APPENDIX A

SUSPENSION VELOCITY MEASUREMENT QUALITY ASSURANCE SUSPENSION SOURCE TO RECEIVER ANALYSIS RESULTS

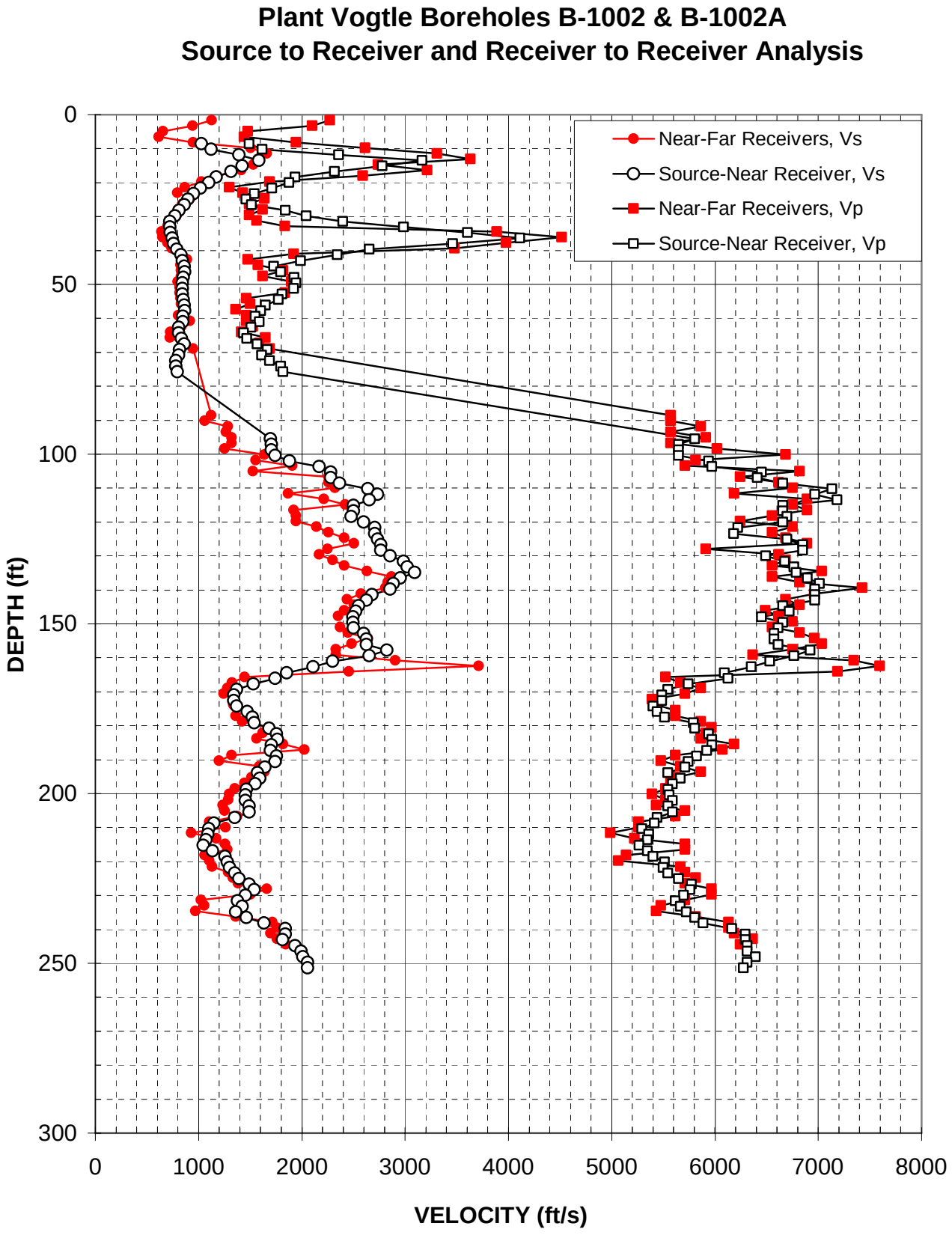

Figure A-1. Boring B-1002 and B-1002A, R1 - R2 high resolution analysis and S - R1 quality assurance analysis P- and S_H-wave data

Depth (ft)	V_s (ft/sec)	V_p (ft/sec)
8.5	1030	1490
10.2	1120	1620
11.8	1390	2360
13.5	1580	3170
15.1	1420	2780
16.7	1320	2320
18.4	1170	1940
20.0	1100	1880
21.7	1020	1710
23.3	950	1540
24.9	900	1460
26.6	860	1510
28.2	810	1840
29.9	770	2040
31.5	720	2400
33.1	720	2990
34.8	730	3600
36.4	740	4110
38.1	760	3460
39.7	790	2650
41.3	830	2340
43.0	840	1990
44.6	860	1730
46.3	870	1800
47.9	850	1930
49.5	850	1940
51.2	850	1920
52.8	850	1810
54.5	850	1770
56.1	860	1650
57.7	870	1600
59.4	850	1550
61.0	850	1590
62.7	810	1510
64.3	810	1440
66.0	840	1470
67.6	860	1570
69.2	820	1660
70.9	810	1610
72.5	780	1690
74.2	780	1800
75.8	790	1820
95.5	1700	5810
97.1	1710	5650
98.8	1710	5650
100.4	1740	5650
102.0	1880	5940
103.7	2170	5970
105.3	2280	6450
107.0	2280	6410
108.6	2360	6660
110.2	2640	7130
111.9	2740	6970
113.5	2650	7180
115.2	2500	6660
116.8	2500	6660
118.4	2480	6700
120.1	2600	6660
121.7	2710	6220
123.4	2710	6180
125.0	2740	6700
126.6	2760	6850
128.3	2760	6850
129.9	2860	6490
131.6	2990	6680
133.2	3020	6760
134.8	3090	6790
136.5	2950	6900
138.1	2890	7010
139.8	2860	6970
141.4	2680	6970
143.0	2630	6970
144.7	2550	6660
146.3	2520	6720
148.0	2500	6450
149.6	2500	6660
151.3	2500	6610
152.9	2600	6570
154.5	2630	6570
156.2	2630	6610
157.8	2820	6920
159.5	2650	6760
161.1	2300	6530
162.7	2110	6350
164.4	1850	6090
166.0	1740	6130
167.7	1530	5740
169.3	1370	5540
170.9	1340	5490
172.6	1340	5490
174.2	1370	5400
175.9	1470	5440
177.5	1520	5510
179.1	1540	5790
180.8	1680	5810
182.4	1750	5940
184.1	1770	5970
185.7	1710	5970
187.3	1700	5920
189.0	1750	5820
190.6	1740	5740
192.3	1640	5710
193.9	1570	5540
195.5	1590	5660
197.2	1550	5590
198.8	1460	5540
200.5	1460	5560
202.1	1460	5590
203.7	1490	5540
205.4	1490	5590
207.0	1350	5440
208.7	1150	5410
210.3	1100	5290
211.9	1090	5360
213.6	1080	5350
215.2	1050	5260
216.9	1140	5350
218.5	1260	5400
220.1	1280	5510
221.8	1300	5500
223.4	1350	5540
225.1	1390	5650
226.7	1490	5770
228.4	1540	5760
230.0	1460	5690
231.6	1380	5620
233.3	1420	5660
234.9	1360	5730
236.6	1460	5810
238.2	1630	5890
239.8	1840	6170
241.5	1840	6300
243.1	1810	6300
244.8	1940	6310
246.4	1990	6310
248.0	2010	6390
249.7	2060	6310
251.3	2060	6280

Table A-1. Boring B-1002 and B-1002A, S - R1 quality assurance analysis P- and S_H-wave data

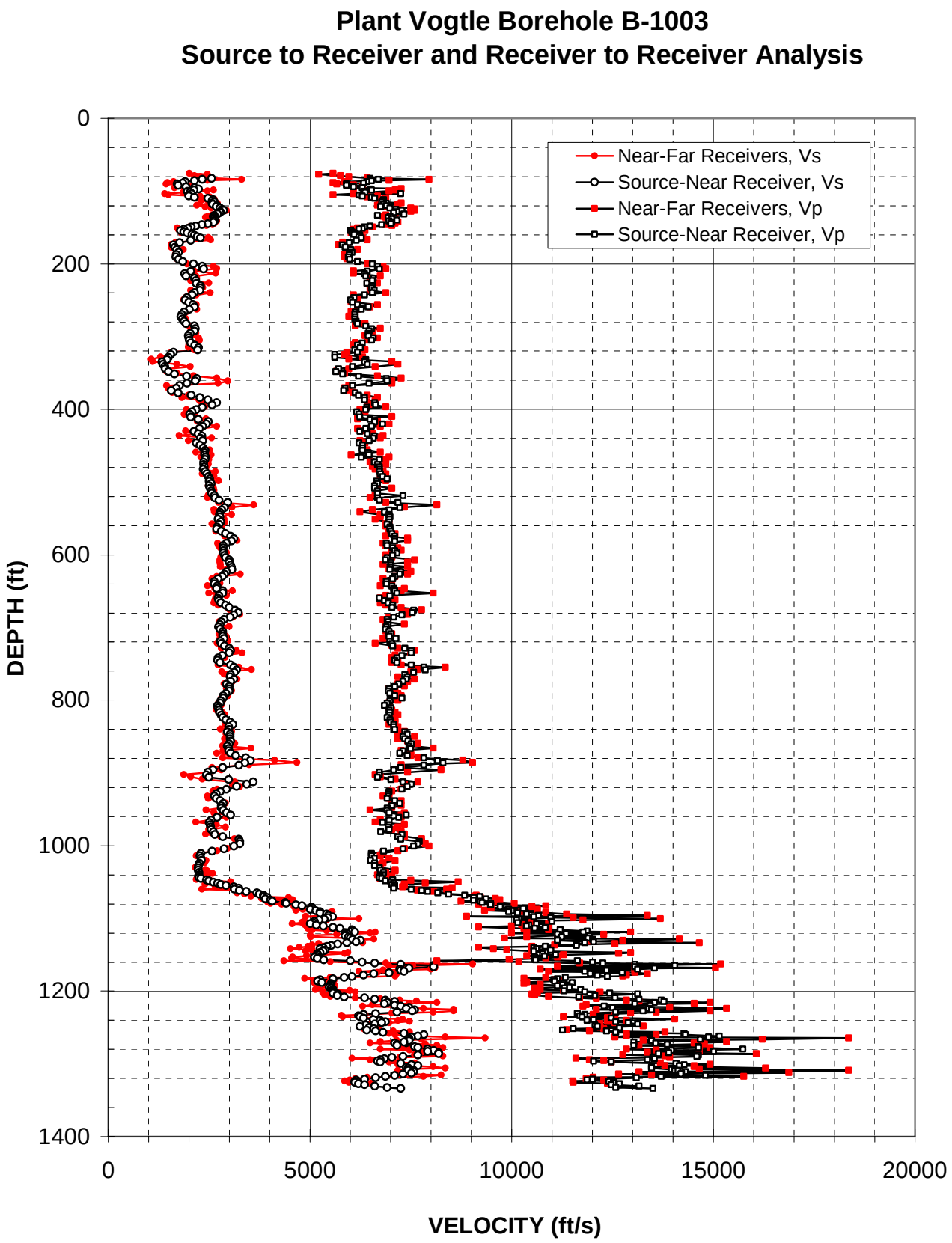

Figure A-2. Boring B-1003, R1 - R2 high resolution analysis and S - R1 quality assurance analysis P- and S_H-wave data

Depth (ft)	V_s (ft/sec)	V_p (ft/sec)
82.4	2560	6490
84.0	2330	6700
85.6	2140	6530
87.3	1910	6410
88.9	1850	6330
90.6	1720	5900
92.2	1730	5900
93.8	1930	6080
95.5	2130	6300
97.1	2240	6490
98.8	2120	6530
100.4	1960	6330
102.0	2030	6370
103.7	2070	7260
105.3	2000	6220
107.0	2000	6300
108.6	2140	6530
110.2	2480	6610
111.9	2600	6830
113.5	2570	6830
115.2	2630	6790
116.8	2580	6900
118.4	2590	6830
120.1	2700	6900
121.7	2670	6760
123.4	2770	6990
125.0	2830	7130
126.6	2860	7280
128.3	2780	7160
129.9	2770	7080
131.6	2710	7330
133.2	2630	6680
134.8	2610	6990
136.5	2620	6940
138.1	2630	7040
139.8	2660	7160
141.4	2620	6970
143.0	2610	7040
144.7	2470	7010
146.3	2320	6790
148.0	2180	6490
149.6	2060	6350
151.3	1980	6300
152.9	1870	6220
154.5	1800	6010
156.2	1870	6040
157.8	1950	6060
159.5	2080	6090
161.1	2130	6240
162.7	2200	6220
164.4	2290	6280
167.7	2040	6150
170.9	1770	5970
174.2	1620	5810
177.5	1650	5870
180.8	1700	6010
184.1	1740	6040
187.3	1690	5970
190.6	1680	5950
193.9	1750	5990
197.2	1850	6180
200.5	2120	6550
203.7	2330	6680
207.0	2360	6720
210.3	2040	6430
213.6	1900	6350
216.9	1940	6390
220.1	2130	6570
223.4	2170	6550
226.7	2190	6410
230.0	2290	6550
233.3	2290	6530
236.6	2270	6590
239.8	2130	6550
243.1	2080	6350
246.4	1960	6090
249.7	1900	6010
253.0	1990	6060
256.2	2100	6180
259.5	2130	6450
262.8	2010	6280
266.1	1890	6130
269.4	1830	6110
272.6	1800	6130
275.9	1840	6110
279.2	1890	6150
282.5	1930	6180
285.8	2130	6390
289.0	2160	6530
292.3	2130	6470
295.6	2030	6450
298.9	1990	6450
302.2	1990	6570
305.5	2010	6530
308.7	2050	6300
312.0	2150	6180
315.3	2240	6260
318.6	2220	6110
321.9	1620	6180
325.1	1550	5620
328.4	1500	5620
331.7	1460	6390
335.0	1330	6350
338.3	1360	6430
341.5	1400	6060
344.8	1410	5710
348.1	1500	5650
351.4	1650	5820
354.7	1940	6200
357.9	2200	6900
361.2	2160	6920
364.5	1960	6470
367.8	1770	6060
371.1	1690	5870
374.3	1560	5840
377.6	1730	6130
380.9	2060	6200
384.2	2270	6350
387.5	2480	6350
390.8	2690	6610
394.0	2570	6630
397.3	2330	6410
400.6	2180	6390
403.9	2080	6170
407.2	2020	6220
410.4	2050	6240
413.7	2230	6490
417.0	2480	6610
420.3	2440	6810
423.6	2350	6530
426.8	2260	6390
430.1	2120	6240
433.4	2230	6430
436.7	2330	6590
440.0	2290	6570
443.2	2350	6470
446.5	2180	6220
449.8	2270	6310
453.1	2360	6300
456.4	2400	6300
459.7	2390	6450
462.9	2390	6470
466.2	2410	6280
469.5	2400	6720
472.8	2370	6590
476.1	2370	6680
479.3	2380	6720
482.6	2360	6720
485.9	2400	6720
489.2	2450	6740

Table A-2. Boring B-1003, S - R1 quality assurance analysis P- and S_H-wave data

Depth (ft)	V_s (ft/sec)	V_p (ft/sec)
492.5	2480	6810
495.7	2520	6920
499.0	2510	6660
502.3	2560	6680
505.6	2510	6610
508.9	2530	6610
512.1	2560	6680
515.4	2570	6680
518.7	2630	7310
522.0	2650	6680
525.3	2740	6720
528.5	2970	7180
535.1	2890	7230
538.4	2810	6970
541.7	2770	6850
545.0	2760	6970
548.2	2770	6990
551.5	2720	6970
554.8	2790	6970
558.1	2740	6920
562.3	2700	6990
564.6	2690	6990
567.9	2810	7010
571.2	2900	7040
574.5	3040	7110
577.8	3110	7110
581.0	3060	7110
584.3	2940	6900
587.6	2860	6920
590.9	2860	7060
594.2	2860	7110
597.4	2860	7160
600.7	2890	7060
604.0	2900	6920
607.3	3000	6880
610.6	3000	7010
613.9	3040	7010
617.1	3060	7010
620.4	3070	6990
623.7	2940	7260
627.0	2890	7230
630.3	2820	7110
633.5	2730	7060
636.8	2630	6900
640.1	2630	6900
643.4	2700	7040
646.7	2690	7080
649.9	2840	7110
653.2	2840	7160
656.5	2740	6990
659.8	2730	6720
663.1	2740	6850
666.3	2790	6940
669.6	2900	7060
672.9	3000	7040
676.2	3150	7570
679.5	3230	7550
682.7	3110	7280
686.0	3020	7080
689.3	2870	6920
692.6	2810	6940
695.9	2770	6940
699.2	2740	6900
702.4	2770	6880
705.7	2840	6970
709.0	2840	7010
712.3	2840	6970
715.6	2870	7130
718.8	2780	6990
722.1	2810	7040
725.4	2890	7060
728.7	3000	7360
732.0	3040	7520
735.2	3000	7520
738.5	2820	7280
741.8	2730	7160
745.1	2710	7110
748.4	2770	7160
751.6	3040	7520
754.9	3110	7830
758.2	3190	7860
761.5	3130	7570
764.8	3040	7360
768.0	3020	7410
771.3	3110	7390
774.6	3040	7310
777.9	2940	7210
781.2	3000	7110
784.5	3000	6970
787.7	3000	6940
791.0	2920	6990
794.3	2860	7110
797.6	2860	7280
800.9	2790	6990
804.1	2780	6920
807.4	2710	6850
810.7	2730	7010
814.0	2740	6970
817.3	2760	6990
820.5	2810	6970
823.8	2840	6920
827.1	2920	6990
830.4	3020	7010
833.7	3090	7080
836.9	2990	7080
840.2	2990	7110
843.5	2950	7360
846.8	3020	7410
850.1	3020	7310
853.4	3020	7360
856.6	3040	7440
859.9	3000	7520
863.2	2950	7460
866.5	2990	7490
869.8	2990	7310
873.0	3040	7230
876.3	3170	7410
879.6	3420	7830
882.9	3530	8160
886.2	3390	8290
889.4	3250	7830
892.7	2840	7260
896.0	2590	7080
899.3	2470	6720
902.6	2440	6720
905.8	2490	6680
909.1	2990	7010
912.4	3600	7310
915.7	3440	7520
919.0	3190	7410
922.2	2940	7280
925.5	2780	6970
929.1	2670	6940
932.1	2630	6940
935.4	2670	6920
938.7	2770	7110
941.9	2860	7230
945.2	2810	7040
948.5	2810	6920
951.8	2860	6920
955.1	2940	6970
958.3	3040	7390
961.6	2700	7210
964.9	2560	6970
968.2	2510	6810
971.5	2530	6970
974.7	2540	6940
978.0	2560	6970
981.3	2610	6760
984.6	2650	7280

