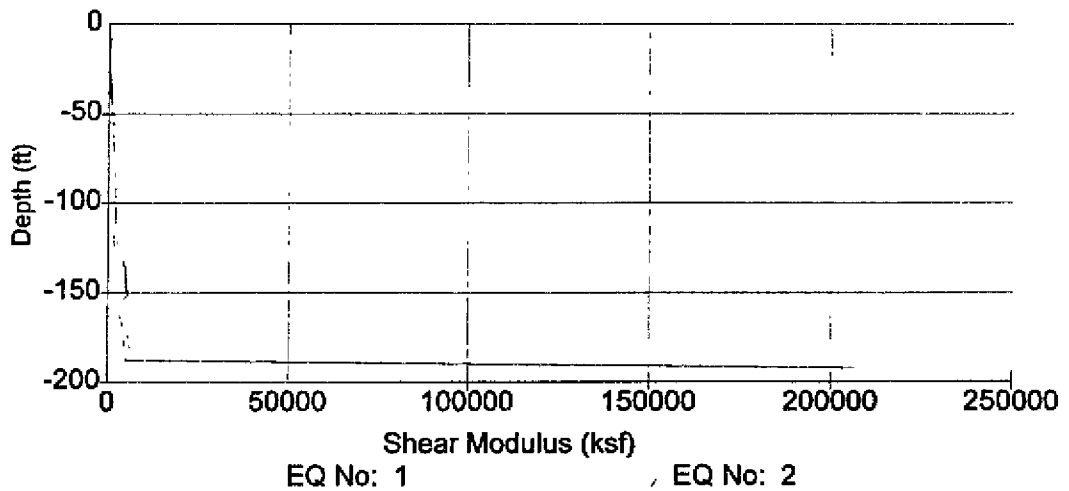


Effective Shear Strain (%)

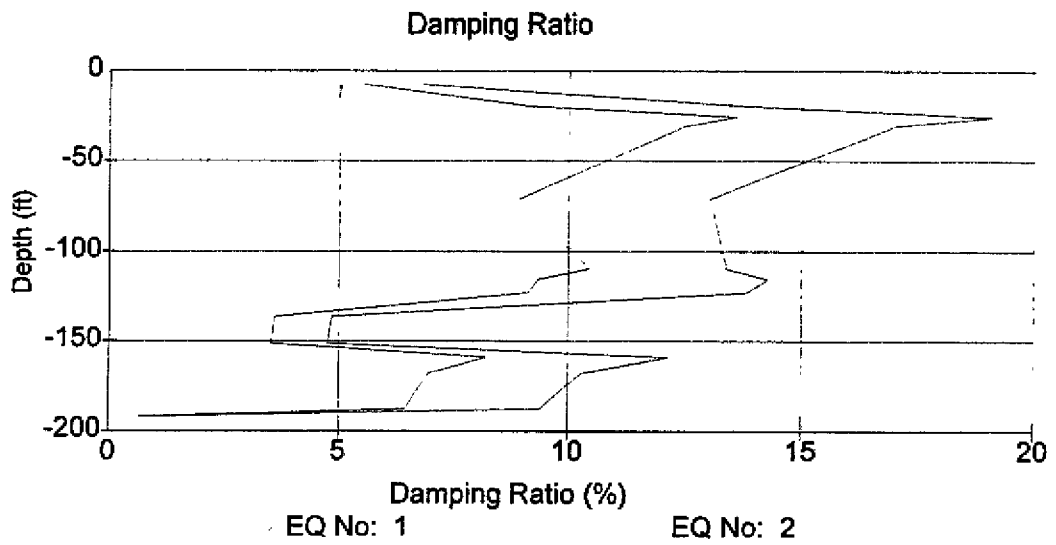
Depth (ft)	EQ No. 1	EQ No. 2
-7.50	0.0360	0.0180
-19.50	0.3145	0.1036
-25.50	0.2194	0.0702
-30.50	0.1398	0.0555
-71.00	0.0623	0.0261
-109.50	0.0559	0.0258
-115.50	0.0807	0.0284
-123.00	0.0732	0.0271
-136.50	0.0265	0.0146
-151.50	0.0253	0.0141
-159.00	0.0515	0.0223
-168.00	0.0348	0.0162
-178.50	0.0312	0.0148
-187.50	0.0287	0.0140
-192.00	0.0007	0.0004

Shear Modulus



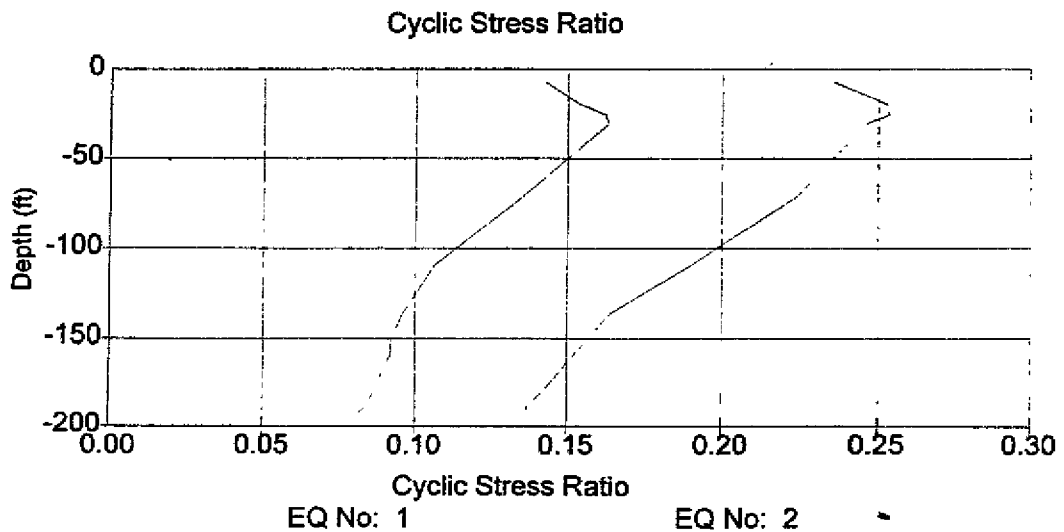
Shear Modulus (ksf)

