

# Duane Arnold (42.10° N, 91.77° 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	3.939187e-03	5.686751e-03	7.952957e-03	8.402781e-03	8.480060e-03	8.357761e-03	7.802708e-03
0.001122	3.789654e-03	5.450722e-03	7.840968e-03	8.365452e-03	8.432601e-03	8.322970e-03	7.695047e-03
0.001259	3.643183e-03	5.219623e-03	7.685966e-03	8.301327e-03	8.365078e-03	8.246928e-03	7.518302e-03
0.001413	3.502233e-03	4.992575e-03	7.504728e-03	8.205261e-03	8.280602e-03	8.145256e-03	7.310718e-03
0.001585	3.366449e-03	4.769642e-03	7.305584e-03	8.089303e-03	8.179121e-03	8.027200e-03	7.084297e-03
0.001778	3.234181e-03	4.552602e-03	7.089365e-03	7.955235e-03	8.059302e-03	7.891031e-03	6.838367e-03
0.001995	3.105260e-03	4.341574e-03	6.857551e-03	7.801606e-03	7.920793e-03	7.735680e-03	6.574754e-03
0.002239	2.977445e-03	4.137153e-03	6.611992e-03	7.627648e-03	7.762222e-03	7.560795e-03	6.295322e-03
0.002512	2.850551e-03	3.939066e-03	6.354039e-03	7.433334e-03	7.583097e-03	7.366038e-03	6.001512e-03
0.002818	2.721941e-03	3.746712e-03	6.085982e-03	7.218621e-03	7.382749e-03	7.151245e-03	5.694668e-03
0.003162	2.591868e-03	3.559912e-03	5.809886e-03	6.984256e-03	7.161875e-03	6.916886e-03	5.376777e-03
0.003548	2.457621e-03	3.376747e-03	5.528243e-03	6.731217e-03	6.920772e-03	6.663844e-03	5.049223e-03
0.003981	2.319814e-03	3.197117e-03	5.242804e-03	6.460979e-03	6.660557e-03	6.393202e-03	4.713788e-03
0.004467	2.176339e-03	3.018030e-03	4.955324e-03	6.174949e-03	6.382038e-03	6.106183e-03	4.371890e-03
0.005012	2.028267e-03	2.839682e-03	4.667004e-03	5.874745e-03	6.086693e-03	5.804222e-03	4.025585e-03
0.005623	1.874883e-03	2.658753e-03	4.378333e-03	5.561754e-03	5.775728e-03	5.488987e-03	3.677480e-03
0.006310	1.717842e-03	2.476069e-03	4.089976e-03	5.237669e-03	5.451097e-03	5.162452e-03	3.330583e-03
0.007079	1.558291e-03	2.289082e-03	3.801150e-03	4.903738e-03	5.114492e-03	4.826928e-03	2.989175e-03
0.007943	1.398338e-03	2.099247e-03	3.512183e-03	4.561725e-03	4.768206e-03	4.484976e-03	2.656859e-03
0.008913	1.240144e-03	1.906166e-03	3.222155e-03	4.213236e-03	4.414932e-03	4.139629e-03	2.338807e-03
0.010000	1.085533e-03	1.712104e-03	2.932052e-03	3.860681e-03	4.057714e-03	3.794249e-03	2.038463e-03
0.011220	9.379521e-04	1.519046e-03	2.642357e-03	3.506876e-03	3.700391e-03	3.452545e-03	1.760114e-03
0.012589	7.985012e-04	1.329456e-03	2.355225e-03	3.155192e-03	3.346378e-03	3.118201e-03	1.506283e-03
0.014125	6.706753e-04	1.147793e-03	2.073900e-03	2.810118e-03	3.000731e-03	2.794972e-03	1.278669e-03
0.015849	5.542802e-04	9.749740e-04	1.801187e-03	2.475493e-03	2.666439e-03	2.486144e-03	1.077042e-03
0.017783	4.517313e-04	8.156420e-04	1.541959e-03	2.156488e-03	2.348347e-03	2.196381e-03	9.011462e-04
0.019953	3.621783e-04	6.706696e-04	1.299787e-03	1.856823e-03	2.049339e-03	1.928178e-03	7.494100e-04
0.022387	2.864385e-04	5.431345e-04	1.079332e-03	1.580878e-03	1.772935e-03	1.681910e-03	6.201534e-04
0.025119	2.226490e-04	4.316577e-04	8.819335e-04	1.330632e-03	1.520415e-03	1.457616e-03	5.109477e-04
0.028184	1.706797e-04	3.377581e-04	7.097116e-04	1.108243e-03	1.293453e-03	1.255321e-03	4.195004e-04
0.031623	1.286028e-04	2.593316e-04	5.619454e-04	9.133941e-04	1.091529e-03	1.074649e-03	3.434259e-04
0.035481	9.562444e-05	1.962098e-04	4.385625e-04	7.457624e-04	9.145137e-04	9.147970e-04	2.805728e-04
0.039811	6.988139e-05	1.456752e-04	3.371788e-04	6.033159e-04	7.606820e-04	7.745878e-04	2.288969e-04
0.044668	5.042482e-05	1.066758e-04	2.559678e-04	4.842054e-04	6.287524e-04	6.525714e-04	1.866093e-04
0.050119	3.576609e-05	7.670158e-05	1.918469e-04	3.856929e-04	5.164890e-04	5.471720e-04	1.521233e-04
0.056234	2.506791e-05	5.446757e-05	1.423559e-04	3.052996e-04	4.220421e-04	4.567586e-04	1.240734e-04
0.063096	1.728153e-05	3.803149e-05	1.046347e-04	2.402812e-04	3.431242e-04	3.797226e-04	1.012742e-04
0.070795	1.178657e-05	2.628280e-05	7.641236e-05	1.882570e-04	2.778156e-04	3.145062e-04	8.252895e-05
0.079433	7.916389e-06	1.790338e-05	5.550215e-05	1.469263e-04	2.240812e-04	2.596396e-04	6.720471e-05
0.089125	5.270256e-06	1.210831e-05	4.022896e-05	1.143581e-04	1.802244e-04	2.137518e-04	5.478903e-05
0.100000	3.464111e-06	8.106975e-06	2.915840e-05	8.882854e-05	1.446044e-04	1.755916e-04	4.472853e-05
0.112202	2.264178e-06	5.414612e-06	2.119303e-05	6.892380e-05	1.158596e-04	1.440295e-04	3.654903e-05
0.125893	1.467740e-06	3.604295e-06	1.547870e-05	5.345982e-05	9.274271e-05	1.180319e-04	2.987800e-05
0.141254	9.508329e-07	2.407828e-06	1.137594e-05	4.148708e-05	7.421227e-05	9.662942e-05	2.441940e-05
0.158489	6.155740e-07	1.617714e-06	8.427068e-06	3.223843e-05	5.939472e-05	7.900514e-05	1.993557e-05