Table A-2, continued. Boring B-1003, S - R1 quality assurance analysis P- and S_H-wave data

Depth (ft)	V_s (ft/sec)	V_p (ft/sec)
987.9	2840	7180
991.1	3250	7260
994.4	3270	7710
997.7	3270	7680
1001.0	3110	7570
1004.3	2870	7310
1007.6	2580	6830
1010.8	2300	6530
1014.1	2280	6530
1017.4	2300	6590
1020.7	2310	6510
1024.0	2260	6610
1027.2	2240	6610
1030.5	2230	6720
1033.8	2230	6740
1037.1	2250	6830
1040.4	2250	6810
1042.0	2240	6740
1043.6	2250	6720
1045.3	2300	6790
1046.9	2440	7060
1048.6	2490	6880
1050.2	2610	7010
1051.8	2710	7080
1053.5	2790	7040
1054.8	2920	7110
1056.8	3110	7080
1058.4	3250	7080
1060.0	3130	7520
1061.7	3260	7770
1063.3	3420	7920
1065.0	3690	8180
1066.6	3750	8440
1068.2	3850	8840
1069.9	3860	9220
1071.5	3940	9070
1073.2	3900	9360
1074.8	4020	9060
1076.4	4070	9230
1078.1	4390	9280
1079.7	4420	9480
1081.4	4650	9480
1083.0	4800	9720
1084.7	5050	9720
1086.3	5060	10290
1087.9	5010	9930
1089.6	5150	10010
1091.2	5250	9930
1092.9	5250	10150
1094.5	5410	10370
1096.1	5460	10660
1097.8	5560	10560
1099.4	5440	10980
1101.1	5350	10190
1102.7	5230	10130
1104.3	5110	11000
1106.0	5080	10170
1107.6	5010	10620
1109.3	5160	10430
1110.9	5330	10370
1112.5	5570	10840
1114.2	5740	10580
1115.8	6040	11210
1117.5	6060	11880
1119.1	6110	11770
1120.7	5920	11360
1122.4	5870	11140
1124.0	5870	11930
1125.7	5950	11240
1127.3	6010	11900
1128.9	6060	12010
1130.6	6260	11140
1132.2	6150	12040
1133.9	5920	11820
1135.5	5690	11610
1137.1	5530	11610
1138.8	5420	10840
1140.4	5330	10560
1142.1	5250	10620
1143.7	5380	10980
1145.3	5330	10560
1147.0	5250	10840
1148.6	5190	10770
1150.3	5200	11090
1151.9	5160	10820
1153.5	5110	10580
1155.2	5190	10580
1156.8	5350	10600
1158.5	6010	11640
1160.1	6300	12010
1161.8	6610	12270
1163.4	7260	13060
1165.0	8070	14050
1166.7	8070	13060
1168.3	7460	13540
1170.0	7230	13130
1171.6	7260	12350
1173.2	7330	11820
1174.9	6970	12740
1176.5	6580	11960
1178.2	6330	12120
1179.8	6040	12380
1181.4	5850	11330
1183.1	5570	11140
1184.7	5250	11050
1186.4	5200	11070
1188.0	5300	11510
1189.6	5530	11290
1191.3	5510	11260
1192.9	5510	11140
1194.6	5490	11430
1196.2	5530	11310
1197.8	5570	11720
1199.5	5570	11300
1201.1	5570	11820
1202.8	5570	12440
1204.4	5690	13130
1206.0	5680	12070
1207.7	5850	11660
1209.3	6350	12560
1211.0	6610	13160
1212.6	6880	13710
1214.2	7110	13790
1215.9	6920	13540
1217.5	6850	13060
1219.2	7110	13430
1220.8	7260	12290
1222.4	7460	12500
1224.1	7390	13400
1225.7	7600	13470
1227.4	7550	13260
1229.0	7160	12590
1230.6	6630	11640
1232.3	6330	11820
1233.9	6200	11690
1235.6	6240	11740
1237.2	6330	12470
1238.9	6570	12040
1240.5	6740	11880
1242.1	6880	12590
1243.8	6790	12900
1245.4	6610	13130
1247.1	6390	12070
1248.7	6240	12120
1250.3	6470	12680
1252.0	6580	11530
1253.6	6410	11260
1255.3	6630	12350
1256.9	6810	12590
1258.5	7330	14280

Table A-2, continued. Boring B-1003, S - R1 quality assurance analysis P- and S_H-wave data

Depth (ft)	V_s (ft/sec)	V_p (ft/sec)
1260.2	7830	14320
1261.8	7680	15140
1263.5	7520	14890
1265.1	7460	14680
1266.7	7440	14680
1268.4	7460	13470
1270.0	7330	13030
1271.7	7110	13570
1273.3	7160	13860
1274.9	7160	13030
1276.6	7600	14640
1278.2	7680	14640
1279.9	7920	15740
1281.5	8070	13970
1283.1	7920	15010
1284.8	8200	13900
1286.4	8200	13640
1288.1	7680	14640
1289.7	7310	14590
1291.3	7040	13500
1293.0	6850	13540
1294.6	6740	13360
1296.3	6680	12040
1297.9	6740	12470
1299.5	7260	14080
1301.2	7520	14280
1302.8	7680	14160
1304.5	7390	13470
1306.1	7440	13470
1307.7	7460	13970
1309.4	7440	14050
1309.4	7570	14120
1311.0	7570	14320
1312.7	7520	14220
1314.3	7310	14200
1316.0	7110	14800
1317.6	6880	13710
1319.2	6630	13100
1320.9	6350	12010
1322.5	6150	11880
1324.2	6110	12410
1325.8	6110	12530
1327.4	6200	12680
1329.1	6350	12470
1330.7	6610	13160
1332.4	6920	12590
1334.0	7260	13500

Table A-2, continued. Boring B-1003, S - R1 quality assurance analysis P- and S_H-wave data

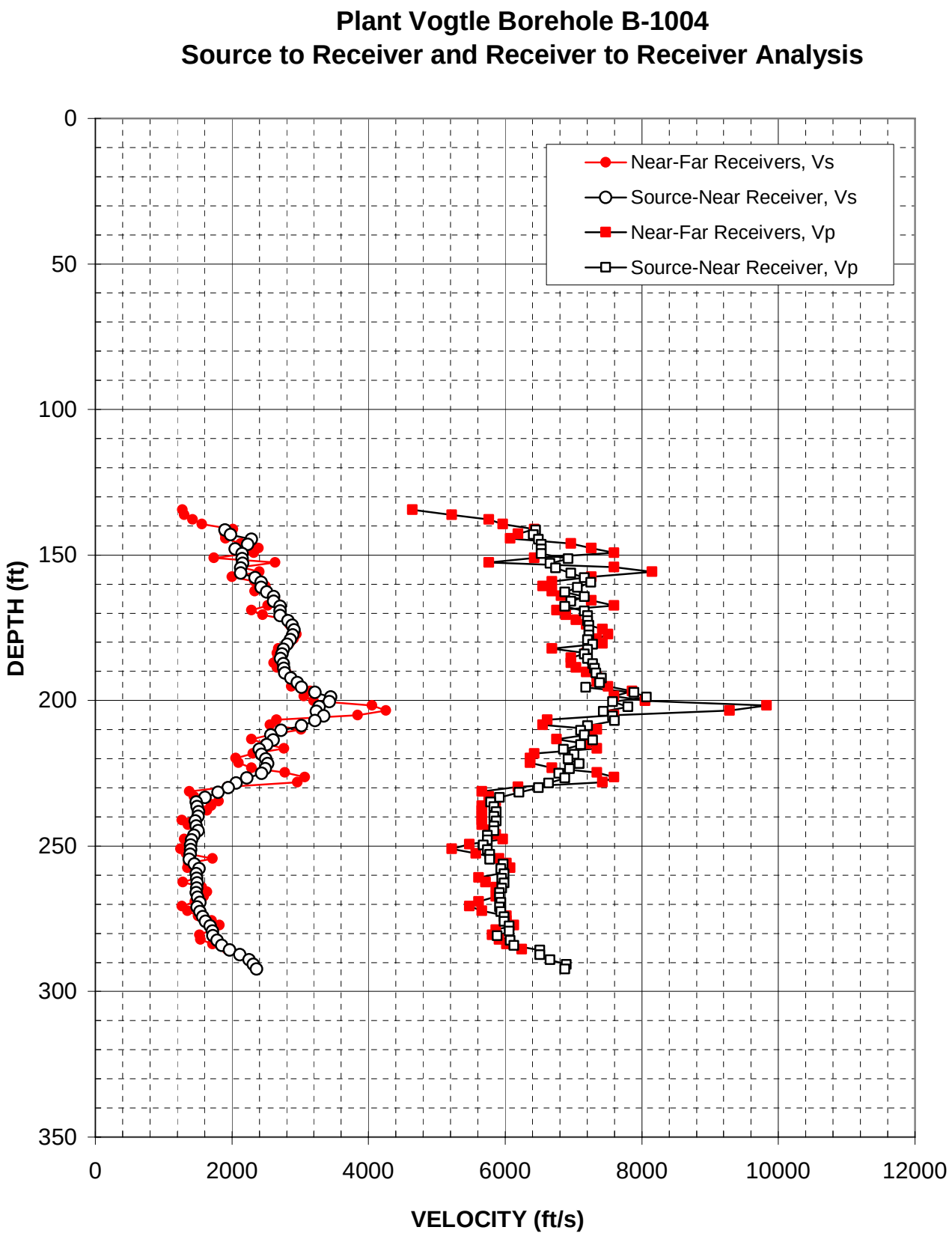

Figure A-3. Boring B-1004, R1 - R2 high resolution analysis and S - R1 quality assurance analysis P- and S_H-wave data

Depth (ft)	V_s (ft/sec)	V_p (ft/sec)
141.4	1900	6450
143.0	1980	6410
144.7	2290	6490
146.3	2230	6530
148.0	2050	6530
149.6	2150	6530
151.3	2150	6920
152.9	2160	6660
154.5	2130	6740
156.2	2130	6970
157.8	2340	7160
159.5	2430	7260
161.1	2430	7060
162.7	2510	6880
164.4	2610	7160
166.0	2610	6970
167.7	2710	6880
169.3	2710	7160
170.9	2710	7210
172.6	2820	7210
174.2	2890	7230
175.9	2910	7230
177.5	2890	7230
179.1	2860	7210
180.8	2810	7280
182.4	2760	7210
184.1	2740	7160
185.7	2710	7210
187.3	2760	7280
189.0	2760	7310
190.6	2780	7330
192.3	2860	7410
193.9	2960	7390
195.5	3020	7180
197.2	3220	7890
198.8	3450	8070
200.5	3430	7570
202.1	3280	7800
203.7	3240	7440
205.4	3350	7570
207.0	3220	7600
208.7	3020	7210
210.3	2720	7110
211.9	2570	7160
213.6	2610	7280
215.2	2510	7110
216.9	2400	6850
218.5	2440	7010
220.1	2500	6920
221.8	2520	7080
223.4	2490	6940
225.1	2440	6790
226.7	2220	6880
228.4	2070	6630
230.0	1950	6490
231.6	1800	6200
233.3	1610	5920
234.9	1480	5790
236.6	1490	5840
238.2	1510	5870
239.8	1510	5840
241.5	1460	5870
243.1	1480	5840
244.8	1510	5840
246.4	1440	5740
248.0	1410	5740
249.7	1400	5680
251.3	1400	5740
253.0	1390	5770
254.6	1380	5770
256.2	1450	5970
257.9	1520	5940
259.5	1480	5990
261.2	1480	5950
262.8	1490	5990
264.4	1490	5950
266.1	1480	5920
267.7	1500	5920
269.4	1540	5940
271.0	1490	5920
272.6	1540	5940
274.3	1570	5990
275.9	1620	5990
277.6	1690	6060
279.2	1720	6060
280.8	1720	5890
282.5	1780	6080
284.1	1850	6130
285.8	1970	6510
287.4	2120	6510
289.0	2250	6660
290.7	2320	6900
292.3	2360	6880

Table A-3. Boring B-1004, S - R1 quality assurance analysis P- and S_H-wave data

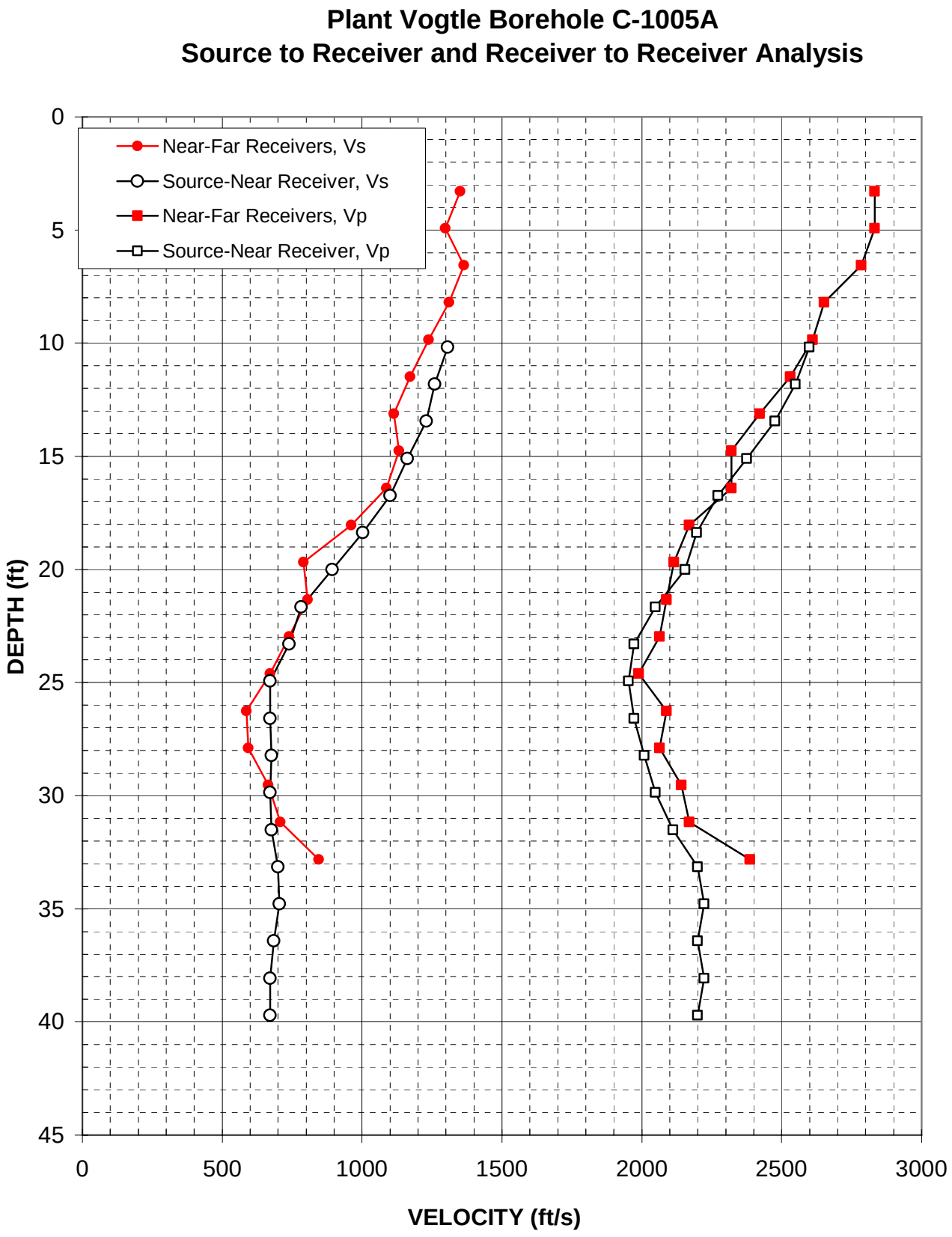

Figure A-4. Boring C-1005A, R1 - R2 high resolution analysis and S - R1 quality assurance analysis P- and S_H-wave data

Depth (ft)	V_s (ft/sec)	V_p (ft/sec)
10.2	1310	2600
11.8	1260	2550
13.5	1230	2480
15.1	1160	2380
16.7	1100	2270
18.4	1000	2200
20.0	890	2150
21.7	780	2050
23.3	740	1970
24.9	670	1950
26.6	670	1970
28.2	680	2010
29.9	670	2050
31.5	680	2110
33.1	700	2200
34.8	700	2220
36.4	690	2200
38.1	670	2220
39.7	670	2200

Table A-4. Boring C-1005A, S - R1 quality assurance analysis P- and S_H-wave data

APPENDIX B

OYO 170 VELOCITY LOGGING SYSTEM

NIST TRACEABLE

CALIBRATION PROCEDURE

CALIBRATION PROCEDURE FOR

GEOVision SEISMIC RECORDER/LOGGER

Reviewed 10/10/05

Objective

The timing/sampling accuracy of seismic recorders or data loggers is required for several GEOVision field procedures including Seismic Refraction, Downhole Seismic Velocity Logging, and P-S Suspension Logging. This procedure describes the method for measuring the timing accuracy of a seismic data logger, such as the OYO Model 170 or the Geometrics Strataview. The objective of this procedure is to verify that the timing accuracy of the recorder is accurate to within 1%.

Frequency of Calibration

The calibration of each GEOVision seismic data logger is twelve (12) months. In the case of rented seismic data loggers, calibration must be performed prior to use.

Test Equipment Required

The following equipment is required. Item #2 must have current NIST traceable calibration.

1. Function generator, Krohn Hite 5400B or equivalent
2. Frequency counter, HP 5315A or equivalent
3. Test cables, from item 1 to item 2, and from item 1 to subject data logger.