Depth (ft)	EQ No: 1	EQ No: 2
-7.50	449.80	543.65
-19.50	124.68	230.13
-25.50	207.52	414.59
-30.50	357.96	597.41
-71.00	1505.93	2173.86
-109.50	2116.56	2563.87
-115.50	1494.27	2397.88
-123.00	1677.53	2594.85
-136.50	4770.15	5052.62
-151.50	5266.48	5572.26
-159.00	2653.68	3693.39
-168.00	4039.92	5253.09
-178.50	4620.52	5906.30
-187.50	5100.23	6421.50
-192.00	205306.50	206855.90



Damping Ratio (%)

Depth (ft)	EQ No: 1	EQ No: 2
-7.50	6.79	5.52
-19.50	13.77	9.13
-25.50	19.09	13.61
-30.50	16.94	12.50
-71.00	13.04	8.94
-109.50	13.40	10.45
-115.50	14.28	9.35
-123.00	13.82	9.13
-136.50	4.84	3.60
-151.50	4.75	3.52
-159.00	12.14	8.22
-168.00	10.29	6.96
-178.50	9.79	6.67
-187.50	9.40	6.46
-192.00	0.75	0.67



Cyclic Stress Ratio

Depth (ft)	EQ No. 1	EQ No. 2
-7.50	0.2359	0.1427
-19.50	0.2529	0.1538
-25.50	0.2535	0.1620
-30.50	0.2461	0.1631
-71.00	0.2245	0.1356
-109.50	0.1898	0.1062
-115.50	0.1842	0.1040
-123.00	0.1765	0.1011
-136.50	0.1638	0.0958
-151.50	0.1560	0.0920
-159.00	0.1522	0.0919
-168.00	0.1479	0.0893
-178.50	0.1427	0.0866
-187.50	0.1374	0.0843
-192.00	0.1361	0.0815

5. Other Parameters

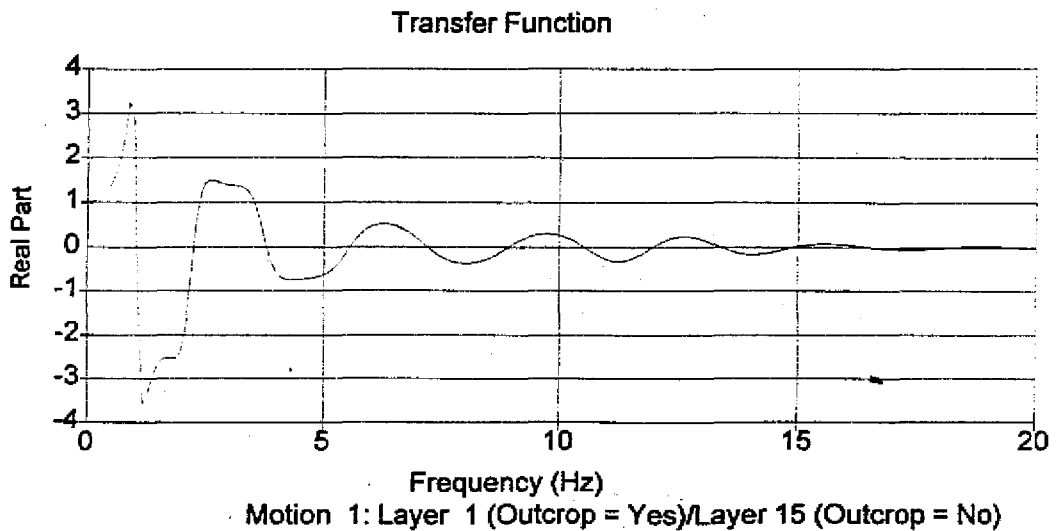
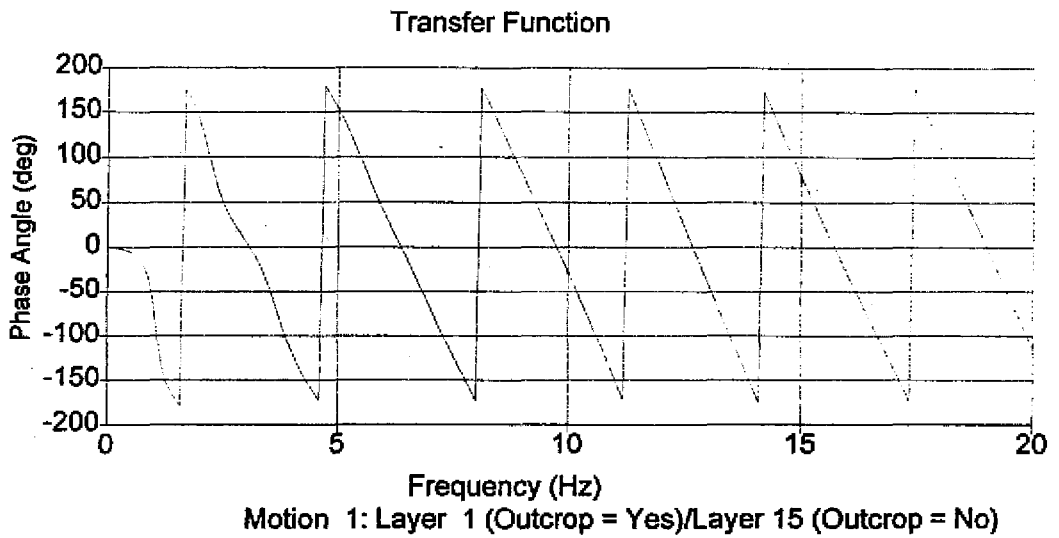
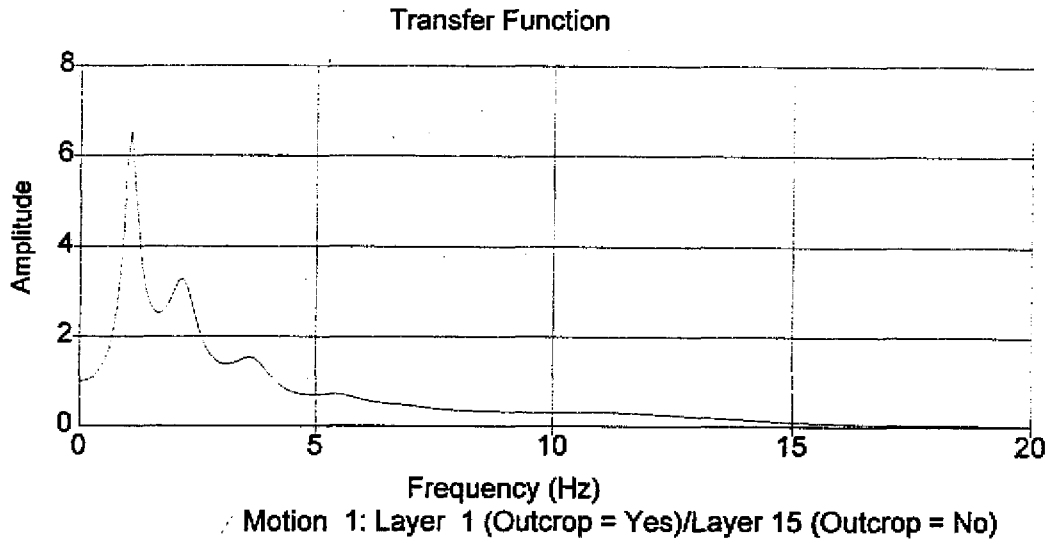
Motion	Layer: 1 - EQ No: 1 - Outcrop: Yes
Peak Acceleration (g):	0.3716
Peak Velocity (cm/sec):	36.5
Peak Displacement (cm):	5.4
RMS Acceleration (g):	0.0755
Arias Intensity (cm/sec):	195.7
Response Spectrum Intensity (g ²):	0.0057
Predominant Period (sec):	0.85
Bracketed Duration (sec):	21.08

