.038512e-02 | 9.377870e-03 | 9.004150e-03 | 7.158392e-03 |
| 0.005012 | 1.915217e-03 | 3.181057e-03 | 7.388256e-03 | 1.003559e-02 | 8.933023e-03 | 8.552928e-03 | 6.632199e-03 |
| 0.005623 | 1.733768e-03 | 2.908037e-03 | 6.917620e-03 | 9.650674e-03 | 8.460215e-03 | 8.080101e-03 | 6.103569e-03 |
| 0.006310 | 1.554484e-03 | 2.640801e-03 | 6.438455e-03 | 9.231460e-03 | 7.964419e-03 | 7.592016e-03 | 5.579204e-03 |
| 0.007079 | 1.379250e-03 | 2.378989e-03 | 5.953821e-03 | 8.779632e-03 | 7.451338e-03 | 7.093778e-03 | 5.065942e-03 |
| 0.007943 | 1.209373e-03 | 2.123721e-03 | 5.467081e-03 | 8.298093e-03 | 6.927612e-03 | 6.592633e-03 | 4.569963e-03 |
| 0.008913 | 1.048024e-03 | 1.876786e-03 | 4.981825e-03 | 7.790697e-03 | 6.399525e-03 | 6.093368e-03 | 4.096651e-03 |
| 0.010000 | 8.960092e-04 | 1.639814e-03 | 4.502415e-03 | 7.262704e-03 | 5.874403e-03 | 5.602747e-03 | 3.650314e-03 |
| 0.011220 | 7.564957e-04 | 1.415996e-03 | 4.033244e-03 | 6.720282e-03 | 5.358195e-03 | 5.124746e-03 | 3.234087e-03 |
| 0.012589 | 6.292805e-04 | 1.206549e-03 | 3.579537e-03 | 6.170551e-03 | 4.857277e-03 | 4.664520e-03 | 2.850177e-03 |
| 0.014125 | 5.169280e-04 | 1.015592e-03 | 3.145841e-03 | 5.621038e-03 | 4.376198e-03 | 4.224533e-03 | 2.495250e-03 |
| 0.015849 | 4.180218e-04 | 8.442937e-04 | 2.737305e-03 | 5.079550e-03 | 3.919718e-03 | 3.807883e-03 | 2.159370e-03 |
| 0.017783 | 3.337698e-04 | 6.928926e-04 | 2.357537e-03 | 4.553641e-03 | 3.490205e-03 | 3.398114e-03 | 1.850343e-03 |
| 0.019953 | 2.624368e-04 | 5.607254e-04 | 2.010067e-03 | 4.049996e-03 | 3.090478e-03 | 2.992866e-03 | 1.578761e-03 |
| 0.022387 | 2.039509e-04 | 4.483098e-04 | 1.696734e-03 | 3.574387e-03 | 2.720995e-03 | 2.614956e-03 | 1.342269e-03 |
| 0.025119 | 1.560845e-04 | 3.535967e-04 | 1.419056e-03 | 3.131120e-03 | 2.377032e-03 | 2.271818e-03 | 1.137718e-03 |
| 0.028184 | 1.181193e-04 | 2.756934e-04 | 1.176761e-03 | 2.723256e-03 | 2.061195e-03 | 1.963010e-03 | 9.619017e-04 |
| 0.031623 | 8.811615e-05 | 2.123721e-04 | 9.683348e-04 | 2.352278e-03 | 1.776807e-03 | 1.687328e-03 | 8.115267e-04 |
| 0.035481 | 6.511160e-05 | 1.619553e-04 | 7.911166e-04 | 2.018737e-03 | 1.523666e-03 | 1.443078e-03 | 6.835089e-04 |
| 0.039811 | 4.750427e-05 | 1.220820e-04 | 6.422811e-04 | 1.721661e-03 | 1.300295e-03 | 1.228178e-03 | 5.748632e-04 |
| 0.044668 | 3.439902e-05 | 9.132284e-05 | 5.185189e-04 | 1.459534e-03 | 1.104557e-03 | 1.040526e-03 | 4.828774e-04 |