Procedure

This procedure is designed to be performed using the accompanying Seismograph Calibration Data Sheet with the same revision number. All data must be entered and the procedure signed by the technician performing the test.

1. Record all identification data on the form provided.
2. Connect function generator to data logger (such as OYO Model 170) using test cable
3. Connect the function generator to the frequency counter using test cable.

4. Set up generator to produce a 100.0 Hz, 0.25 volt (amplitude is approximate, modify as necessary to yield less than full scale waveforms on logger display) peak square wave or sine wave. Verify frequency using the counter and initial space on the data sheet.

5. Initialize data logger and record a data record of at least 0.1 second using a 100 microsecond sample period.

6. Measure the recorded square wave frequency by measuring the duration of 9 cycles of data. This measurement can be made using the data logger display device, or by printing out a paper tape. If a paper tape can be printed, the resulting printout must be attached to this procedure. Record the data in the space provided.

7. Repeat steps 5 and 6 three more times using separate files.

Criteria

The duration for 9 cycles in any file must be 90.0 milliseconds plus or minus 0.9 milliseconds, corresponding to an average frequency for the nine cycles of 100.0 Hz plus or minus 1 Hz (obtained by dividing 9 cycles by the duration in milliseconds).

If the results are outside this range, the data logger must be marked with a GEOVision REJECT tag until it can be repaired and retested.

If results are acceptable affix label indicating the initials of the person performing the calibration, the date of calibration, and the due date for the next calibration (12 months).

Procedure Approval

Approved by:

John G. Diehl	President
Name	Title
Signature	October 10, 2005
	Date

Client Approval (if required):

Name	Title
Signature	Date

MICRO PRECISION CALIBRATION INC.
11562 Knott Avenue. Suite 3, Garden Grove, CA 92841
Ph. (714) 901-5659 Fax (714) 901-5649

Calibration Report

Customer: **GeoVision. Corona, CA 92882**

Account: **15214**

Instrument: **BG9697 Suspension Logger**

Mfg: **OYO Geospace**	Model: **03331-0000**	Serial #: **19029**
Size:	Resltn:	Cust Ctrl:

P.O.:	Dept.:	Location:
Report Date: 04/15/2005	Report #: Tmp0002	Job #: L23242

Work Performed: **Inspected, cleaned, and calibrated.**
Parts Replaced:
Received Condition: **In tolerance** Returned Condition: **In tolerance**

Functions Tested:

Frequency @ 100Hz

Square Wave	Pass	Unless otherwise noted
Sine Wave	Pass	Pass/Fail Criteria is
		Based on published
See attached data		Mfr. tolerances

Control	Standard Used	Instr. Model	Due Date	NIST Trace Ref
AG2886	**Frequency Synthesizer**	**3325A**	**10/12/2005**	**T1700**

Environmental:	**71 Deg F / 40% Rh**	Test Date:	**04/11/2005**
Uncertainty:	**<4:1**	Cycle:	**12**
Cal Procedure:	**Cust. Supplied**	Due Date:	**04/11/2006**
Technician:	**Jim Williams**	Quality Approval:	QC 3

All standards used are either traceable to the National Institute of Standards and Technology or have intrinsic accuracy. All services performed have used proper manufacturer and industrial service techniques and are warranted for no less than (30) days. This report may not be reproduced in part without written permission of Micro Precision's Quality Assurance Manager.

BQ9697

GEOVision
geophysical services
a division of Blackhawk GeoServices

SEISMOGRAPH CALIBRATION DATA SHEET REV 7/11/02

INSTRUMENT DATA

SYSTEM MFR:	OYO	MODEL NO.:	3331 A
SERIAL NO.:	1029	CALIBRATION DATE:	4/11/05
BY:	MICRO PRECISION CAL.	DUE DATE:	4/11/06
COUNTER MFR:	TENMA	MODEL NO.:	72 - 5085
SERIAL NO.:	MB0000 6378	CALIBRATION DATE:	4/8/05
BY:	MICRO PRECISION CAL.	DUE DATE:	4/8/06
FCTN GEN MFR:	HP	MODEL NO.:	3325 A
SERIAL NO.:	1748A 18000	CALIBRATION DATE:	10/12/04
BY:	MICRO PRECISION CAL.	DUE DATE:	10/12/05

SYSTEM SETTINGS:

GAIN:	10
FILTER:	20 KHZ
RANGE:	100 MSEC
DELAY:	0 MSEC
STACK: 1 (STD)	1
PULSE:	1.6 MSEC
DISPLAY:	VARIABLE
SYSTEM: DATE = CORRECT DATE & TIME	4/11/05

PROCEDURE:

SET FREQUENCY TO 100.0HZ SQUAREWAVE WITH AMPLITUDE APPROXIMATELY 0.25 VOLT PEAK. RECORD BOTH ON DISKETTE AND PAPER TAPE. ANALYZE AND PRINT WAVEFORMS FROM ANALYSIS UTILITY. ATTACH PAPER COPIES OF PRINTOUT AND PAPER TAPES TO THIS FORM. AVERAGE FREQUENCY MUST BE BETWEEN 99.0 AND 101.0 HZ.

AS FOUND 100.0 AS LEFT 100.0

WAVEFORM	FILE NO	FREQUENCY	TIME FOR 9 CYCLES Hn	TIME FOR 9 CYCLES Hr	TIME FOR 9 CYCLES V	AVERAGE FREQ.
SQUARE	001	100.0	90.0	90.0	90.0	100.0
SQUARE	002	100.0	90.0	90.0	90.0	100.0
SINE	003	100.0	90.1	90.0	90.0	100.0
SINE	004	100.0	90.0	90.0	90.0	100.0

CALIBRATED BY: Jim Williams (NAME) 4/11/05 (DATE) J Willi (SIGNATURE)

2/2

APPENDIX C

OYO MODEL 170
SUSPENSION VELOCITY LOGGING
FIELD MEASUREMENT PROCEDURE

PROCEDURE FOR

OYO P-S SUSPENSION SEISMIC VELOCITY LOGGING

Background

This procedure describes a method for measuring shear and compressional wave velocities in soil and rock. The OYO P-S Suspension Method is applied by generating shear and compressional waves in a borehole using the OYO P-S Suspension Logger borehole tool and measuring the travel time between two receiver geophones or hydrophones located in the same tool.

Objective

The outcome of this procedure is a plot and table of P and S_H wave velocity versus depth for each borehole. Standard analysis is performed on receiver to receiver data. Data is presented in report format, with ASCII data files and digital records transmitted on diskette.

Instrumentation

1. OYO Model 170 Digital Logging Recorder or equivalent
2. OYO P-S Suspension Logger probe, including two sets horizontal and vertical geophones, seismic source, and power supply for the source and receivers
3. Winch and winch controller, with logging cable
4. Batteries to operate OYO 170 and winch

The Model 170 Suspension P-S Logging system, manufactured by OYO Corporation, is currently the only commercially available suspension system. As shown in Figure 1, the System consists of a borehole probe suspended by a cable and a recording/control electronics package on the surface.

The suspension system probe consists of a combined reversible polarity solenoid horizontal shear-wave generator (S_H) and compressional-wave generator (P), joined to two biaxial geophones by a flexible isolation cylinder. The separation of the two geophones is one meter, allowing average wave velocity in the region between the

geophones to be determined by inversion of the wave travel time between the two geophones. The total length of the probe is approximately 7 meters; the center point of the geophones is approximately 5 meters above the bottom end of the probe.

The probe receives control signals from, and sends the amplified geophone signals to, the instrumentation package on the surface via an armored 7 conductor cable. The cable is wound onto the drum of a winch and is used to support the probe. Cable travel is measured by a rotary encoder to provide probe depth data.

The entire probe is suspended by the cable and centered in the borehole by nylon "whiskers." Therefore, source motion is not coupled directly to the borehole walls; rather, the source motion creates a horizontally propagating pressure wave in the fluid filling the borehole and surrounding the source. This pressure wave produces a horizontal displacement of the soil forming the wall of the borehole. This displacement propagates up and down the borehole wall, in turn causing a pressure wave to be generated in the fluid surrounding the geophones as the soil displacement wave passes their location.

Environmental Conditions

The OYO P-S Suspension Logging Method can be used in either cased or uncased boreholes. For best results, the borehole must be between 10 and 20 cm in diameter, or 4 to 8 inches.

Uncased boreholes are preferred because the effects of the casing and grouting are removed. It is recommended that the borehole be drilled using the rotary mud method. This method does little damage to the borehole wall, and the drilling fluid coats and seals the borehole wall reducing fluid loss and wall collapse. The borehole fluid is required for the logging, and must be well circulated prior to logging.

If the borehole must be cased, the casing must be PVC and properly installed and grouted. Any voids in the grout will cause problems with the data. Likewise, large grout bulbs used to fill cavities will also cause problems. The grout must be set before testing. This means the grouting must take place at least 48 hours before testing.

For borehole casing, applicable preparation procedures are presented in ASTM Standard D4428/D4428M-91 Section 4.1 (see ASTM website for copy).

Calibration

Calibration of the Model 170 digital recorder is required. Calibration is limited to the timing accuracy of the recorder. GEOVision's Seismograph Calibration Procedure or equivalent should be used. Calibration must be performed on an annual basis.

Measurement Procedure

The entire probe is lowered into the borehole to a specific measurement depth by the winch. A measurement sequence is then initiated by the operator from the instrumentation package control panel. No further operator intervention is then needed to complete the measurement sequence described below.

The system electronics activates the SH-wave source in one direction and records the output of the two horizontally oriented geophone axes which are situated parallel to the axis of motion of the source. The source is then activated in the opposite direction, and the horizontal output signals are again recorded, producing a SH-wave record of polarity opposite to the previous record. The source is finally actuated in the first direction again, and the responses of the vertical geophone axes to the resultant P-wave are recorded during this sampling.

The data from each geophone during each source activation is recorded as a different channel on the recording system. The Model 170 has six channels (two simultaneous recording channels), each with a 12 bit 1024 sample record. The recorded data is displayed on a CRT display and on paper tape output as six channels with a common time scale. Data is stored on 3.5-inch floppy diskettes for further processing. Up to 8 sampling sequences can be stacked (averaged) to improve the signal to noise ratio of the signals.

Review of the displayed data on the CRT or paper tape allows the operator to set the gains, filters, delay time, pulse length (energy), sample rate, and stacking number in order to optimize the quality of the data before recording. Final printed data is verified by the operator prior to moving the probe.

Typical depth spacing for measurements is 1.0 meters, or 3.3 feet. Alternative spacing is 0.5 meter, or 1.6 feet.

Required Field Records

1) Field log for each borehole showing

   a) Borehole identification

   b) Date of test

   c) Tester or data recorder

   d) Description of measurement

   e) Any deviations from test plan and action taken as a result

   f) QA Review

2) Paper output records for each measurement as backup showing depth and ID number

3) List of record ID numbers (for data on diskette) and corresponding depth

4) Diskettes with backup copies of data on hard disk, labeled with borehole designation, record ID numbers, date, and tester name.

An example Field Log is attached to this procedure.

Analysis

Following completion of field work, the recorded digital records are processed by computer using the OYO Corporation software program PSLOG and interactively analyzed by an experienced geophysicist to produce plots and tables of P and S_H wave velocity versus depth.

The digital time series records from each depth are transferred to a personal computer for analysis. Figure 2 shows a sample of the data from a single depth. These digital records are analyzed to locate the first minima on the vertical axis records, indicating the arrival of P-wave energy. The difference in travel time between these arrivals is used to calculate the P-wave velocity for that 1-meter interval. When observable, P-wave arrivals on the horizontal axis records are used to verify the velocities determined from the vertical axis data. In addition, the soil velocity calculated from the travel time from source to first receiver is compared to the velocity derived from the travel time between receivers.

The digital records are studied to establish the presence of clear SH-wave pulses, as indicated by the presence of opposite polarity pulses on each pair of horizontal records. Ideally, the SH-wave signals from the ‘normal’ and ‘reverse’ source pulses are very nearly inverted images of each other. Digital FFT – IFFT lowpass filtering are used to remove the higher frequency P-wave signal from the SH-wave signal.

The first maxima are picked for the ‘normal’ signals and the first minima are picked for the 'reverse' signals. The absolute arrival time of the ‘normal’ and ‘reverse’ signals may vary by +/- 0.2 milliseconds, due to differences in actuation time of the solenoid source caused by constant mechanical bias in the source or by borehole inclination. This variation does not affect the velocity determinations, as the differential time is measured between arrivals of waves created by the same source actuation. The final velocity value is the average of the values obtained from the ‘normal’ and ‘reverse’ source actuations.

In Figure 2, the time difference over the 1-meter interval of 1.70 millisecond is equivalent to a SH-wave velocity of 588 m/sec. Whenever possible, time differences are determined from several phase points on the S_H -wave pulse trains to verify the data obtained from the first arrival of the S_H -wave pulse. In addition, the soil velocity

calculated from the travel time from source to first receiver is compared to the velocity derived from the travel time between receivers.

Figure 3 is a sample composite plot of the far normal horizontal geophone records for a range of depths. This plot shows the waveforms at each depth, clearly showing the S-wave arrivals. This display format is used during analysis to observe trends in velocity with changing depth.

Once the proper picks are entered, PSLOG automatically calculates both V_s and V_p for each depth. The program allows spreadsheet output for presentation in either charts or tables or both.

Standard analysis is performed on receiver 1 to receiver 2 data, with separate analysis performed on source to receiver data as a quality assurance procedure.

Registered Geophysicist Anthony Martin Date 6/20/00

QA Review Date 6/20/00

References:

1. Guidelines for Determining Design Basis Ground Motions, Report TR-102293, Electric Power Research Institute, Palo Alto, California, November 1993, Sections 7 and 8.

2. The P-S Velocity Logging Method, R.L. Nigbor and T. Imai, XIII ICSMFE, 1994, New Delhi, India / XIII CIMSTF, 1994, New Delhi, India

3. “Standard test Methods for Crosshole Seismic Testing”, ASTM Standard D4428/D4428M-91, July 1991, Philadelphia, PA