Motion	Layer: 1 - EQ No: 2 - Outcrop: Yes
Peak Acceleration (g):	0.2254
Peak Velocity (cm/sec):	25.7
Peak Displacement (cm):	5.8
RMS Acceleration (g):	0.0694
Arias Intensity (cm/sec):	43.6
Response Spectrum Intensity (g ²):	0.0048
Predominant Period (sec):	0.73
Bracketed Duration (sec):	5.20

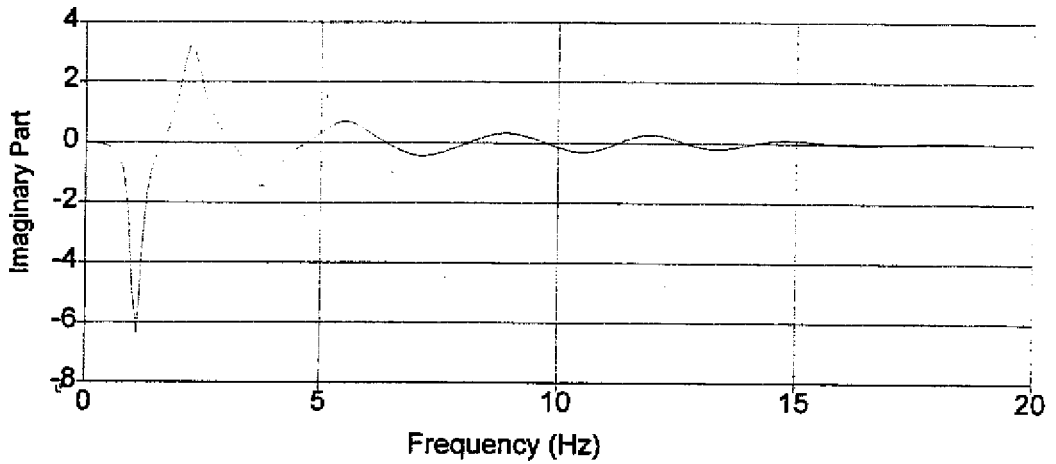
Motion	Layer: 2 - EQ No: 1 - Outcrop: No
Peak Acceleration (g):	0.3273
Peak Velocity (cm/sec):	35.0
Peak Displacement (cm):	5.3
RMS Acceleration (g):	0.0738
Arias Intensity (cm/sec):	173.7
Response Spectrum Intensity (g ²):	0.0054
Predominant Period (sec):	0.85
Bracketed Duration (sec):	19.44

Motion	Layer: 2 - EQ No: 2 - Outcrop: No
Peak Acceleration (g):	0.2018
Peak Velocity (cm/sec):	24.3
Peak Displacement (cm):	5.7
RMS Acceleration (g):	0.0646
Arias Intensity (cm/sec):	37.8
Response Spectrum Intensity (g ²):	0.0042
Predominant Period (sec):	0.73
Bracketed Duration (sec):	5.18