| 0.050119 | 2.465175e-05 | 6.783917e-05 | 4.166094e-04 | 1.230284e-03 | 9.342748e-04 | 8.777649e-04 | 4.050927e-04 |
| 0.056234 | 1.758360e-05 | 5.016212e-05 | 3.333870e-04 | 1.031934e-03 | 7.870927e-04 | 7.376027e-04 | 3.393818e-04 |
| 0.063096 | 1.246159e-05 | 3.696241e-05 | 2.659676e-04 | 8.616301e-04 | 6.606981e-04 | 6.176390e-04 | 2.838710e-04 |
| 0.070795 | 8.821894e-06 | 2.720741e-05 | 2.116898e-04 | 7.164887e-04 | 5.527829e-04 | 5.155861e-04 | 2.360850e-04 |
| 0.079433 | 6.237522e-06 | 2.004405e-05 | 1.682131e-04 | 5.935781e-04 | 4.611415e-04 | 4.292752e-04 | 1.948254e-04 |
| 0.089125 | 4.424125e-06 | 1.480271e-05 | 1.335211e-04 | 4.901482e-04 | 3.836935e-04 | 3.568824e-04 | 1.603195e-04 |
| 0.100000 | 3.152515e-06 | 1.097988e-05 | 1.059358e-04 | 4.035708e-04 | 3.185362e-04 | 2.968756e-04 | 1.315939e-04 |
| 0.112202 | 2.261777e-06 | 8.185952e-06 | 8.405059e-05 | 3.314697e-04 | 2.640392e-04 | 2.474474e-04 | 1.077166e-04 |
| 0.125893 | 1.638089e-06 | 6.139878e-06 | 6.670815e-05 | 2.716599e-04 | 2.187088e-04 | 2.063615e-04 | 8.787308e-05 |
| 0.141254 | 1.197157e-06 | 4.632026e-06 | 5.297129e-05 | 2.222077e-04 | 1.809924e-04 | 1.718661e-04 | 7.133142e-05 |
| 0.158489 | 8.851490e-07 | 3.515094e-06 | 4.208761e-05 | 1.813887e-04 | 1.495537e-04 | 1.428672e-04 | 5.765987e-05 |

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|----------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| 0.177828 | 6.604232e-07 | 2.681450e-06 | 3.346201e-05 | 1.477285e-04 | 1.233739e-04 | 1.185275e-04 | 4.644470e-05 |
| 0.199526 | 4.978136e-07 | 2.054288e-06 | 2.661611e-05 | 1.200429e-04 | 1.016064e-04 | 9.813346e-05 | 3.725776e-05 |
| 0.223872 | 3.776500e-07 | 1.579520e-06 | 2.117377e-05 | 9.738987e-05 | 8.351400e-05 | 8.105621e-05 | 2.974546e-05 |
| 0.251189 | 2.885172e-07 | 1.217069e-06 | 1.684289e-05 | 7.887961e-05 | 6.846507e-05 | 6.675736e-05 | 2.359048e-05 |
| 0.281838 | 2.213166e-07 | 9.386864e-07 | 1.339209e-05 | 6.374927e-05 | 5.597863e-05 | 5.480638e-05 | 1.856313e-05 |
| 0.316228 | 1.701230e-07 | 7.241412e-07 | 1.063996e-05 | 5.138421e-05 | 4.564983e-05 | 4.484146e-05 | 1.451333e-05 |
| 0.354813 | 1.317469e-07 | 5.584740e-07 | 8.443316e-06 | 4.131825e-05 | 3.711667e-05 | 3.654049e-05 | 1.126994e-05 |
| 0.398107 | 1.025395e-07 | 4.299392e-07 | 6.688094e-06 | 3.315016e-05 | 3.006101e-05 | 2.962884e-05 | 8.677101e-06 |