OYO SUSPENSION P-S VELOCITY LOGGING SETUP

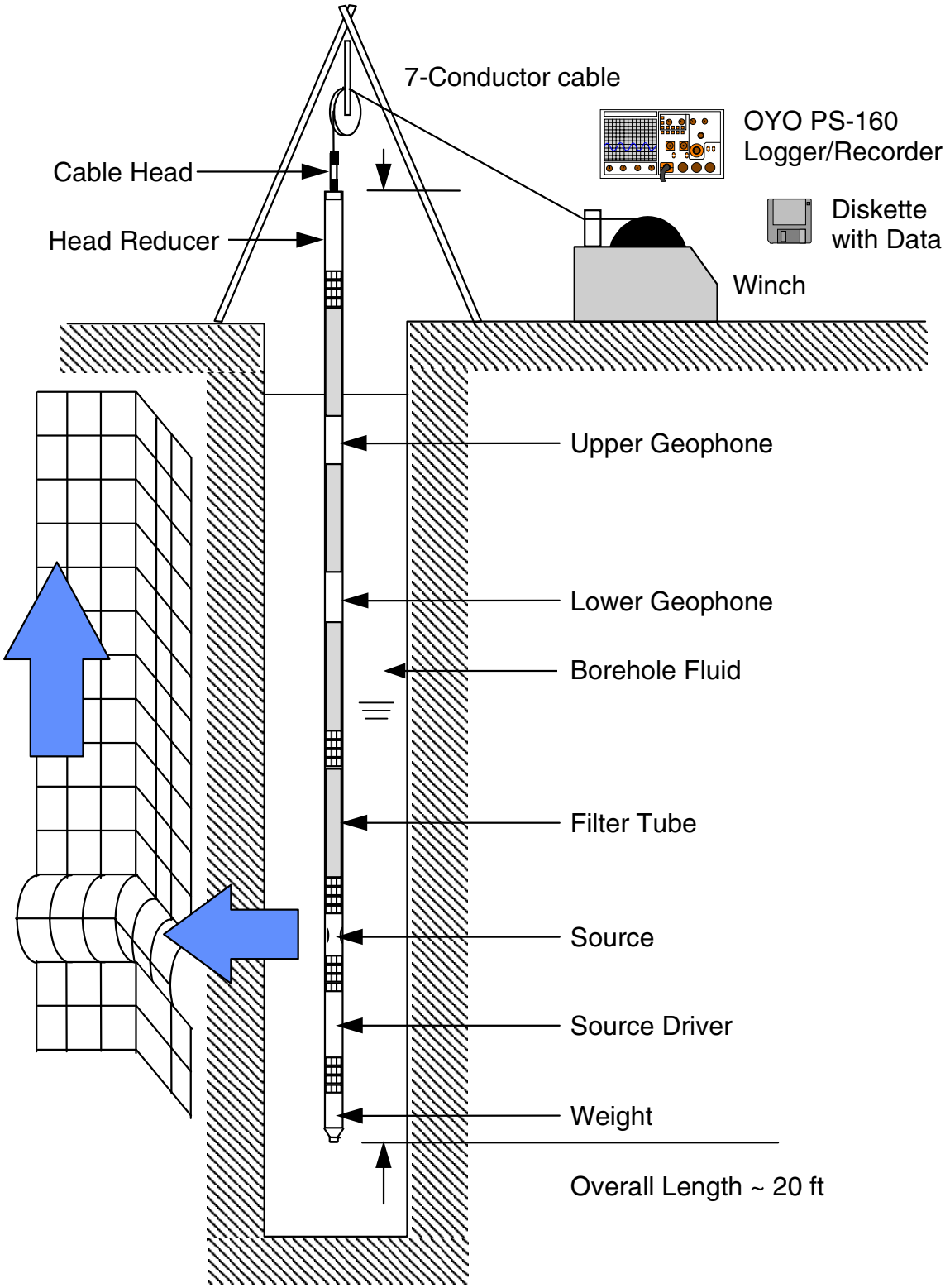

Figure 1. Suspension PS logging method setup

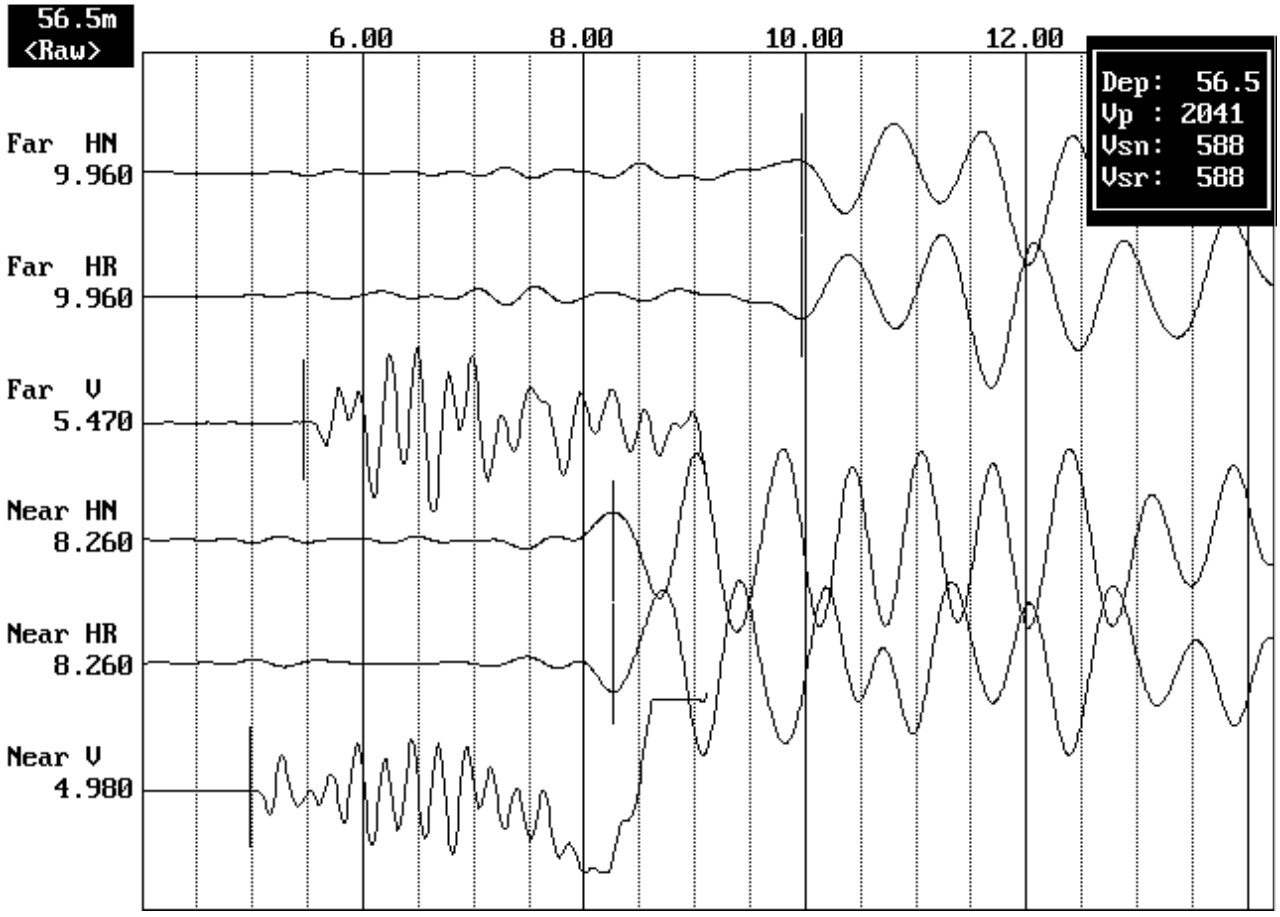

Figure 2. Sample suspension method waveform data showing horizontal normal and reversed (HR and HN), and vertical (V) waveforms received at the near (bottom 3 channels) and far (top 3 channels) geophones. The arrivals in milliseconds for each pick are shown on the left. The box in the upper right corner shows the depth in the borehole and the velocities calculated based on the picks.

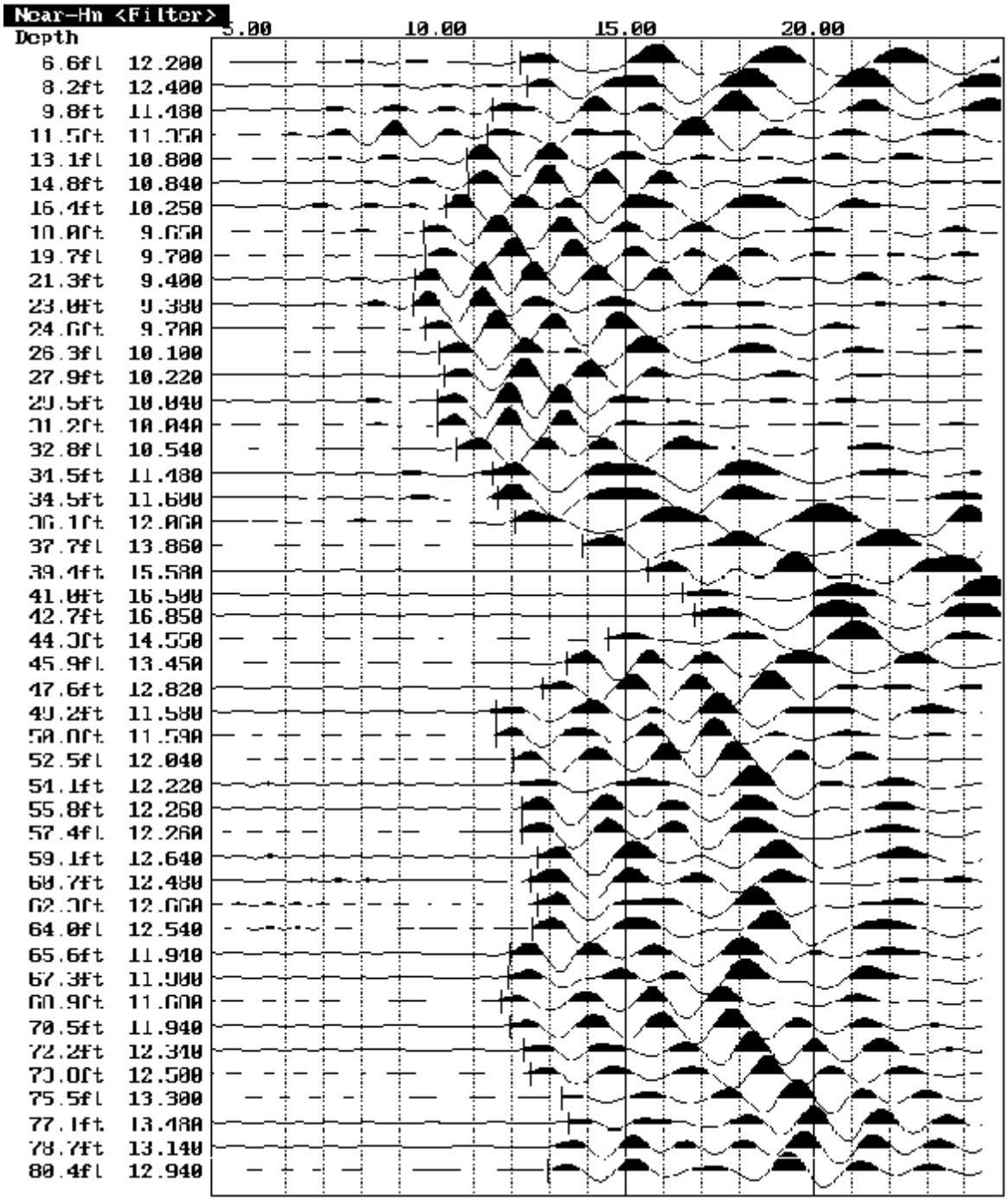

Figure 3. Sample composite waveform plot for normal shear waves received at the near geophone in a single borehole

APPENDIX D

OYO MODEL 170
SUSPENSION VELOCITY LOGGING
FIELD DATA SHEETS

GEOVision
geophysical services

P-S SUSPENSION VELOCITY FIELD LOG

SITE: VOGTLE B-1002 Run 1 DATE: 9 / 22 /05
CLIENT: MACTEC JOB: 5492
AUTHOR: R. STELLER PAGE 1 OF 6

CONTACT: _____ _OFFICE__ PHONE: _____
_____ PHONE: _____
CONTACT: _____ _OFFICE__ PHONE: _____
_____ PHONE: _____
CONTACT: _____ _____ PHONE: _____
_____ PHONE: _____
CONTACT: _____ _____ PHONE: _____
_____ PHONE: _____
DRILLER: _____ _____ PHONE: _____
COMPANY: _____ _____ PHONE: _____

DIRECTIONS TO SITE: _____

GENERAL SITE CONDITIONS/LOCATION: _____

EA#: _____
BOREHOLE DESIGNATION: B-1002 LOCATION: _____

COUNTY: _____ RANGE: _____ TOWNSHIP: _____ SECTION: _____
BOREHOLE CONSTRUCTION: CASED _____ UNCASED ✓
DIAMETERS AND DEPTH RANGES: 5" 0 TO 133.5' ; 4", 133.5' TO 260'
BOREHOLE TOTAL DEPTH AS DRILLED: 260
CONDUCTOR CASING?: YES ✓ DEPTH TO BOTTOM OF CASING 88.5' ; NO ____
DEPTH TO BEDROCK: NA DEPTH TO WATER TABLE: ≈ 80'
BOREHOLE FLUID: WATER ____; FRESH WATER MUD ✓ ; SALT WATER MUD ____;
OTHER: _____
DEPTH TO BOREHOLE FLUID: _____ TIME SINCE LAST CIRCULATION: 1/2 HR.

GEOVision Geophysical Services *1551 Pomona Road, Unit P, Corona, CA 92882* *Ph (951) 549-1234 Fx (951) 549-1236*

GEOVision
geophysical services

SITE:_VOGTLE B-1002 RUN 1 DATE:9 / 22 /05
CLIENT:_MACTEC JOB:_5492
AUTHOR:_R. STELLER PAGE 2 OF 6

LOGGING CREW: R. STELLER
VEHICLE(S) USED AND MILEAGE: RED_____; BLUE_____;WHITE RENTAL
MOBILIZED FROM:_____ DEPARTURE TIME:_____
ARRIVED ON SITE: 10:00
STANDBY TIME:_____ CAUSE:_____
LOGGING STARTED:_____ LOGGING COMPLETED:_____
STANDBY TIME:_____ CAUSE:_____
LOGGING STARTED:_____ LOGGING COMPLETED:_____
DEMOBILIZED TO:_____ ARRIVAL TIME:_____
ADDITIONAL DEMOB TIME:_____ REASON:_____

BATTERIES CHANGED BEFORE LOGGING: YES____; NO____; STORED WITH NEW ✓

WINCH	COMPROBE_____	SILVER ✓	OYO_____
INSTRUMENT	12004_____	15014_____	19029 ✓
GEOPHONE			

MAINTENANCE PERFORMED ON SITE: NONE

EQUIPMENT PROBLEMS OR FAILURES: NONE

SUGGESTIONS, ADDITIONS, CHANGES: NONE

COMMENTS: REF TO RECEIVER MID-POINT 0.0↓ 0.2↑

GEOVision Geophysical Services *1551 Pomona Road, Unit P, Corona, CA 92882* *Ph (951) 549-1234 Fx (951) 549-1236*

GEOVISION SUSPENSION LOGGING FIELD NOTES

SITE:_VOGTLE B-1002 RUN #1 DATE:_9/22/05_

CLIENT:_MACTEC JOB:_5492_

AUTHOR:_R. STELLER PAGE 3 OF 6

DEPTH METERS	DEPTH FEET	UNFILTERED FILE NO.	FILTERED FILE NO.	COMMENTS CASING, WATER, ROCK, ETC
0.5	1.64			
1.0	3.28			
1.5	4.92			
2.0	6.56			
2.5	8.20			
3.0	9.84			
3.5	11.48			
4.0	13.12			
4.5	14.76			
5.0	16.40			
5.5	18.04			
6.0	19.69			
6.5	21.33			
7.0	22.97			
7.5	24.61			
8.0	26.25			
8.5	27.89			
9.0	29.53			
9.5	31.17			
10.0	32.81			
10.5	34.45			
11.0	36.09			
11.5	37.73			
12.0	39.37			
12.5	41.01			
13.0	42.65			
13.5	44.29			
14.0	45.93			
14.5	47.57			
15.0	49.21			
15.5	50.85			
16.0	52.49			
16.5	54.13			
17.0	55.77			
17.5	57.41			
18.0	59.06			
18.5	60.70			
19.0	62.34			
19.5	63.98			
20.0	65.62			

GEOVISION SUSPENSION LOGGING FIELD NOTES

SITE:_VOGTLE B-1002 RUN 1 DATE:_9/22/05_
CLIENT:_MACTEC_ JOB:_5492_
AUTHOR:_R. STELLER_ PAGE 4 OF 6

DEPTH METERS	DEPTH FEET	UNFILTERED FILE NO.	FILTERED FILE NO.	COMMENTS CASING, WATER, ROCK, ETC
20.5	67.26			
21.0	68.90			
21.5	70.54			
22.0	72.18			
22.5	73.82			
23.0	75.46			
23.5	77.10			
24.0	78.74			
24.5	80.38			
25.0	82.02			
25.5	83.66			
26.0	85.30			
26.5	86.94			
27.0	88.58	001		
27.5	90.22	2		
28.0	91.86	3		
28.5	93.50	4		
29.0	95.14	5		
29.5	96.78	6		
30.0	98.43	7		
30.5	100.07	8		
31.0	101.71	9		
31.5	103.35	10		
32.0	104.99	11		
32.5	106.63	12		
33.0	108.27	13		
33.5	109.91	14		
34.0	111.55	15		
34.5	113.19	16		
35.0	114.83	17		
35.5	116.47	18		
36.0	118.11	19		
36.5	119.75	20		
37.0	121.39	21		
37.5	123.03	22		
38.0	124.67	23		
38.5	126.31	24		
39.0	127.95	25		
39.5	129.59	26		
40.0	131.23	27		

GEOVISION SUSPENSION LOGGING FIELD NOTES

SITE:_VOGTLE B-1002 RUN 1 DATE:_9/22/05_

CLIENT:_MACTEC JOB:_5492_

AUTHOR:_R. STELLER PAGE 5 OF 6

DEPTH METERS	DEPTH FEET	UNFILTERED FILE NO.	FILTERED FILE NO.	COMMENTS CASING, WATER, ROCK, ETC
40.5	132.87	28		4" DIA ↓
41.0	134.51	29		
41.5	136.15	30		S_H = 800 m/s
42.0	137.80	31		
42.5	139.44	32		
43.0	141.08	33		
43.5	142.72	34		
44.0	144.36	35		
44.5	146.00	36		
45.0	147.64	37		CAUGHT PROBE ↓
45.5	149.28	38		
46.0	150.92	39		
46.5	152.56	40		
47.0	154.20	41		
47.5	155.84	42		
48.0	157.48	43		BOTTOM OF MARL?
48.5	159.12	44		
49.0	160.76	45		V_S = 830
49.5	162.40	46		
50.0	164.04	47		
50.5	165.68	48		
51.0	167.32	49		
51.5	168.96	50		
52.0	170.60	51		
52.5	172.24	52		
53.0	173.88	53		
53.5	175.52	54		
54.0	177.17	55		
54.5	178.81	56		
55.0	180.45	57		
55.5	182.09	58		
56.0	183.73	59		
56.5	185.37	60		
57.0	187.01	61		
57.5	188.65	62		
58.0	190.29	63		
58.5	191.93	64		
59.0	193.57	65		
59.5	195.21	66		
60.0	196.85	67		

GEOVISION SUSPENSION LOGGING FIELD NOTES

SITE:_VOGTLE B-1002 RUN1 DATE:_9/22/05_

CLIENT:_MACTEC_ JOB:_5492_

AUTHOR:_R. STELLER_ PAGE_6_ OF_6_

DEPTH METERS	DEPTH FEET	UNFILTERED FILE NO.	FILTERED FILE NO.	COMMENTS CASING, WATER, ROCK, ETC
60.5	198.49	68		
61.0	200.13	69		
61.5	201.77	70		
62.0	203.41	71		
62.5	205.05	72		
63.0	206.69	73		
63.5	208.33	74		
64.0	209.97	75		
64.5	211.61	76		
65.0	213.25	77		
65.5	214.90	78		
66.0	216.54	79		
66.5	218.18	80		
67.0	219.82	81		
67.5	221.46	82		
68.0	223.10	83		
68.5	224.74	84		
69.0	226.38	85		
69.5	228.02	86		
70.0	229.66	87		
70.5	231.30	88		
71.0	232.94	89		
71.5	234.58	90		
72.0	236.22	91		
72.5	237.86	92		
73.0	239.50	93		
73.5	241.14	94		
74.0	242.78	95		
74.5	244.42			EXPECTED BOTTOM MEASUREMENT
75.0	246.06			
75.5	247.70			
76.0	249.34			
76.5	250.98			
77.0	252.62			
77.5	254.27			
78.0	255.91			
78.5	257.55			
79.0	259.19			
79.5	260.83			DRILLER T.D. @ 260'
80.0	262.47			

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P-S SUSPENSION VELOCITY FIELD LOG

SITE:_VOGTLE B-1002 RUN 2 DATE: 9 / 23 /05
CLIENT:_MACTEC JOB:_5492
AUTHOR:_R. STELLER PAGE 1 OF 3

CONTACT:_____ _OFFICE__ PHONE:_____
_____ PHONE:_____
CONTACT:_____ _OFFICE__ PHONE:_____
_____ PHONE:_____
CONTACT:_____ _____ PHONE:_____
_____ PHONE:_____
CONTACT:_____ _____ PHONE:_____
_____ PHONE:_____
DRILLER:_____ _____ PHONE:_____
COMPANY:_____ _____ PHONE:_____

DIRECTIONS TO SITE:_____

GENERAL SITE CONDITIONS/LOCATION:_____

EA#:_____
BOREHOLE DESIGNATION: B-1002 LOCATION:_____

COUNTY:_____ RANGE:_____ TOWNSHIP:_____ SECTION:_____
BOREHOLE CONSTRUCTION: CASED_____ UNCASED_____
DIAMETERS AND DEPTH RANGES: 4" 0 TO 70' ; _____, _____ TO _____
BOREHOLE TOTAL DEPTH AS DRILLED: 70'
CONDUCTOR CASING?: YES____ DEPTH TO BOTTOM OF CASING_____; NO ✓
DEPTH TO BEDROCK: NA DEPTH TO WATER TABLE:_____
BOREHOLE FLUID: WATER_____; FRESH WATER MUD ✓; SALT WATER MUD _____;
OTHER:_____
DEPTH TO BOREHOLE FLUID:_____ TIME SINCE LAST CIRCULATION: 1/2 HR

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SITE: VOGTLE B-1002 RUN 2 DATE: 9 / 23 /05
CLIENT: MACTEC JOB: 5492
AUTHOR: R. STELLER PAGE 2 OF 3

LOGGING CREW: R. STELLER
VEHICLE(S) USED AND MILEAGE: RED ; BLUE ; WHITE
MOBILIZED FROM: DEPARTURE TIME:
ARRIVED ON SITE:
STANDBY TIME: CAUSE:
LOGGING STARTED: LOGGING COMPLETED:
STANDBY TIME: CAUSE:
LOGGING STARTED: LOGGING COMPLETED:
DEMOBILIZED TO: ARRIVAL TIME:
ADDITIONAL DEMOB TIME: REASON:

BATTERIES CHANGED BEFORE LOGGING: YES ; NO ✓ ; STORED WITH NEW

WINCH	COMPROBE	SILVER ✓	OYO
INSTRUMENT	12004	15014	19029 ✓
GEOPHONE			

MAINTENANCE PERFORMED ON SITE: NONE

EQUIPMENT PROBLEMS OR FAILURES: NONE

SUGGESTIONS, ADDITIONS, CHANGES: NONE

COMMENTS: NOT ACTUALLY B-1002; A SECOND BORING WAS DRILLED ADJACENT TO B-1002, AS THE CASING IN B-1002 COULD NOT BE REMOVED.