6. Transfer Function

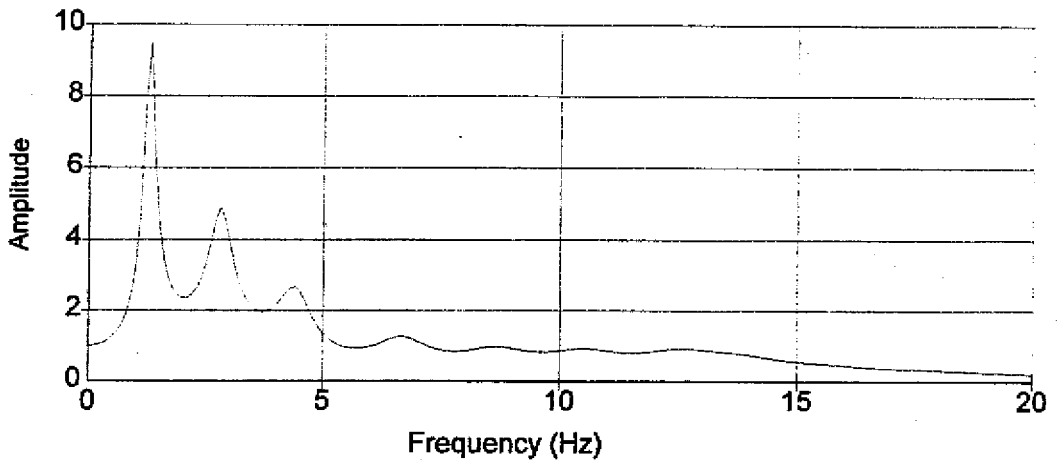


Transfer Function



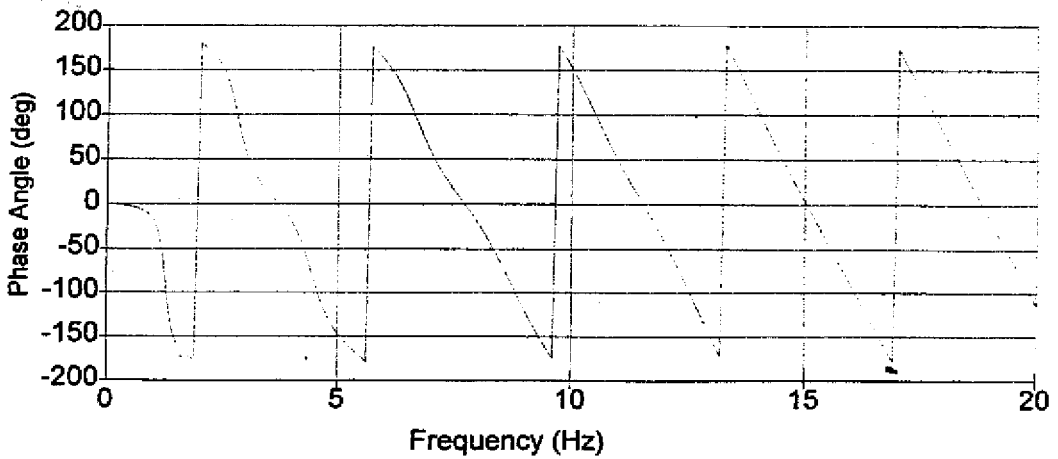
Motion 1: Layer 1 (Outcrop = Yes)/Layer 15 (Outcrop = No)

Transfer Function



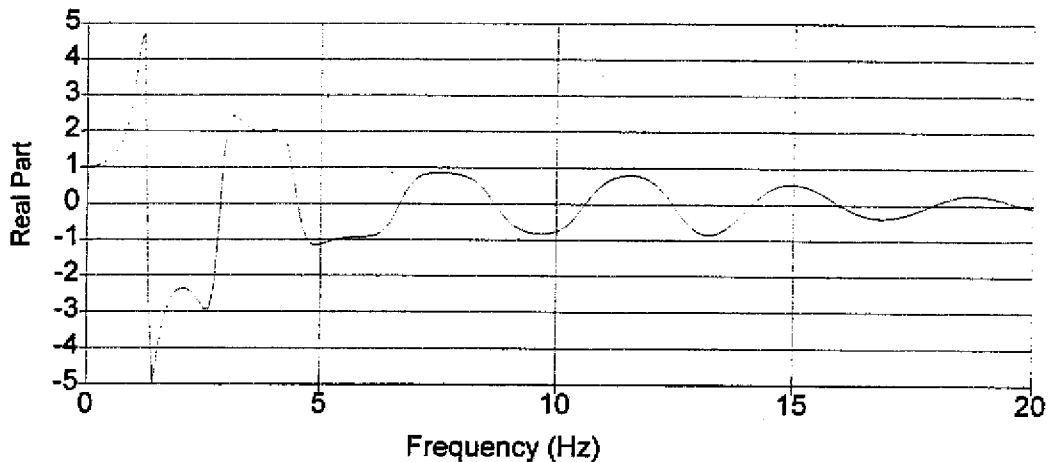
Motion 2: Layer 1 (Outcrop = Yes)/Layer 15 (Outcrop = No)

Transfer Function



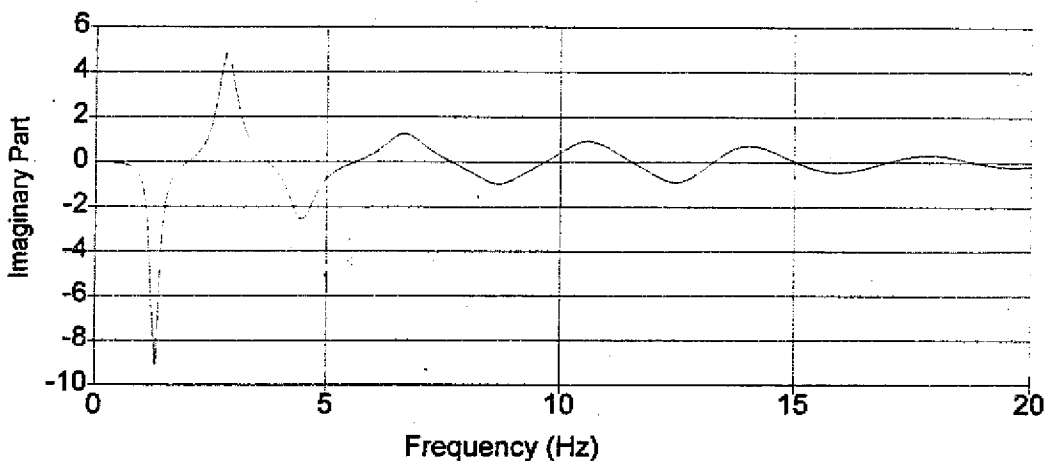
Motion 2: Layer 1 (Outcrop = Yes)/Layer 15 (Outcrop = No)

Transfer Function



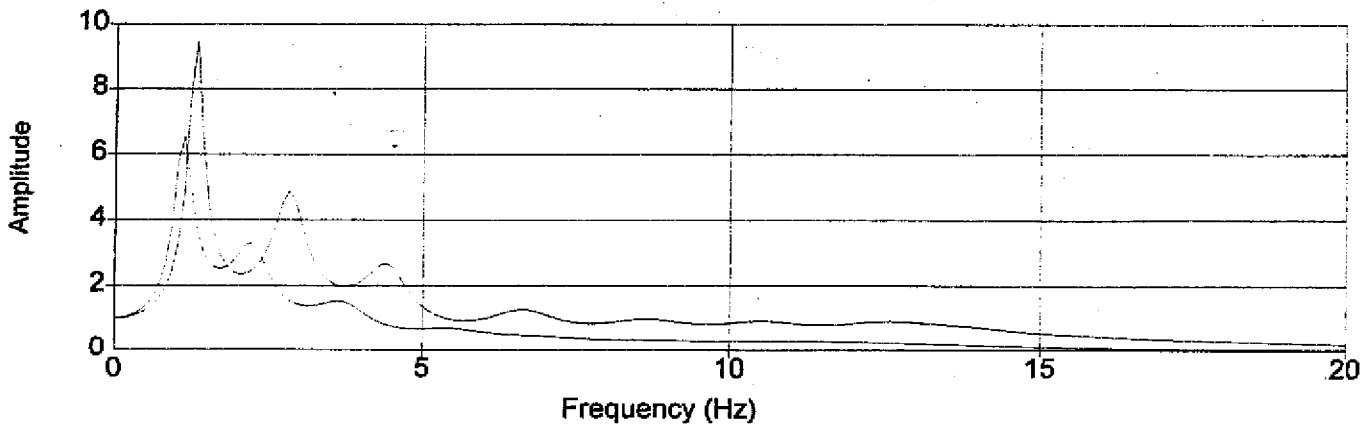
Motion 2: Layer 1 (Outcrop = Yes)/Layer 15 (Outcrop = No)