| 0.446684 | 7.996345e-08 | 3.303793e-07 | 5.285962e-06 | 2.652141e-05 | 2.423410e-05 | 2.388842e-05 | 6.621253e-06 |
| 0.501187 | 6.206508e-08 | 2.531411e-07 | 4.166841e-06 | 2.113735e-05 | 1.944591e-05 | 1.914100e-05 | 5.007490e-06 |
| 0.562341 | 4.781909e-08 | 1.934784e-07 | 3.275420e-06 | 1.676022e-05 | 1.552018e-05 | 1.522879e-05 | 3.751107e-06 |
| 0.630957 | 3.675639e-08 | 1.476200e-07 | 2.566740e-06 | 1.321615e-05 | 1.230175e-05 | 1.201566e-05 | 2.785632e-06 |
| 0.707946 | 2.820961e-08 | 1.125154e-07 | 2.004110e-06 | 1.036490e-05 | 9.675944e-06 | 9.390274e-06 | 2.052600e-06 |
| 0.794328 | 2.153793e-08 | 8.609653e-08 | 1.558158e-06 | 8.077863e-06 | 7.542944e-06 | 7.260813e-06 | 1.499640e-06 |
| 0.891251 | 1.630144e-08 | 6.614214e-08 | 1.205138e-06 | 6.249432e-06 | 5.816913e-06 | 5.549807e-06 | 1.085821e-06 |
| 1.000000 | 1.219598e-08 | 5.071482e-08 | 9.263105e-07 | 4.795366e-06 | 4.435132e-06 | 4.190735e-06 | 7.791132e-07 |
| 1.122019 | 9.033515e-09 | 3.854181e-08 | 7.070264e-07 | 3.646693e-06 | 3.341133e-06 | 3.124074e-06 | 5.539355e-07 |
| 1.258925 | 6.597816e-09 | 2.920489e-08 | 5.345856e-07 | 2.746560e-06 | 2.479515e-06 | 2.296924e-06 | 3.904431e-07 |
| 1.412538 | 4.750004e-09 | 2.204395e-08 | 3.990447e-07 | 2.050253e-06 | 1.808554e-06 | 1.664028e-06 | 2.728812e-07 |
| 1.584893 | 3.370177e-09 | 1.655307e-08 | 2.922517e-07 | 1.513682e-06 | 1.292976e-06 | 1.186659e-06 | 1.891004e-07 |
| 1.778279 | 2.359698e-09 | 1.236357e-08 | 2.103252e-07 | 1.102198e-06 | 9.040380e-07 | 8.319792e-07 | 1.296877e-07 |
| 1.995262 | 1.626813e-09 | 9.174331e-09 | 1.489563e-07 | 7.924747e-07 | 6.172792e-07 | 5.726539e-07 | 8.743241e-08 |
| 2.238721 | 1.102213e-09 | 6.746329e-09 | 1.035793e-07 | 5.627021e-07 | 4.107883e-07 | 3.850917e-07 | 5.720872e-08 |
| 2.511886 | 7.292165e-10 | 4.896333e-09 | 6.981121e-08 | 3.945860e-07 | 2.648437e-07 | 2.489279e-07 | 3.566382e-08 |
| 2.818383 | 4.675320e-10 | 3.487395e-09 | 4.439112e-08 | 2.727687e-07 | 1.642603e-07 | 1.492935e-07 | 2.043524e-08 |
| 3.162278 | 3.139656e-10 | 2.543497e-09 | 3.025861e-08 | 1.984680e-07 | 1.073671e-07 | 9.193142e-08 | 1.176294e-08 |
| 3.548134 | 1.603992e-10 | 1.599599e-09 | 1.612611e-08 | 1.241673e-07 | 5.047395e-08 | 3.456937e-08 | 3.090636e-09 |

Fermi (41.96° N, 83.26° E), Response Spectra

| Frequency (Hz) | UHRS 1E-4 (g) | GMRS (g) | UHRS 1E-5 (g) |
|----------------|---------------|----------|---------------|
| 0.500000 | 0.030089 | 0.034619 | 0.067898 |