0.177828	4.009467e-07	1.097629e-06	6.290506e-06	2.509557e-05	4.756487e-05	6.454861e-05	1.624793e-05
0.199526	2.634852e-07	7.549696e-07	4.733104e-06	1.957568e-05	3.812882e-05	5.274856e-05	1.321282e-05
0.223872	1.752787e-07	5.259390e-07	3.583316e-06	1.529957e-05	3.059597e-05	4.313382e-05	1.071512e-05
0.251189	1.187529e-07	3.730601e-07	2.728223e-06	1.197957e-05	2.457498e-05	3.529417e-05	8.660291e-06
0.281838	8.172447e-08	2.678216e-07	2.084589e-06	9.391917e-06	1.974993e-05	2.888959e-05	6.972876e-06
0.316228	5.746090e-08	1.952840e-07	1.596774e-06	7.368929e-06	1.587592e-05	2.364350e-05	5.590153e-06
0.354813	4.093003e-08	1.434438e-07	1.223872e-06	5.781215e-06	1.275649e-05	1.933743e-05	4.460647e-06
0.398107	2.966976e-08	1.063698e-07	9.376144e-07	4.531911e-06	1.024015e-05	1.579856e-05	3.540713e-06
0.446684	2.166485e-08	7.907019e-08	7.170516e-07	3.546652e-06	8.206632e-06	1.288742e-05	2.795079e-06
0.501187	1.597188e-08	5.895502e-08	5.468738e-07	2.768715e-06	6.561847e-06	1.049113e-05	2.193103e-06
0.562341	1.179365e-08	4.389574e-08	4.156197e-07	2.154494e-06	5.231597e-06	8.518197e-06	1.709843e-06
0.630957	8.725652e-09	3.261997e-08	3.144741e-07	1.669876e-06	4.156193e-06	6.894178e-06	1.323730e-06
0.707946	6.439341e-09	2.414484e-08	2.367869e-07	1.288409e-06	3.288623e-06	5.559029e-06	1.017397e-06
0.794328	4.735516e-09	1.777702e-08	1.772623e-07	9.888702e-07	2.589858e-06	4.463989e-06	7.756857e-07
0.891251	3.464552e-09	1.301461e-08	1.319004e-07	7.546787e-07	2.029231e-06	3.568320e-06	5.865118e-07
1.000000	2.517136e-09	9.455853e-09	9.745923e-08	5.722845e-07	1.580772e-06	2.837988e-06	4.393854e-07
1.122019	1.816300e-09	6.822610e-09	7.149546e-08	4.310629e-07	1.223989e-06	2.244699e-06	3.261603e-07
1.258925	1.298388e-09	4.876350e-09	5.201433e-08	3.222707e-07	9.412325e-07	1.764786e-06	2.396127e-07
1.412538	9.208484e-10	3.457972e-09	3.752750e-08	2.390895e-07	7.186124e-07	1.378395e-06	1.741881e-07
1.584893	6.457845e-10	2.424938e-09	2.681349e-08	1.758583e-07	5.442269e-07	1.068829e-06	1.251247e-07
1.778279	4.487078e-10	1.684793e-09	1.897208e-08	1.282040e-07	4.086675e-07	8.222084e-07	8.876139e-08
1.995262	3.078755e-10	1.155893e-09	1.327610e-08	9.254469e-08	3.039712e-07	6.270404e-07	6.208352e-08
2.238721	2.090863e-10	7.849175e-10	9.188279e-09	6.612409e-08	2.238588e-07	4.736117e-07	4.278870e-08
2.511886	1.398516e-10	5.249900e-10	6.275314e-09	4.670734e-08	1.629624e-07	3.538549e-07	2.901098e-08
2.818383	9.233324e-11	3.465718e-10	4.226479e-09	3.259309e-08	1.171332e-07	2.611122e-07	1.934028e-08
3.162278	5.979810e-11	2.244204e-10	2.798539e-09	2.242320e-08	8.293426e-08	1.898910e-07	1.262874e-08
3.548134	3.801464e-11	1.426302e-10	1.818498e-09	1.518647e-08	5.769423e-08	1.357070e-07	8.024941e-09
3.981072	2.346270e-11	8.800389e-11	1.153034e-09	1.009217e-08	3.925286e-08	9.492261e-08	4.933872e-09
4.466836	1.413746e-11	5.300742e-11	7.126537e-10	6.560811e-09	2.607056e-08	6.466687e-08	2.934177e-09
5.011872	8.161632e-12	3.059299e-11	4.259356e-10	4.147058e-09	1.677049e-08	4.263750e-08	1.660341e-09
5.623413	5.012378e-12	1.878678e-11	2.737671e-10	2.790751e-09	1.121728e-08	2.906274e-08	1.006203e-09
6.309573	1.863124e-12	6.980572e-12	1.215985e-10	1.434443e-09	5.664070e-09	1.548798e-08	3.520661e-10