Transfer Function



Motion 2: Layer 1 (Outcrop = Yes)/Layer 15 (Outcrop = No)

Transfer Function



Motion 1: Layer 1 (Outcrop = Yes)/Layer 15 (Outcrop = No) Motion 2: Layer 1 (Outcrop = Yes)/Layer 15 (Outcrop = No)

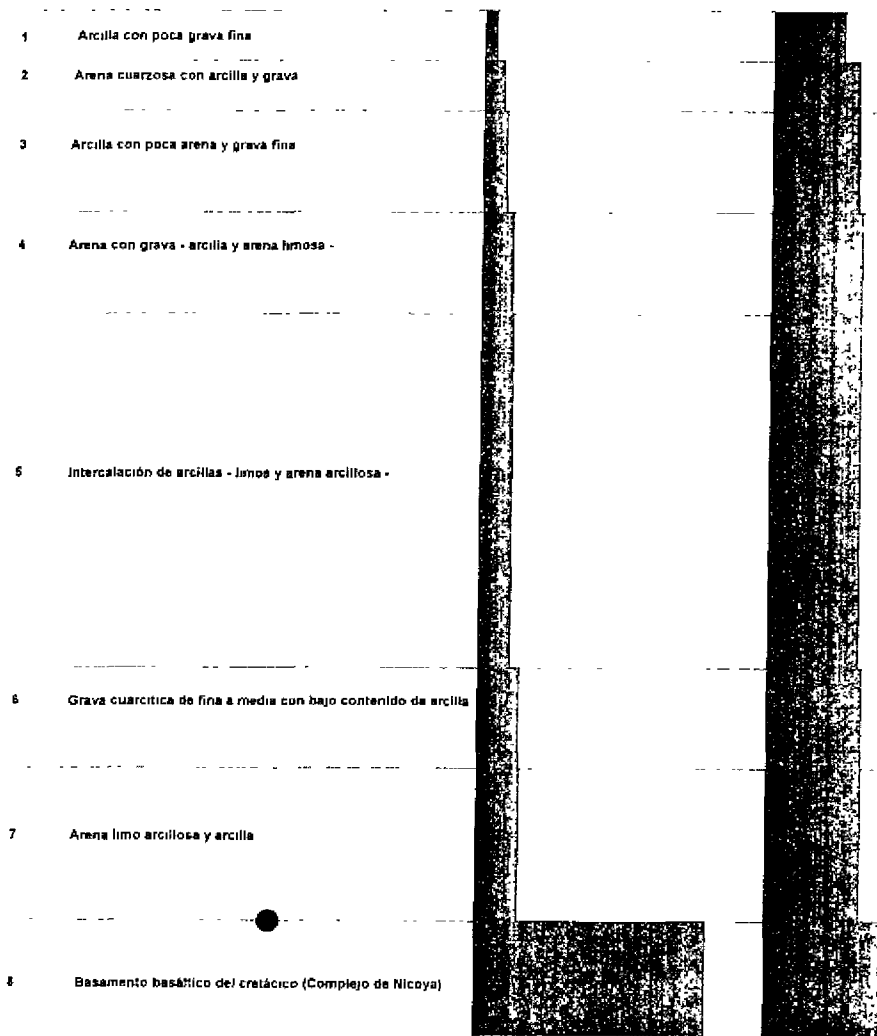
ProShake Report

Soil Profile

Profile Name: CN-33
Water Table: 2.3 m
Number of Layers: 8

CN-33

Number	Description	Motion	Output	Shear Wave Velocity	Unit Weight
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Layer Number	Material Name	Thickness (m)	Unit Weight (kN/m ³)	Gmax (MPa)	Vs (m/sec)	Modulus Curve	Damping Curve
1	Arcilla con poca grava fina	3.0	14.1	21.3	122.0	Clay (Seed and Sun 1989)	Clay (Idriss 1990)
2	Arena cuarzosa con arcilla y grava	3.0	17.1	69.6	200.0	Sand (Seed & Idriss) - Average	Sand (Idriss 1990)
3	Arcilla con poca arena y grava fina	6.1	17.5	102.7	240.0	Clay (Seed and Sun 1989)	Clay (Idriss 1990)
4	Arena con grava - arcilla y arena limosa -	6.1	18.0	165.4	300.0	Sand (Seed & Idriss) - Average	Sand (Seed & Idriss) - Average
5	Intercalación de arcillas - limos y arena arcillosa -	21.3	18.1	177.4	310.0	Clay (Seed and Sun 1989)	Clay (Idriss 1990)
6	Grava cuarcítica de fina a media con bajo contenido de arcilla	6.1	18.8	313.9	405.0	Gravel (Seed et al)	Gravel (Seed et al)
7	Arena limo arcillosa y arcilla	9.1	18.8	322.3	410.0	Sand (Seed & Idriss) - Average	Sand (Seed & Idriss) - Average
8	Basamento basáltico del cretácico (Complejo de Nicoya)	Infinite	23.5	12055.9	2243.0	Rock	Rock

Input Motion

Number of Motions 2
Number of Iterations 10
Strain Ratio 0.65
Tolerance 2.00%

File Name	No of Acc. Values	Max. Acc. (g)	Time Step (sec)	Cutoff Freq. (Hz)	No of Founer Terms	Layer	Outcrop
C:\PROGRA-1\PROSHAKE\CACHI.EQ	3393	0.144	0.020	20.00	4096	8	No
C:\PROGRA-1\PROSHAKE\YERBA.EQ	2000	0.065	0.020	20.00	2048	8	No