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GEOVISION SUSPENSION LOGGING FIELD NOTES

SITE:_VOGTLE B-1002 RUN 2 DATE:_9_/_23_/05_____
CLIENT:_MACTEC_____ JOB:_5492_____
AUTHOR:_R. STELLER_____ PAGE_3_OF_3_____

DEPTH METERS	DEPTH FEET	UNFILTERED FILE NO.	FILTERED FILE NO.	COMMENTS CASING, WATER, ROCK, ETC
0.5	1.64	101		
1.0	3.28	102		
1.5	4.92	103		
2.0	6.56	104		
2.5	8.20	105		
3.0	9.84	106		
3.5	11.48	107		
4.0	13.12	108		
4.5	14.76	109		
5.0	16.40	110		
5.5	18.04	111		
6.0	19.69	112		
6.5	21.33	113		
7.0	22.97	114		
7.5	24.61	115		
8.0	26.25	116		
8.5	27.89	117		
9.0	29.53	118		
9.5	31.17	119		
10.0	32.81	120		
10.5	34.45	121		
11.0	36.09	122		
11.5	37.73	123		
12.0	39.37	120		
12.5	41.01	125		
13.0	42.65	126		
13.5	44.29	127		
14.0	45.93	128		
14.5	47.57	129		
15.0	49.21	130		
15.5	50.85	131		
16.0	52.49	132		
16.5	54.13	133		EXPECTED DEEPEST MEASUREMENT.
17.0	55.77			
17.5	57.41			
18.0	59.06			
18.5	60.70			
19.0	62.34			
19.5	63.98			
20.0	65.62			DRILLER T.D. @ 70'

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P-S SUSPENSION VELOCITY FIELD LOG

SITE:_VOGTLE B- 1002 A DATE:10 / 5 /05
CLIENT:_MACTEC JOB:_5492
AUTHOR:_R. STELLER PAGE 1 OF 4

CONTACT:_____ _OFFICE__ PHONE:_____
_____ PHONE:_____
CONTACT:_____ _OFFICE__ PHONE:_____
_____ PHONE:_____
CONTACT:_____ _____ PHONE:_____
_____ PHONE:_____
CONTACT:_____ _____ PHONE:_____
_____ PHONE:_____
DRILLER:_____ _____ PHONE:_____
COMPANY:_____ _____ PHONE:_____

DIRECTIONS TO SITE:_____

GENERAL SITE CONDITIONS/LOCATION:_____

EA#:_____
BOREHOLE DESIGNATION:_B-1002 A_____LOCATION:_____

COUNTY:_____RANGE:_____TOWNSHIP:_____SECTION:_____
BOREHOLE CONSTRUCTION: CASED_____ UNCASED_✓_
DIAMETERS AND DEPTH RANGES: 4" 0 TO 105' ; _____, _____ TO _____
BOREHOLE TOTAL DEPTH AS DRILLED: 105'
CONDUCTOR CASING?: YES____ DEPTH TO BOTTOM OF CASING_____; NO_✓_
DEPTH TO BEDROCK: NA DEPTH TO WATER TABLE:_____
BOREHOLE FLUID: WATER_____; FRESH WATER MUD_✓_; SALT WATER MUD _____;
OTHER:_____
DEPTH TO BOREHOLE FLUID:_____ TIME SINCE LAST CIRCULATION: 1/2 HR

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SITE:_VOGTLE B-1002 A DATE:_10 / 5 /05_____
CLIENT:_MACTEC_____ JOB:_5492_____
AUTHOR:_R. STELLER_____ PAGE 2 OF 4

LOGGING CREW:_____ R. STELLER
VEHICLE(S) USED AND MILEAGE: RED_____; BLUE_____;WHITE RENTAL
MOBILIZED FROM:_____ DEPARTURE TIME:_____
ARRIVED ON SITE:_____
STANDBY TIME:_____ CAUSE:_____
LOGGING STARTED:_____ LOGGING COMPLETED:_____
STANDBY TIME:_____ CAUSE:_____
LOGGING STARTED:_____ LOGGING COMPLETED:_____
DEMOBILIZED TO:_____ ARRIVAL TIME:_____
ADDITIONAL DEMOB TIME:_____ REASON:_____

BATTERIES CHANGED BEFORE LOGGING: YES_____; NO ✓; STORED WITH NEW_____

WINCH	COMPROBE_____	SILVER ✓	OYO_____
INSTRUMENT	12004_____	15014_____	19029 ✓
GEOPHONE			

MAINTENANCE PERFORMED ON SITE: NONE

EQUIPMENT PROBLEMS OR FAILURES: NONE

SUGGESTIONS, ADDITIONS, CHANGES: NONE

COMMENTS: REF TO RECIEVER MID POINT 0.0m ↓ 0.0m ↑

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GEOVISION SUSPENSION LOGGING FIELD NOTES

SITE:_VOGTLE B-1002A DATE:10/5/05

CLIENT:_MACTEC JOB:_5492

AUTHOR:_R. STELLER PAGE 3 OF 4

DEPTH METERS	DEPTH FEET	UNFILTERED FILE NO.	FILTERED FILE NO.	COMMENTS CASING, WATER, ROCK, ETC
0.5	1.64			
1.0	3.28			
1.5	4.92			
2.0	6.56			
2.5	8.20			
3.0	9.84			
3.5	11.48			
4.0	13.12			
4.5	14.76			
5.0	16.40			
5.5	18.04			
6.0	19.69			
6.5	21.33			
7.0	22.97			
7.5	24.61			
8.0	26.25			
8.5	27.89			
9.0	29.53			
9.5	31.17			
10.0	32.81			
10.5	34.45			
11.0	36.09			
11.5	37.73			
12.0	39.37			
12.5	41.01			
13.0	42.65			
13.5	44.29			
14.0	45.93			
14.5	47.57			
15.0	49.21	201		
15.5	50.85	202		
16.0	52.49	203		
16.5	54.13	204		
17.0	55.77	205		
17.5	57.41	206		
18.0	59.06	207		
18.5	60.70	208		
19.0	62.34	209		
19.5	63.98	210		
20.0	65.62	211		

GEOVISION SUSPENSION LOGGING FIELD NOTES

SITE:_VOGTLE B-1002 A DATE:_12/5/05

CLIENT:_MACTEC JOB:_5492

AUTHOR:_R. STELLER PAGE 4 OF 4

DEPTH METERS	DEPTH FEET	UNFILTERED FILE NO.	FILTERED FILE NO.	COMMENTS CASING, WATER, ROCK, ETC
20.5	67.26	212		
21.0	68.90	213		
21.5	70.54			
22.0	72.18			
22.5	73.82			
23.0	75.46			
23.5	77.10			
24.0	78.74			
24.5	80.38			
25.0	82.02			
25.5	83.66			
26.0	85.30			
26.5	86.94			
27.0	88.58			
27.5	90.22			EXPECTED DEEPEST MEASUREMENT
28.0	91.86			
28.5	93.50			
29.0	95.14			
29.5	96.78			
30.0	98.43			
30.5	100.07			
31.0	101.71			
31.5	103.35			
32.0	104.99			DRILLER T.D. @ 105'
32.5	106.63			
33.0	108.27			
33.5	109.91			
34.0	111.55			
34.5	113.19			
35.0	114.83			
35.5	116.47			
36.0	118.11			
36.5	119.75			
37.0	121.39			
37.5	123.03			
38.0	124.67			
38.5	126.31			
39.0	127.95			
39.5	129.59			
40.0	131.23			

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P-S SUSPENSION VELOCITY FIELD LOG

SITE:_VOGTLE B-1003 RUN 1 DATE:10/3/05
CLIENT:_MACTEC JOB:_5492
AUTHOR:_R. STELLER PAGE 1 OF 19

CONTACT:_____ _OFFICE__ PHONE:_____
_____ PHONE:_____
CONTACT:_____ _OFFICE__ PHONE:_____
_____ PHONE:_____
CONTACT:_____ _____ PHONE:_____
_____ PHONE:_____
CONTACT:_____ _____ PHONE:_____
_____ PHONE:_____
DRILLER:_____ _____ PHONE:_____
COMPANY:_____ _____ PHONE:_____

DIRECTIONS TO SITE:_____

GENERAL SITE CONDITIONS/LOCATION:_____

EA#:_____
BOREHOLE DESIGNATION:__B-1003_____LOCATION:_____

COUNTY:_____RANGE:_____TOWNSHIP:_____SECTION:_____
BOREHOLE CONSTRUCTION: CASED____ UNCASED__✓__
DIAMETERS AND DEPTH RANGES: __5"__ 0 TO __1074'__ ; _____, _____ TO _____
BOREHOLE TOTAL DEPTH AS DRILLED:__1074'_____
CONDUCTOR CASING?: YES__✓__ DEPTH TO BOTTOM OF CASING__88'__; NO____ 6" PVC SCH 40
DEPTH TO BEDROCK:__1049'__ DEPTH TO WATER TABLE:_____
BOREHOLE FLUID: WATER_____; FRESH WATER MUD__✓__; SALT WATER MUD _____;
OTHER:_____
DEPTH TO BOREHOLE FLUID:_____ TIME SINCE LAST CIRCULATION:__1 HR__

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SITE: VOGTLE B-1003 RUN 1 DATE: 10 / 3 /05
CLIENT: MACTEC JOB: 5492
AUTHOR: R. STELLER PAGE 2 OF 19

LOGGING CREW: R. STELLER
VEHICLE(S) USED AND MILEAGE: RED ; BLUE ; WHITE RENTAL
MOBILIZED FROM: DEPARTURE TIME:
ARRIVED ON SITE: 08:00
STANDBY TIME: CAUSE:
LOGGING STARTED: 12:00 LOGGING COMPLETED: 16:30
STANDBY TIME: CAUSE:
LOGGING STARTED: LOGGING COMPLETED:
DEMOBILIZED TO: ARRIVAL TIME:
ADDITIONAL DEMOB TIME: REASON:

BATTERIES CHANGED BEFORE LOGGING: YES ✓; NO ; STORED WITH NEW

WINCH	COMPROBE	SILVER ✓	OYO
INSTRUMENT	12004	15014	19029 ✓
GEOPHONE			

MAINTENANCE PERFORMED ON SITE: NONE

EQUIPMENT PROBLEMS OR FAILURES: NONE

SUGGESTIONS, ADDITIONS, CHANGES: NONE

COMMENTS: RUN 1 REF TO CABLE HEAD 2.0m ↓ 1.81m ↑

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GEOVISION SUSPENSION LOGGING FIELD NOTES

SITE:_VOGTLE B-1003 Run 7 DATE: 10 / 3 /05
CLIENT:_MACTEC JOB:_5492
AUTHOR:_R. STELLER PAGE 3 OF 19

DEPTH METERS	DEPTH FEET	UNFILTERED FILE NO.	FILTERED FILE NO.	COMMENTS CASING, WATER, ROCK, ETC
0.5	1.64			
1.0	3.28			
1.5	4.92			
2.0	6.56			
2.5	8.20			
3.0	9.84			
3.5	11.48			
4.0	13.12			
4.5	14.76			
5.0	16.40			
5.5	18.04			
6.0	19.69			
6.5	21.33			
7.0	22.97			
7.5	24.61			
8.0	26.25			
8.5	27.89			
9.0	29.53			
9.5	31.17			
10.0	32.81			
10.5	34.45			
11.0	36.09			
11.5	37.73			
12.0	39.37			
12.5	41.01			
13.0	42.65			
13.5	44.29			
14.0	45.93			
14.5	47.57			
15.0	49.21			
15.5	50.85			
16.0	52.49			
16.5	54.13			
17.0	55.77			
17.5	57.41			
18.0	59.06			
18.5	60.70			
19.0	62.34			
19.5	63.98	001		GROUT TO 64'
20.0	65.62	002		TIME = 12:14

GEOVISION SUSPENSION LOGGING FIELD NOTES

SITE:_VOGTLE B-1003 Run 1 DATE:10/3/05
CLIENT:_MACTEC JOB:_5492
AUTHOR:_R. STELLER PAGE 4 OF 19

DEPTH METERS	DEPTH FEET	UNFILTERED FILE NO.	FILTERED FILE NO.	COMMENTS CASING, WATER, ROCK, ETC
20.5	67.26	3		
21.0	68.90	4		
21.5	70.54	5		
22.0	72.18	6		
22.5	73.82	7		
23.0	75.46	8		
23.5	77.10	9		
24.0	78.74	10		
24.5	80.38	11		
25.0	82.02	12		
25.5	83.66	13		
26.0	85.30	14		
26.5	86.94	15		MARL TOP @ 86'
27.0	88.58	16		CASE AT 88'
27.5	90.22	17		
28.0	91.86	18		
28.5	93.50	19		
29.0	95.14	20		
29.5	96.78	21		
30.0	98.43	22		
30.5	100.07	23		
31.0	101.71	24		
31.5	103.35	25		
32.0	104.99	26		
32.5	106.63	27		
33.0	108.27	28		
33.5	109.91	29		
34.0	111.55	30		
34.5	113.19	31		
35.0	114.83	32		
35.5	116.47	33		
36.0	118.11	34		
36.5	119.75	35		
37.0	121.39	36		
37.5	123.03	37		
38.0	124.67	38		
38.5	126.31	39		
39.0	127.95	40		
39.5	129.59	41		
40.0	131.23	42		

GEOVISION SUSPENSION LOGGING FIELD NOTES

SITE:_VOGTLE B-1003 RUN 1 DATE: 10/3/05
CLIENT:_MACTEC JOB:_5492
AUTHOR:_R. STELLER PAGE 5 OF 19

DEPTH METERS	DEPTH FEET	UNFILTERED FILE NO.	FILTERED FILE NO.	COMMENTS CASING, WATER, ROCK, ETC
40.5	132.87	43		
41.0	134.51	44		
41.5	136.15	45		
42.0	137.80	46		
42.5	139.44	47		
43.0	141.08	48		
43.5	142.72	49		
44.0	144.36	50		
44.5	146.00	503		
45.0	147.64	504		
45.5	149.28	505		BOTTOM OF MARL
46.0	150.92	506		
46.5	152.56	507		
47.0	154.20	508		
47.5	155.84	509		
48.0	157.48	510		SHIFT TO 1 m SPACING ↓
48.5	159.12			
49.0	160.76	511		
49.5	162.40			
50.0	164.04	512		
50.5	165.68			
51.0	167.32	513		
51.5	168.96			
52.0	170.60	514		
52.5	172.24			
53.0	173.88	515		
53.5	175.52			
54.0	177.17	516		
54.5	178.81			
55.0	180.45	517		
55.5	182.09			
56.0	183.73	518		
56.5	185.37			
57.0	187.01	519		
57.5	188.65			
58.0	190.29	520		
58.5	191.93			
59.0	193.57	521		
59.5	195.21			
60.0	196.85	522		

GEOVISION SUSPENSION LOGGING FIELD NOTES

SITE:_VOGTLE B-1003 RUN 1 DATE:10/3/05
CLIENT:_MACTEC JOB:_5492
AUTHOR:_R. STELLER PAGE 6 OF 19

DEPTH METERS	DEPTH FEET	UNFILTERED FILE NO.	FILTERED FILE NO.	COMMENTS CASING, WATER, ROCK, ETC
60.5	198.49			
61.0	200.13	523		
61.5	201.77			
62.0	203.41	524		
62.5	205.05			
63.0	206.69	525		
63.5	208.33			
64.0	209.97	526		
64.5	211.61			
65.0	213.25	527		
65.5	214.90			
66.0	216.54	528		
66.5	218.18			
67.0	219.82	529		
67.5	221.46			
68.0	223.10	530		
68.5	224.74			
69.0	226.38	531		
69.5	228.02			
70.0	229.66	532		
70.5	231.30			
71.0	232.94	533		
71.5	234.58			
72.0	236.22	534		
72.5	237.86			
73.0	239.50	535		
73.5	241.14			
74.0	242.78	536		
74.5	244.42			
75.0	246.06	537		
75.5	247.70			
76.0	249.34	538		
76.5	250.98			
77.0	252.62	539		
77.5	254.27			
78.0	255.91	540		
78.5	257.55			
79.0	259.19	541		
79.5	260.83			
80.0	262.47	542		