| 0.561009 | 0.031817 | 0.036987 | 0.072729 |
| 0.629463 | 0.033671 | 0.039538 | 0.077940 |
| 0.706269 | 0.035740 | 0.042329 | 0.083623 |
| 0.792447 | 0.037967 | 0.045322 | 0.089710 |
| 0.889140 | 0.040405 | 0.048581 | 0.096336 |
| 0.997631 | 0.043032 | 0.052134 | 0.103577 |
| 1.000000 | 0.043089 | 0.052211 | 0.103733 |
| 1.122019 | 0.046580 | 0.059313 | 0.119316 |
| 1.258925 | 0.050703 | 0.067424 | 0.137110 |
| 1.412538 | 0.055641 | 0.076667 | 0.157297 |
| 1.584893 | 0.061427 | 0.087216 | 0.180289 |
| 1.778279 | 0.068748 | 0.099871 | 0.207632 |
| 1.995262 | 0.077612 | 0.114661 | 0.239387 |
| 2.238721 | 0.088898 | 0.133135 | 0.278902 |
| 2.500000 | 0.102910 | 0.155372 | 0.326147 |
| 2.805046 | 0.124155 | 0.193016 | 0.408142 |

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|------------|----------|----------|----------|
| 3.147313 | 0.149497 | 0.235661 | 0.500047 |
| 3.531344 | 0.175134 | 0.276295 | 0.586387 |
| 3.962233 | 0.197793 | 0.310101 | 0.657110 |
| 4.445698 | 0.212680 | 0.331024 | 0.700169 |
| 4.988156 | 0.220636 | 0.340908 | 0.719761 |
| 5.000000 | 0.220770 | 0.341062 | 0.720059 |
| 5.610092 | 0.216436 | 0.338429 | 0.716660 |
| 6.294627 | 0.209013 | 0.330564 | 0.702000 |
| 7.062688 | 0.200901 | 0.320859 | 0.683059 |
| 7.924466 | 0.195291 | 0.314487 | 0.670878 |
| 8.891397 | 0.195409 | 0.316237 | 0.675445 |
| 9.976312 | 0.201245 | 0.325944 | 0.696320 |
| 10.000000 | 0.201402 | 0.326194 | 0.696851 |
| 11.220185 | 0.200595 | 0.326010 | 0.697061 |
| 12.589254 | 0.202493 | 0.329372 | 0.704396 |
| 14.125375 | 0.204392 | 0.332484 | 0.711065 |
| 15.848932 | 0.204012 | 0.331976 | 0.710036 |
| 17.782794 | 0.200694 | 0.327150 | 0.700022 |
| 19.952623 | 0.197883 | 0.322875 | 0.691037 |
| 22.387211 | 0.197247 | 0.321326 | 0.687450 |
| 25.000000 | 0.196020 | 0.317732 | 0.678909 |
| 28.050461 | 0.198888 | 0.321096 | 0.685414 |
| 31.473135 | 0.203237 | 0.326712 | 0.696654 |
| 35.313439 | 0.206708 | 0.330587 | 0.704010 |
| 39.622330 | 0.206778 | 0.329176 | 0.700197 |
| 44.456985 | 0.205944 | 0.325696 | 0.691654 |
| 49.881558 | 0.201892 | 0.317854 | 0.674243 |
| 55.968028 | 0.192155 | 0.300903 | 0.637428 |
| 62.797161 | 0.179673 | 0.279835 | 0.591995 |
| 70.459573 | 0.165066 | 0.255277 | 0.539090 |
| 79.056942 | 0.150460 | 0.230400 | 0.485355 |
| 88.703347 | 0.137458 | 0.209022 | 0.439549 |
| 99.526793 | 0.127119 | 0.192913 | 0.405473 |
| 100.000000 | 0.117018 | 0.177866 | 0.373993 |