Layers Locations

Layer No	Depth (m)	Outcrop
1	0.00	Yes
2	3.0	No
3	6.1	No
4	12.2	No
5	18.3	No
6	39.6	No
7	45.7	No
8	54.8	No

ProShake Report

Soil Profile

Profile Name CN-71

Water Table 13.1 m

Number of Layers 6

CN-71

Number	Description	Motion	Output	Shear Wave Velocity	Unit Weight
1	Arena media a gruesa con grava y arcilla limosa				
2	Arena media a gruesa con grava y arcilla limosa				
3	Grava media a gruesa con arena y arcilla limosa				
4	Grava media a gruesa con matriz de arcilla limosa				
5	Arena gruesa con grava y arcilla limosa				
6	Basamento basáltico del cratérico (Complejo de Ncoya)				

Layer Number	Material Name	Thickness (m)	Unit Weight (kN/m ³)	Gmax (Mpa)	Vs (m/sec)	Modulus Curve	Damping Curve
1	Arena media a gruesa con grava y arcilla limosa	13.0	16.5	206.1	350.0	Sand (Seed & Idriss) - Average	Sand (Seed & Idriss) - Average
2	Arena media a gruesa con grava y arcilla limosa	4.4	17.9	92.2	225.0	Sand (Seed & Idriss) - Average	Sand (Seed & Idriss) - Average
3	Grava media a gruesa con arena y arcilla limosa	2.4	18.0	168.4	302.6	Gravel (Seed et al)	Gravel (Seed et al)
4	Grava media a gruesa con matriz de arcilla limosa	6.7	18.2	198.4	326.7	Gravel (Seed et al)	Gravel (Seed et al)
5	Arena gruesa con grava y arcilla limosa	18.3	18.6	274.0	380.0	Sand (Seed & Idriss) - Average	Sand (Seed & Idriss) - Average
6	Basamento basáltico del cretácico (Complejo de Nicoya)	Infinite	23.0	9904.3	2055.0	Rock	Rock

Input Motion

Number of Motions: 2
Number of Iterations: 10
Strain Ratio: 0.65
Tolerance: 2.00%

File Name	No of Acc. Values	Max. Acc. (g)	Time Step (sec)	Cutoff Freq. (Hz)	No of Fourier Terms	Layer	Outcrop
C:\PROGRAM~1\PROSHAKE\CACHI.EQ	3393	0.144	0.020	20.00	4096	6	No
C:\PROGRAM~1\PROSHAKE\YERBA.EQ	2000	0.065	0.020	20.00	2048	6	No

Layers Locations

Layer No	Depth (m)	Outcrop
1	0.00	Yes
2	13.00	No
3	17.40	No
4	19.82	No
5	26.52	No
6	44.81	No

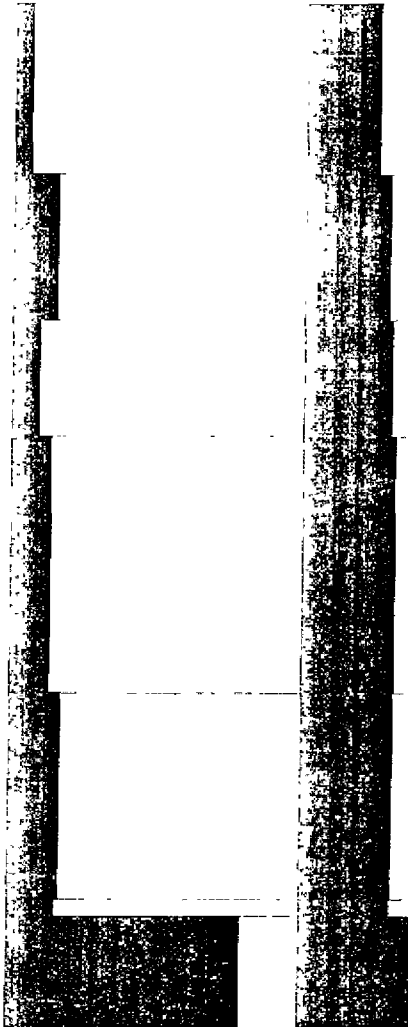
ProShake Report

Soil Profile

Profile Name: CN-72
Water Table: 16.76 m
Number of Layers: 7

CN-72

Number	Description	Motion	Output	Shear Wave Velocity	Unit Weight
1	Suelo y arcilla plástica con material volcánico				
2	Grava de fina a gruesa con arena y matriz arcillosa				
3	Arcilla limosa y arena gruesa con material volcánico				
4	Grava de fina a gruesa con material volcánico y matriz arcillosa				
5	Toba con bajo contenido de arcilla (granos de lava, vidrio volcánico y nódulos calcáreos)				
6	Grava de fina a gruesa con bajo contenido de arcilla				
7	Basamento basáltico del cretácico (Complejo de Nicoya)				



Layer Number	Material Name	Thickness (m)	Unit Weight (kN/m ³)	Gmax (Mpa)	Vs (m/sec)	Modulus Curve	Damping Curve
1	Suelo y arcilla plastica con material volcánico	9.0	14.5	33.2	150.0	Clay - PI=10-20 (Sun et al)	Clay - Average (Sun et al)
2	Grava de fina a gruesa con arena y matriz arcillosa	7.8	16.8	274.7	400.0	Gravel (Seed et al)	Gravel (Seed et al)
3	Arcilla limosa y arena gruesa con material volcánico	6.1	17.5	107.4	245.0	Sand (Seed & Idriss) - Average	Sand (Seed & Idriss) - Average
4	Grava de fina a gruesa con material volcánico y matriz arcillosa	13.7	18.5	243.8	360.0	Gravel (Seed et al)	Gravel (Seed et al)
5	Toba con bajo contenido de arcilla (granos de lava - vidrio volcánico - nódulos calcáreos)	11.0	18.2	391.6	460.0	Sand (Seed & Idriss) - Average	Sand (Seed & Idriss) - Average
6	Grava de fina a gruesa con bajo contenido de arcilla	0.9	17.9	322.2	420.0	Gravel (Seed et al)	Gravel (Seed et al)
7	Basamento basáltico del cretácico (Complejo de Nicoya)	Infinite	23.0	9904.3	2055.0	Rock	Rock