GEOVISION SUSPENSION LOGGING FIELD NOTES

SITE:_VOGTLE B-1003 Run 1 DATE:10 / 3 /05

CLIENT:_MACTEC JOB:_5492

AUTHOR:_R. STELLER PAGE 7 OF 19

DEPTH METERS	DEPTH FEET	UNFILTERED FILE NO.	FILTERED FILE NO.	COMMENTS CASING, WATER, ROCK, ETC
80.5	264.11			
81.0	265.75	543		
81.5	267.39			
82.0	269.03	544		
82.5	270.67			
83.0	272.31	545		
83.5	273.95			
84.0	275.59	546		
84.5	277.23			
85.0	278.87	547		
85.5	280.51			
86.0	282.15	548		
86.5	283.79			
87.0	285.43	549		
87.5	287.07			
88.0	288.71	550		
88.5	290.35			
89.0	291.99	551		
89.5	293.64			
90.0	295.28	552		
90.5	296.92			
91.0	298.56	553		
91.5	300.20			
92.0	301.84	554		
92.5	303.48			
93.0	305.12	555		
93.5	306.76			
94.0	308.40	556		
94.5	310.04			
95.0	311.68	557		
95.5	313.32			
96.0	314.96	558		
96.5	316.60			
97.0	318.24	559		
97.5	319.88			
98.0	321.52	560		
98.5	323.16			
99.0	324.80	561		
99.5	326.44			TIME = 13:40
100.0	328.08	~~562~~ 600		NEW DISK (2) & PAPER

GEOVISION SUSPENSION LOGGING FIELD NOTES

SITE:_VOGTLE B-1003 Run 1 DATE:10/ 3 /05
CLIENT:_MACTEC JOB:_5492
AUTHOR:_R. STELLER PAGE 8 OF 19

DEPTH METERS	DEPTH FEET	UNFILTERED FILE NO.	FILTERED FILE NO.	COMMENTS CASING, WATER, ROCK, ETC
100.5	329.72			
101.0	331.36	601		
101.5	333.01			
102.0	334.65	602		
102.5	336.29			
103.0	337.93	603		
103.5	339.57			
104.0	341.21	604		
104.5	342.85			
105.0	344.49	605		
105.5	346.13			
106.0	347.77	606		
106.5	349.41			
107.0	351.05	607		
107.5	352.69			
108.0	354.33	608		
108.5	355.97			
109.0	357.61	609		
109.5	359.25			
110.0	360.89	610		
110.5	362.53			
111.0	364.17	611		
111.5	365.81			
112.0	367.45	612		
112.5	369.09			
113.0	370.73	613		
113.5	372.38			
114.0	374.02	614		
114.5	375.66			
115.0	377.30	615		
115.5	378.94			
116.0	380.58	616		
116.5	382.22			
117.0	383.86	617		
117.5	385.50			
118.0	387.14	618		
118.5	388.78			
119.0	390.42	619		
119.5	392.06			
120.0	393.70	620		

GEOVISION SUSPENSION LOGGING FIELD NOTES

SITE:_VOGTLE B-1003 Run 1 DATE:_10/_3_/05_____
CLIENT:_MACTEC_____ JOB:_5492_____
AUTHOR:_R. STELLER_____ PAGE_9_____ OF_19_____

DEPTH METERS	DEPTH FEET	UNFILTERED FILE NO.	FILTERED FILE NO.	COMMENTS CASING, WATER, ROCK, ETC
120.5	395.34			
121.0	396.98	621		
121.5	398.62			
122.0	400.26	622		
122.5	401.90			
123.0	403.54	623		
123.5	405.18			
124.0	406.82	624		
124.5	408.46			
125.0	410.10	625		
125.5	411.75			
126.0	413.39	626		
126.5	415.03			
127.0	416.67	627		
127.5	418.31			
128.0	419.95	628		
128.5	421.59			
129.0	423.23	629		
129.5	424.87			
130.0	426.51	630		
130.5	428.15			
131.0	429.79	631		
131.5	431.43			
132.0	433.07	632		
132.5	434.71			
133.0	436.35	633		
133.5	437.99			
134.0	439.63	634		
134.5	441.27			
135.0	442.91	635		
135.5	444.55			
136.0	446.19	636		
136.5	447.83			
137.0	449.48	637		
137.5	451.12			
138.0	452.76	638		
138.5	454.40			
139.0	456.04	639		
139.5	457.68			
140.0	459.32	640		

GEOVISION SUSPENSION LOGGING FIELD NOTES

SITE:_VOGTLE B-1003 RUN 1 DATE:10/3/05
CLIENT:_MACTEC JOB:_5492
AUTHOR:_R. STELLER PAGE 10 OF 19

DEPTH METERS	DEPTH FEET	UNFILTERED FILE NO.	FILTERED FILE NO.	COMMENTS CASING, WATER, ROCK, ETC
140.5	460.96			
141.0	462.60	641		
141.5	464.24			
142.0	465.88	642		
142.5	467.52			
143.0	469.16	643		
143.5	470.80			
144.0	472.44	644		
144.5	474.08			
145.0	475.72	645		
145.5	477.36			
146.0	479.00	646		
146.5	480.64			
147.0	482.28	647		
147.5	483.92			
148.0	485.56	648		
148.5	487.20			
149.0	488.85	649		
149.5	490.49			
150.0	492.13	650		
150.5	493.77			
151.0	495.41	651		
151.5	497.05			
152.0	498.69	652		
152.5	500.33			
153.0	501.97	653		
153.5	503.61			
154.0	505.25	654		
154.5	506.89			
155.0	508.53	655		
155.5	510.17			
156.0	511.81	656		
156.5	513.45			
157.0	515.09	657		
157.5	516.73			
158.0	518.37	658		
158.5	520.01			SKIPPED 160 m READING.
159.0	521.65	659		
159.5	523.29			
160.0	524.93	~~660~~		TIME = 14:16

GEOVISION SUSPENSION LOGGING FIELD NOTES

SITE:_VOGTLE B-1003 RUN 1 DATE:10/3/05
CLIENT:_MACTEC JOB:_5492
AUTHOR:_R. STELLER PAGE 11 OF 19

DEPTH METERS	DEPTH FEET	UNFILTERED FILE NO.	FILTERED FILE NO.	COMMENTS CASING, WATER, ROCK, ETC
160.5	526.57			
161.0	528.22	660		
161.5	529.86			
162.0	531.50	661		
162.5	533.14			
163.0	534.78	662		
163.5	536.42			
164.0	538.06	663		
164.5	539.70			
165.0	541.34	664		
165.5	542.98			
166.0	544.62	665		
166.5	546.26			
167.0	547.90	666		
167.5	549.54			
168.0	551.18	667		
168.5	552.82			
169.0	554.46	668		OVERSHOT — DATA @ 169.3 m
169.5	556.10			
170.0	557.74	669		
170.5	559.38			
171.0	561.02	671		FILE # 670 SKIPPED TO
171.5	562.66			MATCH FILE # WITH DEPTH
172.0	564.30	672		
172.5	565.94			
173.0	567.59	673		
173.5	569.23			
174.0	570.87	674		
174.5	572.51			
175.0	574.15	675		
175.5	575.79			
176.0	577.43	676		
176.5	579.07			
177.0	580.71	677		
177.5	582.35			
178.0	583.99	678		
178.5	585.63			
179.0	587.27	679		
179.5	588.91			
180.0	590.55	680		

GEOVISION SUSPENSION LOGGING FIELD NOTES

SITE:_VOGTLE B-1003 Run 1 DATE:10/3/05
CLIENT:_MACTEC JOB:_5492
AUTHOR:_R. STELLER PAGE 12 OF 19

DEPTH METERS	DEPTH FEET	UNFILTERED FILE NO.	FILTERED FILE NO.	COMMENTS CASING, WATER, ROCK, ETC
180.5	592.19			
181.0	593.83	681		
181.5	595.47			
182.0	597.11	682		
182.5	598.75			
183.0	600.39	683		
183.5	602.03			
184.0	603.67	684		
184.5	605.31			
185.0	606.96	685		
185.5	608.60			
186.0	610.24	686		
186.5	611.88			
187.0	613.52	687		
187.5	615.16			
188.0	616.80	688		
188.5	618.44			
189.0	620.08	689		
189.5	621.72			
190.0	623.36	690		
190.5	625.00			
191.0	626.64	691		
191.5	628.28			
192.0	629.92	692		
192.5	631.56			
193.0	633.20	693		
193.5	634.84			
194.0	636.48	694		
194.5	638.12			
195.0	639.76	695		
195.5	641.40			
196.0	643.04	696		
196.5	644.69			
197.0	646.33	697		
197.5	647.97			
198.0	649.61	698		
198.5	651.25			
199.0	652.89	699		
199.5	654.53			
200.0	656.17	700		

GEOVISION SUSPENSION LOGGING FIELD NOTES

SITE:_VOGTLE B-1003 RUN 1 DATE:10/3/05
CLIENT:_MACTEC JOB:_5492
AUTHOR:_R. STELLER PAGE 13 OF 19

DEPTH METERS	DEPTH FEET	UNFILTERED FILE NO.	FILTERED FILE NO.	COMMENTS CASING, WATER, ROCK, ETC
200.5	657.81			
201.0	659.45	701		NEW DISK (3) & PAPER
201.5	661.09			TIME = 14:41
202.0	662.73	702		
202.5	664.37			
203.0	666.01	703		
203.5	667.65			
204.0	669.29	704		
204.5	670.93			
205.0	672.57	705		
205.5	674.21			
206.0	675.85	706		
206.5	677.49			
207.0	679.13	707		
207.5	680.77			
208.0	682.41	708		
208.5	684.06			
209.0	685.70	709		
209.5	687.34			
210.0	688.98	710		
210.5	690.62			
211.0	692.26	711		
211.5	693.90			
212.0	695.54	712		
212.5	697.18			
213.0	698.82	713		
213.5	700.46			
214.0	702.10	714		
214.5	703.74			
215.0	705.38	715		
215.5	707.02			
216.0	708.66	716		
216.5	710.30			
217.0	711.94	717		
217.5	713.58			
218.0	715.22	718		
218.5	716.86			
219.0	718.50	719		
219.5	720.14			
220.0	721.78	720		

GEOVISION SUSPENSION LOGGING FIELD NOTES

SITE:_VOGTLE B-1003 RUN 1 DATE:10/3/05
CLIENT:_MACTEC JOB:_5492
AUTHOR:_R. STELLER PAGE 14 OF 19

DEPTH METERS	DEPTH FEET	UNFILTERED FILE NO.	FILTERED FILE NO.	COMMENTS CASING, WATER, ROCK, ETC
220.5	723.43			
221.0	725.07	721		
221.5	726.71			
222.0	728.35	722		
222.5	729.99			
223.0	731.63	723		
223.5	733.27			
224.0	734.91	724		
224.5	736.55			
225.0	738.19	725		
225.5	739.83			
226.0	741.47	726		
226.5	743.11			
227.0	744.75	727		
227.5	746.39			
228.0	748.03	728		
228.5	749.67			
229.0	751.31	729		
229.5	752.95			
230.0	754.59	730		
230.5	756.23			
231.0	757.87	731		
231.5	759.51			
232.0	761.15	732		
232.5	762.80			
233.0	764.44	733		
233.5	766.08			
234.0	767.72	734		
234.5	769.36			
235.0	771.00	735		
235.5	772.64			
236.0	774.28	736		
236.5	775.92			
237.0	777.56	737		
237.5	779.20			
238.0	780.84	738		
238.5	782.48			
239.0	784.12	739		
239.5	785.76			
240.0	787.40	740		

GEOVISION SUSPENSION LOGGING FIELD NOTES

SITE:_VOGTLE B-1003 RUN 1 DATE:10/3/05
CLIENT:_MACTEC JOB:_5492
AUTHOR:_R. STELLER PAGE 15 OF 19

DEPTH METERS	DEPTH FEET	UNFILTERED FILE NO.	FILTERED FILE NO.	COMMENTS CASING, WATER, ROCK, ETC
240.5	789.04			
241.0	790.68	741		
241.5	792.32			
242.0	793.96	742		
242.5	795.60			
243.0	797.24	743		
243.5	798.88			
244.0	800.52	744		
244.5	802.17			
245.0	803.81	745		
245.5	805.45			
246.0	807.09	746		
246.5	808.73			
247.0	810.37	747		
247.5	812.01			
248.0	813.65	748		
248.5	815.29			
249.0	816.93	749		
249.5	818.57			
250.0	820.21	750		
250.5	821.85			
251.0	823.49	751		
251.5	825.13			
252.0	826.77	752		
252.5	828.41			
253.0	830.05	753		
253.5	831.69			
254.0	833.33	754		
254.5	834.97			
255.0	836.61	755		
255.5	838.25			
256.0	839.90	756		
256.5	841.54			
257.0	843.18	757		
257.5	844.82			
258.0	846.46	758		
258.5	848.10			
259.0	849.74	759		
259.5	851.38			
260.0	853.02	760		

GEOVISION SUSPENSION LOGGING FIELD NOTES

SITE:_VOGTLE B-1003 RUN 1 DATE:10/3/05
CLIENT:_MACTEC JOB:_5492
AUTHOR:_R. STELLER PAGE 16 OF 19

DEPTH METERS	DEPTH FEET	UNFILTERED FILE NO.	FILTERED FILE NO.	COMMENTS CASING, WATER, ROCK, ETC
260.5	854.66			
261.0	856.30	761		
261.5	857.94			
262.0	859.58	762		
262.5	861.22			
263.0	862.86	763		
263.5	864.50			
264.0	866.14	764		
264.5	867.78			
265.0	869.42	765		
265.5	871.06			
266.0	872.70	766		
266.5	874.34			
267.0	875.98	767		
267.5	877.62			
268.0	879.27	768		
268.5	880.91			
269.0	882.55	769		
269.5	884.19			
270.0	885.83	770		
270.5	887.47			
271.0	889.11	771		
271.5	890.75			
272.0	892.39	772		
272.5	894.03			
273.0	895.67	773		
273.5	897.31			
274.0	898.95	774		
274.5	900.59			
275.0	902.23	775		
275.5	903.87			
276.0	905.51	776		
276.5	907.15			
277.0	908.79	777		
277.5	910.43			
278.0	912.07	778		
278.5	913.71			
279.0	915.35	779		
279.5	916.99			
280.0	918.64	780		

GEOVISION SUSPENSION LOGGING FIELD NOTES

SITE:_VOGTLE B-1003 Run 1 DATE:10/3/05
CLIENT:_MACTEC JOB:_5492
AUTHOR:_R. STELLER PAGE 17 OF 19

DEPTH METERS	DEPTH FEET	UNFILTERED FILE NO.	FILTERED FILE NO.	COMMENTS CASING, WATER, ROCK, ETC
280.5	920.28			
281.0	921.92	781		OVERSHOT DEPTH: DATA @ 281.1 m
281.5	923.56			
282.0	925.20	782		
282.5	926.84			
283.0	928.48	783		
283.5	930.12			
284.0	931.76	784		
284.5	933.40			
285.0	935.04	785		
285.5	936.68			
286.0	938.32	786		
286.5	939.96			
287.0	941.60	787		
287.5	943.24			
288.0	944.88	788		
288.5	946.52			
289.0	948.16	789		
289.5	949.80			
290.0	951.44	790		
290.5	953.08			
291.0	954.72	791		
291.5	956.36			
292.0	958.01	792		
292.5	959.65			
293.0	961.29	793		
293.5	962.93			
294.0	964.57	794		
294.5	966.21			
295.0	967.85	795		
295.5	969.49			
296.0	971.13	796		
296.5	972.77			
297.0	974.41	797		
297.5	976.05			
298.0	977.69	798		
298.5	979.33			
299.0	980.97	799		
299.5	982.61			
300.0	984.25	800		

GEOVISION SUSPENSION LOGGING FIELD NOTES

SITE:_VOGTLE B-1003 RUN 1 DATE:10/ 3 /05

CLIENT:_MACTEC JOB:_5492

AUTHOR:_R. STELLER PAGE 18 OF 19

DEPTH METERS	DEPTH FEET	UNFILTERED FILE NO.	FILTERED FILE NO.	COMMENTS CASING, WATER, ROCK, ETC
300.5	985.89			
301.0	987.53	801		NEW DISK (4) & PAPER
301.5	989.17			TIME = 15:36
302.0	990.81	802		
302.5	992.45			
303.0	994.09	803		
303.5	995.73			
304.0	997.38	804		
304.5	999.02			
305.0	1000.66	805		
305.5	1002.30			
306.0	1003.94	806		
306.5	1005.58			
307.0	1007.22	807		
307.5	1008.86			
308.0	1010.50	808		
308.5	1012.14			
309.0	1013.78	809		
309.5	1015.42			
310.0	1017.06	810		
310.5	1018.70			
311.0	1020.34	811		
311.5	1021.98			
312.0	1023.62	812		
312.5	1025.26			
313.0	1026.90	813		
313.5	1028.54			
314.0	1030.18	814		
314.5	1031.82			
315.0	1033.46	815		RETURN TO 0.5 m SPACING.
315.5	1035.10	816		
316.0	1036.75	817		
316.5	1038.39	818		
317.0	1040.03	819		
317.5	1041.67	820		
318.0	1043.31	821		
318.5	1044.95	822		
319.0	1046.59	823		
319.5	1048.23	824		
320.0	1049.87	825		TRIASSIC CONTACT @ 1049'

GEOVISION SUSPENSION LOGGING FIELD NOTES

SITE:_VOGTLE B-1003 RUN 1 DATE:10/3/05
CLIENT:_MACTEC JOB:_5492
AUTHOR:_R. STELLER PAGE 19 OF 19

DEPTH METERS	DEPTH FEET	UNFILTERED FILE NO.	FILTERED FILE NO.	COMMENTS CASING, WATER, ROCK, ETC
320.5	1051.51	826		
321.0	1053.15	827		
321.5	1054.79	828		
322.0	1056.43	829		
322.5	1058.07	830		
323.0	1059.71	831		EXPECTED BOTTOM MEASUREMENT
323.5	1061.35	832		
324.0	1062.99			HIT BOTTOM @ 323.8m.
324.5	1064.63			TIME = 15:50
325.0	1066.27			
325.5	1067.91			
326.0	1069.55			
326.5	1071.19			
327.0	1072.83			
327.5	1074.48			DRILLER T.D. @ 1074'
328.0	1076.12			
328.5	1077.76			
329.0	1079.40			
329.5	1081.04			
330.0	1082.68			
330.5	1084.32			
331.0	1085.96			
331.5	1087.60			
332.0	1089.24			
332.5	1090.88			
333.0	1092.52			
333.5	1094.16			
334.0	1095.80			
334.5	1097.44			
335.0	1099.08			
335.5	1100.72			
336.0	1102.36			
336.5	1104.00			
337.0	1105.64			
337.5	1107.28			
338.0	1108.92			
338.5	1110.56			
339.0	1112.20			
339.5	1113.85			
340.0	1115.49			