## Duane Arnold (42.10° N, 91.77° E), Response Spectra

Frequency (Hz)	UHRS 1E-4 (g)	GMRS (g)	UHRS 1E-5 (g)
0.500000	0.034870	0.038297	0.074242
0.561009	0.036501	0.039946	0.077372
0.629463	0.038196	0.041640	0.080573
0.706269	0.039983	0.043375	0.083829
0.792447	0.041796	0.045157	0.087184
0.889140	0.043702	0.046985	0.090602
0.997631	0.045647	0.048847	0.094082
1.000000	0.045687	0.048886	0.094155
1.122019	0.047077	0.050893	0.098273
1.258925	0.048665	0.053177	0.102957
1.412538	0.050515	0.055813	0.108361
1.584893	0.052593	0.058793	0.114482

1.778279	0.054954	0.062158	0.121391
1.995262	0.057622	0.065984	0.129259
2.238721	0.060734	0.070429	0.138401
2.500000	0.064151	0.075297	0.148417
2.805046	0.068405	0.083704	0.166714
3.147313	0.073330	0.093136	0.187237
3.531344	0.078764	0.103302	0.209345
3.962233	0.084424	0.113747	0.232070
4.445698	0.089796	0.123657	0.253671
4.988156	0.094744	0.132785	0.273596
5.000000	0.094847	0.132970	0.273999
5.610092	0.097430	0.139882	0.289962
6.294627	0.099796	0.146466	0.305283
7.062688	0.102378	0.153280	0.321081
7.924466	0.105909	0.161410	0.339618
8.891397	0.111795	0.173087	0.365626
9.976312	0.120867	0.189747	0.402210
10.000000	0.121080	0.190131	0.403051
11.220185	0.126516	0.200779	0.426748
12.589254	0.131394	0.210875	0.449467
14.125375	0.133895	0.217416	0.464765
15.848932	0.135071	0.222104	0.476285
17.782794	0.136309	0.227178	0.488808
19.952623	0.137742	0.232855	0.502806
22.387211	0.138494	0.237489	0.514644
25.000000	0.138322	0.236925	0.513276
28.050461	0.136659	0.233706	0.506104
31.473135	0.133711	0.228171	0.493850
35.313439	0.130162	0.221529	0.479157
39.622330	0.126489	0.214764	0.464248
44.456985	0.122515	0.207636	0.448634
49.881558	0.118455	0.200809	0.433910
55.968028	0.112501	0.190698	0.412054
62.797161	0.105027	0.178102	0.384877
70.459573	0.096231	0.163123	0.352474
79.056942	0.086912	0.147189	0.317970
88.703347	0.077769	0.131569	0.284153
99.526793	0.069955	0.118306	0.255484
100.000000	0.063547	0.107584	0.232392