Input Motion

Number of Motions: 2
Number of Iterations: 10
Strain Ratio: 0.65
Tolerance: 2.00%

File Name	No of Acc. Values	Max. Acc. (g)	Time Step (sec)	Cutoff Freq. (Hz)	No of Fourier Terms	Layer	Outcrop
C:\PROGRA~1\PROSHAKE\CACHI.EQ	3393	0.144	0.020	20.00	4096	7	No
C:\PROGRA~1\PROSHAKE\YERBA.EQ	2000	0.065	0.020	20.00	2048	7	No

Layers Locations

Layer No	Depth (m)	Outcrop
1	0.00	Yes
2	29.53	No
3	55.00	No
4	75.00	No
5	120.00	No
6	156.00	No
7	159.00	No

ProShake Report

Soil Profile

Profile Name: CN-77

Water Table: 6.1 m

Number of Layers: 8

CN-77

Number	Description	Motion	Output	Shear Wave Velocity	Unit Weight
1	Arcilla con arena fina limosa y materia orgánica				
2	Arena con grava y arcilla				
3	Arcilla limosa y arena fina a gruesa con material volcánico				
4	Grava fina a gruesa con arena y arcilla y material volcánico				
5	Aglomerado arenoso y gravoso con arcilla				
6	Grava fina a gruesa con arena y poca arcilla				
7	Arena arcillosa con poca grava				
8	Basamento andesítico del cretácico (Complejo de Nicoya)				

Layer Number	Material Name	Thickness (m)	Unit Weight (kN/m ³)	Gmax (MPa)	Vs (m/sec)	Modulus Curve	Damping Curve
1	Arcilla con arena fina limosa y materia organica	6.1	14.3	27.4	137.2	Clay (Seed and Sun 1989)	Clay (Idriss 1990)
2	Arena con grava y arcilla	4.0	17.3	90.4	226.1	Sand (Seed & Idriss) - Average	Sand (Seed & Idriss) - Average
3	Arcilla limosa y arena fina a gruesa con material volcanico	14.3	17.0	69.5	200.0	Clay (Seed and Sun 1989)	Clay (Idriss 1990)
4	Grava fina a gruesa con arena y arcilla y material volcánico	5.5	18.4	223.5	345.5	Gravel (Seed et al.)	Gravel (Seed et al.)
5	Aglomerado arenoso y gravoso con arcilla	11.9	18.6	275.0	380.7	Gravel (Seed et al.)	Gravel (Seed et al.)
6	Grava fina a gruesa con arena y poca arcilla	9.1	18.8	333.4	416.6	Gravel (Seed et al.)	Gravel (Seed et al.)
7	Arena arcillosa con poca grava	4.6	18.7	301.3	397.3	Sand (Seed & Idriss) - Average	Sand (Seed & Idriss) - Average
8	Basamento andesítico del cretácico (Complejo de Nicoya)	Infinite	23.5	12055.9	2243.0	Rock	Rock

Input Motion

Number of Motions: 2
Number of Iterations: 10
Strain Ratio: 0.65
Tolerance: 2.00%

File Name	No of Acc. Values	Max. Acc. (g)	Time Step (sec)	Cutoff Freq. (Hz)	No of Fourier Terms	Layer	Outcrop
C:\PROGRAMA~1\PROSHAKE\CACHI.EQ	3393	0.144	0.020	20.00	4096	8	No
C:\PROGRAMA~1\PROSHAKE\YERBA.EQ	2000	0.065	0.020	20.00	2048	8	No

Layers Locations

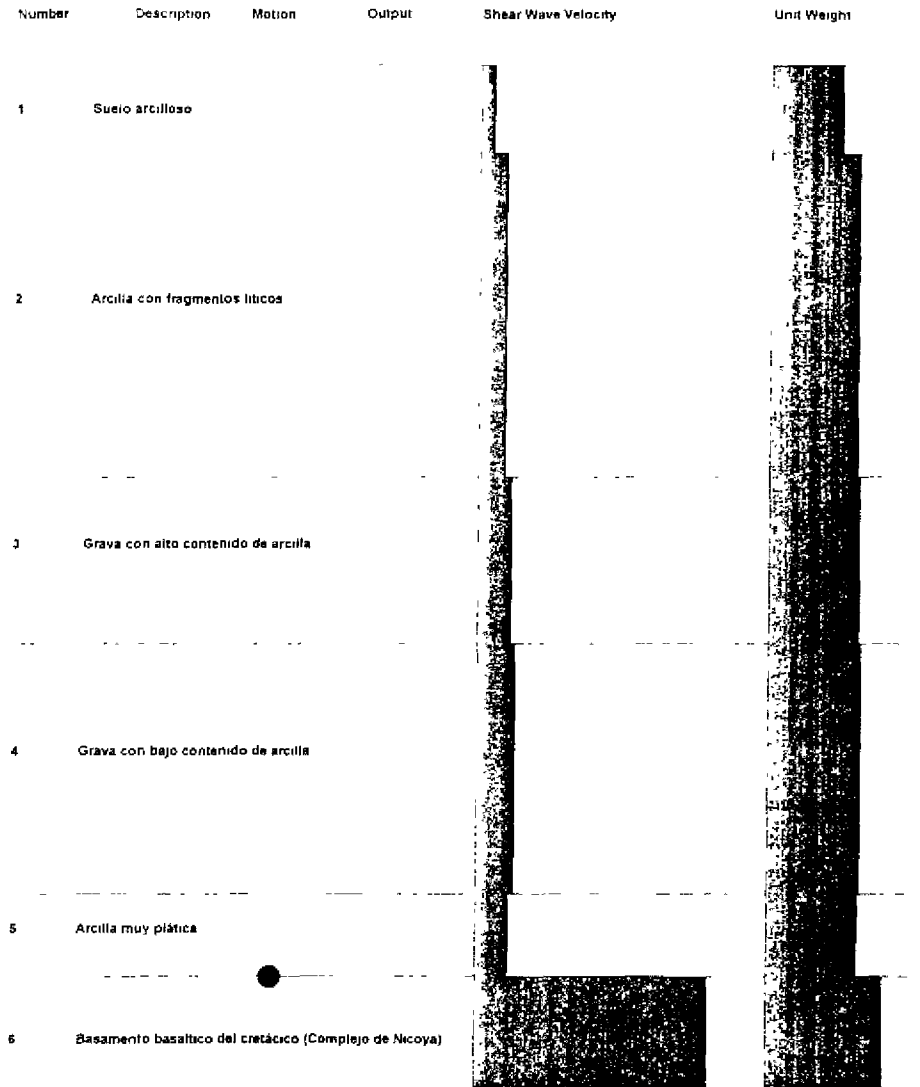
Layer No	Depth (m)	Outcrop
1	0.00	Yes
2	6.10	No
3	10.05	No
4	24.38	No
5	29.87	No
6	41.76	No
7	50.90	No
8	55.47	No