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P-S SUSPENSION VELOCITY FIELD LOG

SITE:_VOGTLE B-1003 Run 2 DATE:_11/_10_/05_____
CLIENT:_MACTEC_____ JOB:_5492_____
AUTHOR:_R. STELLER_____ PAGE 1 OF ~~7~~ 8

CONTACT:_____ _OFFICE__ PHONE:_____
_____ PHONE:_____
CONTACT:_____ _OFFICE__ PHONE:_____
_____ PHONE:_____
CONTACT:_____ _____ PHONE:_____
_____ PHONE:_____
CONTACT:_____ _____ PHONE:_____
_____ PHONE:_____
DRILLER:_____ _____ PHONE:_____
COMPANY:_____ _____ PHONE:_____

DIRECTIONS TO SITE:_____
_____
_____
_____
_____

GENERAL SITE CONDITIONS/LOCATION:_____
_____

EA#:_____
BOREHOLE DESIGNATION:__B-1003_____LOCATION:_____
_____
COUNTY:_____RANGE:_____TOWNSHIP:_____SECTION:_____
BOREHOLE CONSTRUCTION: CASED_____ UNCASED_✓_
DIAMETERS AND DEPTH RANGES: 5" 0 TO 1338' ; _____, _____ TO _____
BOREHOLE TOTAL DEPTH AS DRILLED:_1338_____
CONDUCTOR CASING?: YES_✓_ DEPTH TO BOTTOM OF CASING 1054'; NO____
DEPTH TO BEDROCK:_1049_____ DEPTH TO WATER TABLE:_____
BOREHOLE FLUID: WATER_____; FRESH WATER MUD_✓_; SALT WATER MUD _____;
OTHER:_____
DEPTH TO BOREHOLE FLUID:_____ TIME SINCE LAST CIRCULATION:_3 HR_____

GEOVision Geophysical Services 1551 Pomona Road, Unit P, Corona, CA 92882 Ph (951) 549-1234 Fx (951) 549-1236

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SITE: VOGTLE B-1003 RUN 2 DATE: 11/8/10/05
CLIENT: MACTEC JOB: 5492
AUTHOR: R. STELLER PAGE 2 OF ~~7~~ 8

LOGGING CREW: R. STELLER
VEHICLE(S) USED AND MILEAGE: RED ; BLUE ;WHITE RENTAL
MOBILIZED FROM: DEPARTURE TIME:
ARRIVED ON SITE:
STANDBY TIME: CAUSE:
LOGGING STARTED: LOGGING COMPLETED:
STANDBY TIME: CAUSE:
LOGGING STARTED: LOGGING COMPLETED:
DEMOBILIZED TO: ARRIVAL TIME:
ADDITIONAL DEMOB TIME: REASON:

BATTERIES CHANGED BEFORE LOGGING: YES ✓; NO ; STORED WITH NEW

WINCH	COMPROBE	SILVER ✓	OYO
INSTRUMENT	12004	15014	19029 ✓
GEOPHONE			

MAINTENANCE PERFORMED ON SITE: NONE

EQUIPMENT PROBLEMS OR FAILURES: NONE

SUGGESTIONS, ADDITIONS, CHANGES: NONE.

COMMENTS: DEPTH REFERENCE TO CABLE COUPLER - SEE SKETCH ON PAGE 8

GEOVision Geophysical Services 1551 Pomona Road, Unit P, Corona, CA 92882 Ph (951) 549-1234 Fx (951) 549-1236

GEOVISION SUSPENSION LOGGING FIELD NOTES

SITE:_VOGTLE B-1003 RUN 2 DATE:_11_/_10_/05_____
CLIENT:_MACTEC_____ JOB:_5492_____
AUTHOR:_R. STELLER_____ PAGE_3_____OF_~~7~~ 8_____

DEPTH METERS	DEPTH FEET	UNFILTERED FILE NO.	FILTERED FILE NO.	COMMENTS CASING, WATER, ROCK, ETC
320.5	1051.51			
321.0	1053.15	001		
321.5	1054.79	2		
322.0	1056.43	3		
322.5	1058.07	4		
323.0	1059.71	5		
323.5	1061.35	6		
324.0	1062.99	7		
324.5	1064.63	8		
325.0	1066.27	9		
325.5	1067.91	10		
326.0	1069.55	11		
326.5	1071.19	12		
327.0	1072.83	13		
327.5	1074.48	14		
328.0	1076.12	15		
328.5	1077.76	16		
329.0	1079.40	17		
329.5	1081.04	18		
330.0	1082.68	19		
330.5	1084.32	20		
331.0	1085.96	21		
331.5	1087.60	22		
332.0	1089.24	23		
332.5	1090.88	24		
333.0	1092.52	25		
333.5	1094.16	26		
334.0	1095.80	27		
334.5	1097.44	28		
335.0	1099.08	29		
335.5	1100.72	30		
336.0	1102.36	31		
336.5	1104.00	32		
337.0	1105.64	33		
337.5	1107.28	34		
338.0	1108.92	35		
338.5	1110.56	36		
339.0	1112.20	37		
339.5	1113.85	38		
340.0	1115.49	39		

GEOVISION SUSPENSION LOGGING FIELD NOTES

SITE:_VOGTLE B-1003 RUN 2 DATE:_11/10/05_____
CLIENT:_MACTEC_____ JOB:_5492_____
AUTHOR:_R. STELLER_____ PAGE 4 OF ~~7~~ 8

DEPTH METERS	DEPTH FEET	UNFILTERED FILE NO.	FILTERED FILE NO.	COMMENTS CASING, WATER, ROCK, ETC
340.5	1117.13	40		
341.0	1118.77	41		
341.5	1120.41	42		
342.0	1122.05	43		
342.5	1123.69	44		
343.0	1125.33	45		
343.5	1126.97	46		
344.0	1128.61	47		
344.5	1130.25	48		
345.0	1131.89	49		
345.5	1133.53	50		
346.0	1135.17	51		
346.5	1136.81	52		
347.0	1138.45	53		
347.5	1140.09	54		
348.0	1141.73	55		
348.5	1143.37	56		
349.0	1145.01	57		
349.5	1146.65	58		
350.0	1148.29	59		
350.5	1149.93	60		
351.0	1151.57	61		
351.5	1153.22	62		
352.0	1154.86	63		
352.5	1156.50	64		
353.0	1158.14	65		
353.5	1159.78	66		
354.0	1161.42	67		
354.5	1163.06	68		
355.0	1164.70	69		
355.5	1166.34	70		
356.0	1167.98	71		
356.5	1169.62	72		
357.0	1171.26	73		
357.5	1172.90	74		
358.0	1174.54	75		
358.5	1176.18	76		
359.0	1177.82	77		
359.5	1179.46	78		
360.0	1181.10	79		

GEOVISION SUSPENSION LOGGING FIELD NOTES

SITE:_VOGTLE B-1003 RUN 2 DATE:_11/_10/05

CLIENT:_MACTEC JOB:_5492

AUTHOR:_R. STELLER PAGE 5 OF 78

DEPTH METERS	DEPTH FEET	UNFILTERED FILE NO.	FILTERED FILE NO.	COMMENTS CASING, WATER, ROCK, ETC
360.5	1182.74	80		
361.0	1184.38	81		
361.5	1186.02	82		
362.0	1187.66	83		
362.5	1189.30	84		
363.0	1190.94	85		
363.5	1192.59	86		
364.0	1194.23	87		
364.5	1195.87	88		
365.0	1197.51	89		
365.5	1199.15	90		
366.0	1200.79	91		
366.5	1202.43	92		
367.0	1204.07	93		
367.5	1205.71	94		
368.0	1207.35	95		
368.5	1208.99	96		
369.0	1210.63	97		
369.5	1212.27	98		
370.0	1213.91	99		
370.5	1215.55	100		
371.0	1217.19	101		
371.5	1218.83	102		
372.0	1220.47	103		
372.5	1222.11	104		
373.0	1223.75	105		
373.5	1225.39	106		
374.0	1227.03	107		
374.5	1228.67	108		
375.0	1230.31	109		
375.5	1231.96	110		
376.0	1233.60	111		
376.5	1235.24	112		
377.0	1236.88	113		
377.5	1238.52	114		
378.0	1240.16	115		
378.5	1241.80	116		
379.0	1243.44	117		
379.5	1245.08	118		
380.0	1246.72	119		

GEOVISION SUSPENSION LOGGING FIELD NOTES

SITE:_VOGTLE B-1003 RUN 2 DATE:11/10/05
CLIENT:_MACTEC JOB:_5492
AUTHOR:_R. STELLER PAGE 6 OF 78

DEPTH METERS	DEPTH FEET	UNFILTERED FILE NO.	FILTERED FILE NO.	COMMENTS CASING, WATER, ROCK, ETC
380.5	1248.36	120		
381.0	1250.00	121		
381.5	1251.64	122		
382.0	1253.28	123		
382.5	1254.92	124		
383.0	1256.56	125		
383.5	1258.20	126		
384.0	1259.84	127		
384.5	1261.48	128		
385.0	1263.12	129		
385.5	1264.76	130		
386.0	1266.40	131		
386.5	1268.04	132		
387.0	1269.69	133		
387.5	1271.33	134		
388.0	1272.97	135		
388.5	1274.61	136		
389.0	1276.25	137		
389.5	1277.89	138		
390.0	1279.53	139		
390.5	1281.17	140		
391.0	1282.81	141		
391.5	1284.45	142		
392.0	1286.09	143		
392.5	1287.73	144		
393.0	1289.37	145		
393.5	1291.01	146		
394.0	1292.65	147		
394.5	1294.29	148		
395.0	1295.93	149		
395.5	1297.57	150		
396.0	1299.21	151		
396.5	1300.85	152		
397.0	1302.49	153		
397.5	1304.13	154		
398.0	1305.77	155		
398.5	1307.41	156		
399.0	1309.06	157		
399.5	1310.70	158		
400.0	1312.34	159		

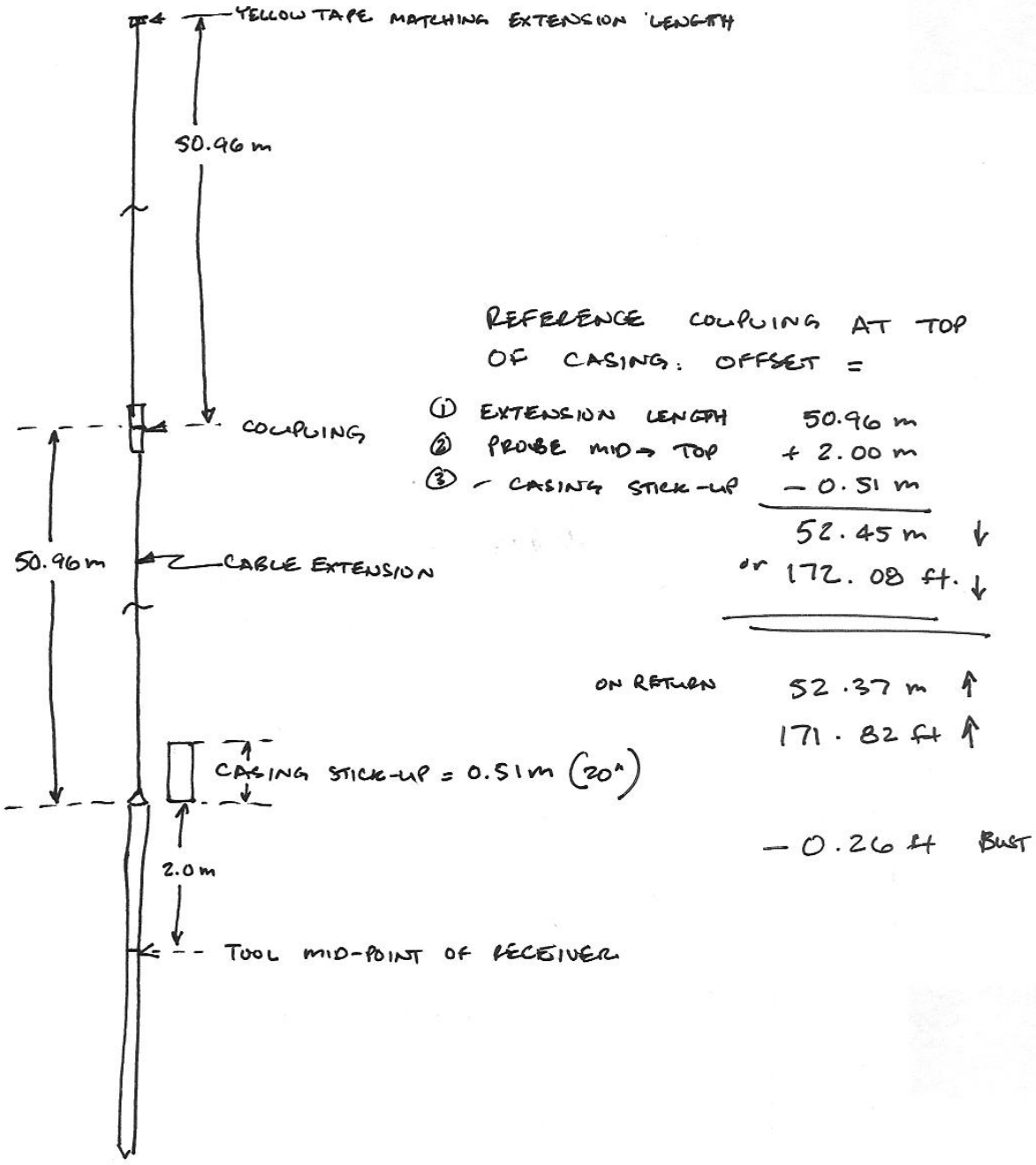
GEOVISION SUSPENSION LOGGING FIELD NOTES

SITE:_VOGTLE B-1003 RUN 2 DATE:11/10/05
CLIENT:_MACTEC JOB:_5492
AUTHOR:_R. STELLER PAGE 7 OF 78

DEPTH METERS	DEPTH FEET	UNFILTERED FILE NO.	FILTERED FILE NO.	COMMENTS CASING, WATER, ROCK, ETC
400.5	1313.98	160		
401.0	1315.62	161		
401.5	1317.26	162		TIME = 12:22
402.0	1318.90			
402.5	1320.54			
403.0	1322.18			DEEPEST EXPECTED MEASURE.
403.5	1323.82			
404.0	1325.46			
404.5	1327.10			
405.0	1328.74			
405.5	1330.38			
406.0	1332.02			
406.5	1333.66			
407.0	1335.30			
407.5	1336.94			
408.0	1338.58			PRIMER T.D. @ 1338'
408.5	1340.22			
409.0	1341.86			
409.5	1343.50			
410.0	1345.14			
410.5	1346.78			
411.0	1348.43			
411.5	1350.07			
412.0	1351.71			
412.5	1353.35			
413.0	1354.99			
413.5	1356.63			
414.0	1358.27			
414.5	1359.91			
415.0	1361.55			
415.5	1363.19			
416.0	1364.83			
416.5	1366.47			
417.0	1368.11			
417.5	1369.75			
418.0	1371.39			
418.5	1373.03			
419.0	1374.67			
419.5	1376.31			
420.0	1377.95			

P-S SUSPENSION VELOCITY FIELD LOG

SITE:_VOGTLE B-1003 RUN 2 DATE:11 / 10 /05
CLIENT:_MACTEC JOB:_5492
AUTHOR:_R. STELLER PAGE 8 OF 8



REFERENCE COUPLING AT TOP OF CASING: OFFSET =

①	EXTENSION LENGTH	50.96 m
②	PROBE MID → TOP	+ 2.00 m
③	− CASING STICK-UP	− 0.51 m
		52.45 m ↓
		or 172.08 ft. ↓

ON RETURN 52.37 m ↑
171.82 ft ↑

− 0.26 ft BUST

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P-S SUSPENSION VELOCITY FIELD LOG

SITE:_VOGTLE B-1003 Run 3 DATE: 11 / 11 /05
CLIENT:_MACTEC JOB:_5492
AUTHOR:_R. STELLER PAGE 1 OF 4 5

CONTACT:_____ _OFFICE__ PHONE:_____
_____ PHONE:_____
CONTACT:_____ _OFFICE__ PHONE:_____
_____ PHONE:_____
CONTACT:_____ _____ PHONE:_____
_____ PHONE:_____
CONTACT:_____ _____ PHONE:_____
_____ PHONE:_____
DRILLER:_____ _____ PHONE:_____
COMPANY:_____ _____ PHONE:_____

DIRECTIONS TO SITE:_____

GENERAL SITE CONDITIONS/LOCATION:_____

EA#:_____
BOREHOLE DESIGNATION: B-1003 LOCATION:_____

COUNTY:_____RANGE:_____TOWNSHIP:_____SECTION:_____
BOREHOLE CONSTRUCTION: CASED_____ UNCASED ✓
DIAMETERS AND DEPTH RANGES: 5" 0 TO 1338' ; _____, _____ TO _____
BOREHOLE TOTAL DEPTH AS DRILLED: 1338'
CONDUCTOR CASING?: YES ✓ DEPTH TO BOTTOM OF CASING 1054' ; NO____
DEPTH TO BEDROCK: 1049' DEPTH TO WATER TABLE:_____
BOREHOLE FLUID: WATER_____; FRESH WATER MUD ✓; SALT WATER MUD _____;
OTHER:_____
DEPTH TO BOREHOLE FLUID:_____ TIME SINCE LAST CIRCULATION: 3HR

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SITE:_VOGTLE B-1003 RUN 3 DATE: 11 / 11 /05
CLIENT:_MACTEC JOB:_5492
AUTHOR:_R. STELLER PAGE 2 OF 45

LOGGING CREW: R STELLER
VEHICLE(S) USED AND MILEAGE: RED_____; BLUE_____;WHITE RENTAL
MOBILIZED FROM:_____ DEPARTURE TIME:_____
ARRIVED ON SITE:_____
STANDBY TIME:_____ CAUSE:_____
LOGGING STARTED:_____ LOGGING COMPLETED:_____
STANDBY TIME:_____ CAUSE:_____
LOGGING STARTED:_____ LOGGING COMPLETED:_____
DEMOBILIZED TO:_____ ARRIVAL TIME:_____
ADDITIONAL DEMOB TIME:_____ REASON:_____