ProShake Report

Soil Profile

Profile Name: CN-129
Water Table: 4.6 m
Number of Layers: 6

CN-129



Layer Number	Material Name	Thickness (m)	Unit Weight (kN/m ³)	Gmax (MPa)	Vs (m/sec)	Modulus Curve	Damping Curve
1	Suelo arcilloso	3.2	14.1	23.6	128.0	Clay (Seed and Sun 1989)	Clay (Idriss 1990)
2	Arcilla con fragmentos liticos	11.8	17.4	99.0	236.0	Clay (Seed and Sun 1989)	Clay (Idriss 1990)
3	Grava con alto contenido de arcilla	6.1	18.0	169.9	299.6	Gravel (Seed et al.)	Gravel (Seed et al.)
4	Grava con bajo contenido de arcilla	9.1	18.3	214.5	338.8	Gravel (Seed et al.)	Gravel (Seed et al.)
5	Arcilla muy plastica	3.0	17.9	148.2	285.0	Clay - PI=20-40 (Sun et al.)	Clay - Upper Bound (Sun et al.)
6	Basamento basáltico del cretacico (Complejo de Nicoya)	Infinite	23.0	9904.3	2055.0	Rock	Rock

Input Motion

Number of Motions: 2
Number of Iterations: 10
Strain Ratio: 0.65
Tolerance: 2.00%

File Name	No of Acc. Values	Max Acc. (g)	Time Step (sec)	Cutoff Freq. (Hz)	No of Fourier Terms	Layer	Outcrop
C:\PROGRAMA~1\PROSHAKE\CACHI EQ	3393	0.144	0.020	20.00	4096	6	No
C:\PROGRAMA~1\PROSHAKE\YERBA EQ	2000	0.065	0.020	20.00	2048	6	No

Layers Locations

Layer No	Depth (m)	Outcrop
1	0.00	Yes
2	3.20	No
3	15.00	No
4	21.10	No
5	30.24	No
6	33.29	No

ProShake Report

Soil Profile

Profile Name BE-44
Water Table 3.05 m
Number of Layers 10

BE-44

Number	Description	Motion	Output	Shear Wave Velocity	Unit Weight
1	Arcilla plástica y ceniza arcillosa con material piroclástico				
2	Arcilla plástica y ceniza arcillosa con material piroclástico				
3	Arena media a gruesa con grava y material piroclástico				
4	Arena fina con matriz de arcilla y ceniza volcánica				
5	Arena fina a gruesa con grava y material piroclástico				
6	Ceniza volcánica con arena - poca grava fina y material piroclástico -				
7	Arena fina a gruesa con ceniza volcánica y poca grava fina				
8	Ceniza volcánica con liticos de cuarzo y material piroclástico				
9	Arena fina a gruesa con grava fina				
10	Basamento basánico del cretácico (Complejo de Nicoya)				

Layer Number	Material Name	Thickness (m)	Unit Weight (kN/m ³)	Gmax (MPa)	Vs (m/sec)	Modulus Curve	Damping Curve
1	Arcilla plastica y ceniza arcillosa con material piroclástico	3.0	14.1	22.4	125.0	Clay - PI=10-20 (Sun et al.)	Clay - Average (Sun et al.)
2	Arcilla plastica y ceniza arcillosa con material piroclástico	9.1	16.5	40.3	155.0	Clay - PI=10-20 (Sun et al.)	Clay - Average (Sun et al.)
3	Arena media a gruesa con grava y material piroclástico	9.1	18.4	223.1	345.0	Sand (Seed & Idriss) - Average	Sand (Seed & Idriss) - Average
4	Arena fina con matriz de arcilla y ceniza volcánica	9.1	17.7	126.9	265.0	Sand (Seed & Idriss) - Average	Sand (Seed & Idriss) - Average
5	Arena fina a gruesa con grava y material piroclástico	7.3	18.5	258.8	370.0	Sand (Seed & Idriss) - Average	Sand (Seed & Idriss) - Average
6	Ceniza volcánica con arena - poca grava fina y material piroclástico -	3.0	18.2	196.2	325.0	Sand (Seed & Idriss) - Average	Sand (Seed & Idriss) - Average
7	Arena fina a gruesa con ceniza volcánica y poca grava fina	4.0	18.8	313.9	405.0	Sand (Seed & Idriss) - Average	Sand (Seed & Idriss) - Average
8	Ceniza volcánica con líticos de cuarzo y material piroclástico	1.8	18.3	216.1	340.0	Clay (Seed and Sun 1989)	Clay (Idriss 1990)
9	Arena fina a gruesa con grava fina	4.6	18.2	196.2	325.0	Sand (Seed & Idriss) - Average	Sand (Seed & Idriss) - Average
10	Basamento basáltico del cretácico (Complejo de Nicoya)	Infinite	23.5	12055.9	2243.0	Rock	Rock

Input Motion

Number of Motions: 2
Number of Iterations: 10
Strain Ratio: 0.65
Tolerance: 2.00%

File Name	No of Acc. Values	Max. Acc. (g)	Time Step (sec)	Cutoff Freq. (Hz)	No of Fourier Terms	Layer	Outcrop
C:\PROGRA~1\PROSHAKE\CACHI.EQ	3393	0.144	0.020	20.00	4096	10	No
C:\PROGRA~1\PROSHAKE\YERBA.EQ	2000	0.065	0.020	20.00	2048	10	No

Layers Locations

Layer No	Depth (m)	Outcrop
1	0.00	Yes
2	3.05	No
3	12.19	No
4	21.34	No
5	30.48	No
6	37.80	No
7	40.84	No
8	44.81	No
9	46.63	No
10	51.21	No