BATTERIES CHANGED BEFORE LOGGING: YES_____; NO ✓; STORED WITH NEW_____

WINCH	COMPROBE_____	SILVER ✓	OYO_____
INSTRUMENT	12004_____	15014_____	19029 ✓
GEOPHONE			

MAINTENANCE PERFORMED ON SITE: NONE

EQUIPMENT PROBLEMS OR FAILURES: NONE

SUGGESTIONS, ADDITIONS, CHANGES: NONE

COMMENTS: DEPTH REFERENCE TO CABLE COUPLER - SEE SKETCH ON PAGE 5

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GEOVISION SUSPENSION LOGGING FIELD NOTES

SITE:_VOGTLE B-1003 RUN 3 DATE:11 / 11 /05
CLIENT:_MACTEC JOB:_5492
AUTHOR:_R. STELLER PAGE 3 OF 45

DEPTH METERS	DEPTH FEET	UNFILTERED FILE NO.	FILTERED FILE NO.	COMMENTS CASING, WATER, ROCK, ETC
380.5	1248.36			
381.0	1250.00			
381.5	1251.64			
382.0	1253.28			
382.5	1254.92			
383.0	1256.56			
383.5	1258.20			
384.0	1259.84			
384.5	1261.48			
385.0	1263.12			
385.5	1264.76			
386.0	1266.40			
386.5	1268.04			
387.0	1269.69			
387.5	1271.33			
388.0	1272.97			
388.5	1274.61			
389.0	1276.25			
389.5	1277.89			
390.0	1279.53			
390.5	1281.17			
391.0	1282.81			
391.5	1284.45			
392.0	1286.09			
392.5	1287.73			
393.0	1289.37			
393.5	1291.01			
394.0	1292.65			
394.5	1294.29			
395.0	1295.93			
395.5	1297.57			
396.0	1299.21			
396.5	1300.85			
397.0	1302.49	301		TIME = 11:42
397.5	1304.13	302		
398.0	1305.77	303		
398.5	1307.41	304		
399.0	1309.06	305		
399.5	1310.70	306		
400.0	1312.34	307		

GEOVISION SUSPENSION LOGGING FIELD NOTES

SITE:_VOGTLE B-1003 RUN 3 DATE:11/11/05

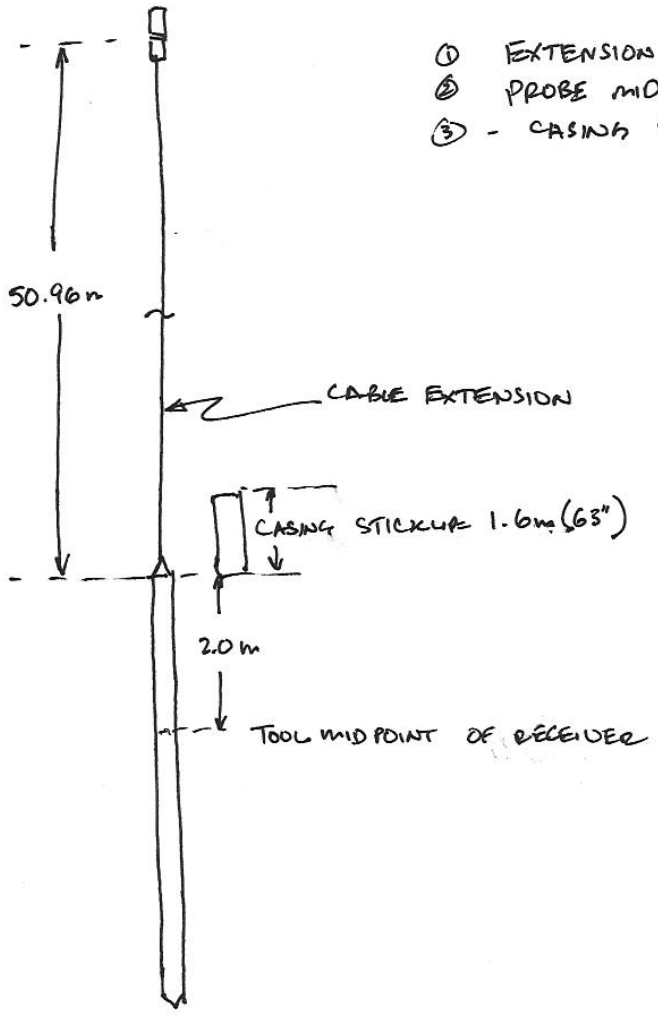
CLIENT:_MACTEC JOB:_5492

AUTHOR:_R. STELLER PAGE 4 OF 4-5

DEPTH METERS	DEPTH FEET	UNFILTERED FILE NO.	FILTERED FILE NO.	COMMENTS CASING, WATER, ROCK, ETC
400.5	1313.98	308		
401.0	1315.62	309		
401.5	1317.26	310		
402.0	1318.90	311		
402.5	1320.54	312		
403.0	1322.18	313		DEEPEST EXPECTED MEASURE
403.5	1323.82	314		
404.0	1325.46	315		
404.5	1327.10	316		TIME = 11:57
405.0	1328.74			
405.5	1330.38			
406.0	1332.02			
406.5	1333.66			
407.0	1335.30			
407.5	1336.94			
408.0	1338.58			DRILLER T.D. @1338'
408.5	1340.22			
409.0	1341.86			
409.5	1343.50			
410.0	1345.14			
410.5	1346.78			
411.0	1348.43			
411.5	1350.07			
412.0	1351.71			
412.5	1353.35			
413.0	1354.99			
413.5	1356.63			
414.0	1358.27			
414.5	1359.91			
415.0	1361.55			
415.5	1363.19			
416.0	1364.83			
416.5	1366.47			
417.0	1368.11			
417.5	1369.75			
418.0	1371.39			
418.5	1373.03			
419.0	1374.67			
419.5	1376.31			
420.0	1377.95			

P-S SUSPENSION VELOCITY FIELD LOG

SITE:_VOGTLE B-1003 RUN 3 DATE:11 / 11 /05
CLIENT:_MACTEC JOB:_5492
AUTHOR:_R. STELLER PAGE 5 OF 5



REFERENCE COUPLING AT TOP OF CASING : DEPTH OFFSET =

①	EXTENSION LENGTH	50.96 m
②	PROBE MID POINT ⇒ TOP	2.00 m
③	- CASING STICK-UP	1.6 m
		51.36 m ↓
		168.5 ft ↓
ON RETURN:		51.20 ↑
		167.98 ↑
		- 0.5 ft BUSHT

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P-S SUSPENSION VELOCITY FIELD LOG

SITE:_VOGTLE B-1004 DATE:10 / 4 /05
CLIENT:_MACTEC JOB:_5492
AUTHOR:_R. STELLER PAGE 1 OF 5

CONTACT:_____ _OFFICE__ PHONE:_____
_____ PHONE:_____
CONTACT:_____ _OFFICE__ PHONE:_____
_____ PHONE:_____
CONTACT:_____ _____ PHONE:_____
_____ PHONE:_____
CONTACT:_____ _____ PHONE:_____
_____ PHONE:_____
DRILLER:_____ _____ PHONE:_____
COMPANY:_____ _____ PHONE:_____

DIRECTIONS TO SITE:_____

GENERAL SITE CONDITIONS/LOCATION:_____

EA#:_____
BOREHOLE DESIGNATION: B-1004 LOCATION:_____

COUNTY:_____RANGE:_____TOWNSHIP:_____SECTION:_____
BOREHOLE CONSTRUCTION: CASED_____ UNCASED ✓
DIAMETERS AND DEPTH RANGES: 4" 0 TO 302' ; _____, _____ TO _____
BOREHOLE TOTAL DEPTH AS DRILLED: 302'
CONDUCTOR CASING?: YES ✓ DEPTH TO BOTTOM OF CASING 135'; NO____
DEPTH TO BEDROCK: NA DEPTH TO WATER TABLE:_____
BOREHOLE FLUID: WATER_____; FRESH WATER MUD ✓; SALT WATER MUD _____;
OTHER:_____
DEPTH TO BOREHOLE FLUID:_____ TIME SINCE LAST CIRCULATION: 1/2 HR

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SITE:_VOGTLE B-1004 DATE:_10/_4/05_____
CLIENT:_MACTEC_____ JOB:_5492_____
AUTHOR:_R. STELLER_____ PAGE 2 OF _5__

LOGGING CREW:_R. STELLER_____
VEHICLE(S) USED AND MILEAGE: RED_____; BLUE_____;WHITE_RENTAL_____
MOBILIZED FROM:_____ DEPARTURE TIME:_____
ARRIVED ON SITE:_____
STANDBY TIME:_____ CAUSE:_____
LOGGING STARTED:_____ LOGGING COMPLETED:_____
STANDBY TIME:_____ CAUSE:_____
LOGGING STARTED:_____ LOGGING COMPLETED:_____
DEMOBILIZED TO:_____ ARRIVAL TIME:_____
ADDITIONAL DEMOB TIME:_____ REASON:_____

BATTERIES CHANGED BEFORE LOGGING: YES_____; NO_✓_; STORED WITH NEW_____

WINCH	COMPROBE_____	SILVER_✓_____	OYO_____
INSTRUMENT	12004_____	15014_____	19029_✓_____
GEOPHONE	_____		

MAINTENANCE PERFORMED ON SITE:_NONE_____

EQUIPMENT PROBLEMS OR FAILURES:_NONE_____

SUGGESTIONS, ADDITIONS, CHANGES:_NONE_____

COMMENTS:_DEPTH REFERENCE TO RECIEVER MID POINT 0.0↓ 0.0↑_____

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GEOVISION SUSPENSION LOGGING FIELD NOTES

SITE:_VOGTLE B-1004 DATE:_10/_4_/05_____

CLIENT:_MACTEC_____ JOB:_5492_____

AUTHOR:_R. STELLER_____ PAGE_3_OF_5_____

DEPTH METERS	DEPTH FEET	UNFILTERED FILE NO.	FILTERED FILE NO.	COMMENTS CASING, WATER, ROCK, ETC
40.5	132.87			
41.0	134.51	001		CASE TO 135'
41.5	136.15	2		
42.0	137.80	3		
42.5	139.44	4		
43.0	141.08	5		
43.5	142.72	6		
44.0	144.36	7		
44.5	146.00	8		
45.0	147.64	9		
45.5	149.28	10		
46.0	150.92	11		
46.5	152.56	12		
47.0	154.20	13		
47.5	155.84	14		
48.0	157.48	15		
48.5	159.12	16		
49.0	160.76	17		
49.5	162.40	18		
50.0	164.04	19		
50.5	165.68	20, 21,	22, 23	USE RECORD #20.
51.0	167.32	24		
51.5	168.96	25		
52.0	170.60	26		
52.5	172.24	27		
53.0	173.88	28		
53.5	175.52	29		
54.0	177.17	30		
54.5	178.81	31		
55.0	180.45	32		
55.5	182.09	33		
56.0	183.73	34		
56.5	185.37	35		
57.0	187.01	36		
57.5	188.65	37		
58.0	190.29	38		
58.5	191.93	39		
59.0	193.57	40		
59.5	195.21	41		
60.0	196.85	42		

GEOVISION SUSPENSION LOGGING FIELD NOTES

SITE:_VOGTLE B-1004 DATE:__9/____/05

CLIENT:_MACTEC JOB:_5492

AUTHOR:_R. STELLER PAGE 4 OF 5

DEPTH METERS	DEPTH FEET	UNFILTERED FILE NO.	FILTERED FILE NO.	COMMENTS CASING, WATER, ROCK, ETC
60.5	198.49	43		
61.0	200.13	44		
61.5	201.77	45		
62.0	203.41	46		
62.5	205.05	47		
63.0	206.69	48		
63.5	208.33	49		
64.0	209.97	50		
64.5	211.61	51		
65.0	213.25	52		
65.5	214.90	53		
66.0	216.54	54		
66.5	218.18	55		
67.0	219.82	56		
67.5	221.46	57		
68.0	223.10	58		
68.5	224.74	59		
69.0	226.38	60		
69.5	228.02	61		
70.0	229.66	62		
70.5	231.30	63		
71.0	232.94	64		
71.5	234.58	65		
72.0	236.22	66		
72.5	237.86	67		
73.0	239.50	68		
73.5	241.14	69		
74.0	242.78	70		
74.5	244.42	71		
75.0	246.06	72		
75.5	247.70	73		
76.0	249.34	74		
76.5	250.98	75		
77.0	252.62	76		
77.5	254.27	77		
78.0	255.91	78		
78.5	257.55	79		
79.0	259.19	80		
79.5	260.83	81		
80.0	262.47	82		

GEOVISION SUSPENSION LOGGING FIELD NOTES

SITE:_VOGTLE_____B-1004_____ DATE:_10/4/05_____
CLIENT:_MACTEC_____ JOB:_5492_____
AUTHOR:_R. STELLER_____ PAGE_5_ OF_5_

DEPTH METERS	DEPTH FEET	UNFILTERED FILE NO.	FILTERED FILE NO.	COMMENTS CASING, WATER, ROCK, ETC
80.5	264.11	83		
81.0	265.75	84		
81.5	267.39	85		
82.0	269.03	86		
82.5	270.67	87		
83.0	272.31	88		
83.5	273.95	89		
84.0	275.59	90		
84.5	277.23	91		
85.0	278.87	92		
85.5	280.51	93		
86.0	282.15	94		
86.5	283.79	95		
87.0	285.43	96		EXPECTED DEEPEST MEASURE
87.5	287.07			
88.0	288.71			
88.5	290.35			
89.0	291.99			
89.5	293.64			
90.0	295.28			
90.5	296.92			
91.0	298.56			
91.5	300.20			
92.0	301.84			DRILLER T.D. @ 302'
92.5	303.48			
93.0	305.12			
93.5	306.76			
94.0	308.40			
94.5	310.04			
95.0	311.68			
95.5	313.32			
96.0	314.96			
96.5	316.60			
97.0	318.24			
97.5	319.88			
98.0	321.52			
98.5	323.16			
99.0	324.80			
99.5	326.44			
100.0	328.08			

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P-S SUSPENSION VELOCITY FIELD LOG

SITE:_VOGTLE C-1005A DATE:10/6/05
CLIENT:_MACTEC JOB:_5492
AUTHOR:_R. STELLER PAGE 1 OF 3

CONTACT:_____ _OFFICE__ PHONE:_____
_____ PHONE:_____
CONTACT:_____ _OFFICE__ PHONE:_____
_____ PHONE:_____
CONTACT:_____ _____ PHONE:_____
_____ PHONE:_____
CONTACT:_____ _____ PHONE:_____
_____ PHONE:_____
DRILLER:_____ _____ PHONE:_____
COMPANY:_____ _____ PHONE:_____

DIRECTIONS TO SITE:_____

GENERAL SITE CONDITIONS/LOCATION:_____

EA#:_____
BOREHOLE DESIGNATION:C-1005A LOCATION:_____

COUNTY:_____RANGE:_____TOWNSHIP:_____SECTION:_____
BOREHOLE CONSTRUCTION: CASED_____ UNCASED_____
DIAMETERS AND DEPTH RANGES: 4" 0 TO 60'~~48~~' ; _____, _____ TO _____
BOREHOLE TOTAL DEPTH AS DRILLED:~~48'~~ 60'
CONDUCTOR CASING?: YES____ DEPTH TO BOTTOM OF CASING_____; NO W
DEPTH TO BEDROCK:NA DEPTH TO WATER TABLE:_____
BOREHOLE FLUID: WATER_____; FRESH WATER MUD____✓ SALT WATER MUD _____;
OTHER:_____
DEPTH TO BOREHOLE FLUID:_____ TIME SINCE LAST CIRCULATION:1/2HR

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SITE: VOGTLE C-100S A DATE: 10 / 6 /05
CLIENT: MACTEC JOB: 5492
AUTHOR: R. STELLER PAGE 2 OF 3

LOGGING CREW: R. STELLER
VEHICLE(S) USED AND MILEAGE: RED ; BLUE ; WHITE RENTAL
MOBILIZED FROM: DEPARTURE TIME:
ARRIVED ON SITE:
STANDBY TIME: CAUSE:
LOGGING STARTED: LOGGING COMPLETED:
STANDBY TIME: CAUSE:
LOGGING STARTED: LOGGING COMPLETED:
DEMOBILIZED TO: ARRIVAL TIME:
ADDITIONAL DEMOB TIME: REASON:

BATTERIES CHANGED BEFORE LOGGING: YES ✓; NO ; STORED WITH NEW

WINCH	COMPROBE	SILVER ✓	OYO
INSTRUMENT	12004	15014	19029 ✓
GEOPHONE			

MAINTENANCE PERFORMED ON SITE: NONE

EQUIPMENT PROBLEMS OR FAILURES: NONE

SUGGESTIONS, ADDITIONS, CHANGES: NONE

COMMENTS: DEPTH REF AT MID POINT OF RECIEVER. 0.0↓ 0.0↑

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GEOVISION SUSPENSION LOGGING FIELD NOTES

SITE:_VOGTLE C-6005A DATE:10/ 6 /05
CLIENT:_MACTEC JOB:_5492
AUTHOR:_R. STELLER PAGE 3 OF 3

DEPTH METERS	DEPTH FEET	UNFILTERED FILE NO.	FILTERED FILE NO.	COMMENTS CASING, WATER, ROCK, ETC
0.5	1.64			
1.0	3.28	001		
1.5	4.92	2		
2.0	6.56	3		
2.5	8.20	4		
3.0	9.84	5		
3.5	11.48	6		
4.0	13.12	7		
4.5	14.76	8		
5.0	16.40	9		
5.5	18.04	10		
6.0	19.69	11		
6.5	21.33	12		
7.0	22.97	13		
7.5	24.61	14		
8.0	26.25	15		
8.5	27.89	16		
9.0	29.53	17		
9.5	31.17	18		
10.0	32.81	19		
10.5	34.45			
11.0	36.09			
11.5	37.73			
12.0	39.37			
12.5	41.01			
13.0	42.65			
13.5	44.29			
14.0	45.93			EXPECTED BOTTOM MEASUREMENT.
14.5	47.57			
15.0	49.21			
15.5	50.85			
16.0	52.49			
16.5	54.13			
17.0	55.77			
17.5	57.41			
18.0	59.06			
18.5	60.70			
19.0	62.34			
19.5	63.98			
20.0	65.62			DRILLER T.D. @60'