

Figure 82. Boring MP-418A, Up Deviation Projection

CLINCH RIVER SMR PROJECT BOREHOLE MP-419 Receiver to Receiver V_s and V_p Analysis

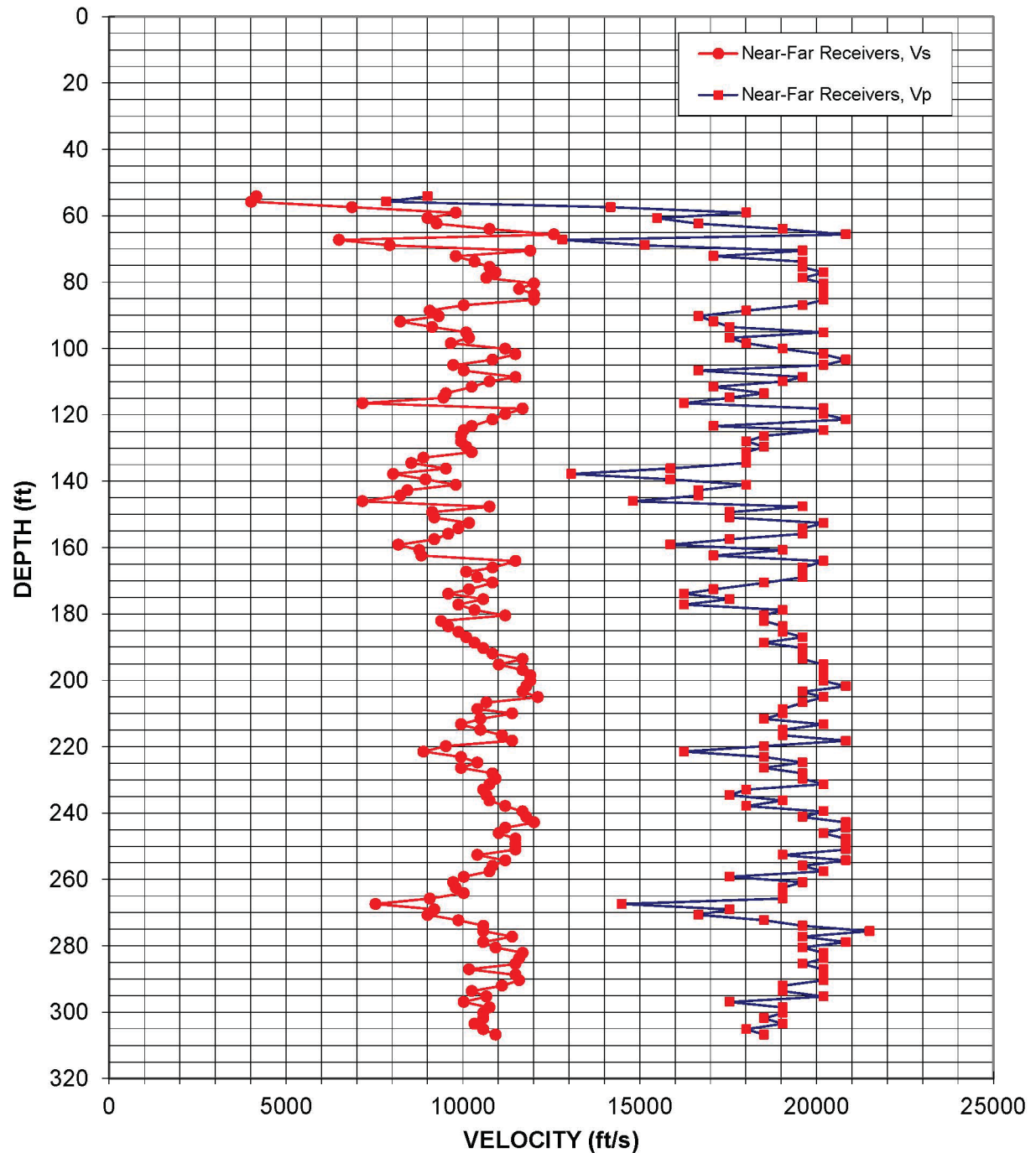


Figure 83: Boring MP-419, Suspension R1-R2 P- and S_H -wave velocities

Table 44. Boring MP-419, Suspension R1-R2 depths and P- and S_H-wave velocities

**Summary of Compressional Wave Velocity, Shear Wave Velocity, and Poisson's Ratio
Based on Receiver-to-Receiver Travel Time Data - Borehole MP-419**

American Units				Metric Units			
Depth at Midpoint Between Receivers	Velocity		Poisson's Ratio	Depth at Midpoint Between Receivers	Velocity		Poisson's Ratio
	V _s	V _p			V _s	V _p	
(ft)	(ft/s)	(ft/s)		(m)	(m/s)	(m/s)	
54.1	4170	9010	0.36	16.5	1270	2750	0.36
55.8	4020	7840	0.32	17.0	1220	2390	0.32
57.4	6870	14180	0.35	17.5	2090	4320	0.35
59.1	9800	18020	0.29	18.0	2990	5490	0.29
60.7	9010	15500	0.25	18.5	2750	4730	0.25
62.3	9260	16670	0.28	19.0	2820	5080	0.28
64.0	10750	19050	0.27	19.5	3280	5810	0.27
65.6	12580	20830	0.21	20.0	3830	6350	0.21
67.3	6500	12820	0.33	20.5	1980	3910	0.33
68.9	7940	15150	0.31	21.0	2420	4620	0.31
70.5	11900	19610	0.21	21.5	3630	5980	0.21
72.2	9800	17090	0.25	22.0	2990	5210	0.25
73.8	10340	19610	0.31	22.5	3150	5980	0.31
75.5	10750	19610	0.28	23.0	3280	5980	0.28
77.1	10930	20200	0.29	23.5	3330	6160	0.29
78.7	10670	19610	0.29	24.0	3250	5980	0.29
80.4	12010	20200	0.23	24.5	3660	6160	0.23
82.0	11590	20200	0.25	25.0	3530	6160	0.25
83.7	12010	20200	0.23	25.5	3660	6160	0.23
85.3	12010	20200	0.23	26.0	3660	6160	0.23
86.9	10030	19610	0.32	26.5	3060	5980	0.32
88.6	9070	18020	0.33	27.0	2760	5490	0.33
90.2	9320	16670	0.27	27.5	2840	5080	0.27
91.9	8230	17090	0.35	28.0	2510	5210	0.35
93.5	9130	17540	0.31	28.5	2780	5350	0.31
95.1	10100	20200	0.33	29.0	3080	6160	0.33
96.8	10180	17540	0.25	29.5	3100	5350	0.25
98.4	9660	18020	0.30	30.0	2940	5490	0.30
100.1	11200	19050	0.24	30.5	3420	5810	0.24
101.7	11490	20200	0.26	31.0	3500	6160	0.26
103.4	10840	20830	0.31	31.5	3300	6350	0.31
105.0	9730	20200	0.35	32.0	2970	6160	0.35
106.6	10030	16670	0.22	32.5	3060	5080	0.22
108.6	11490	19610	0.24	33.1	3500	5980	0.24
109.9	10750	19050	0.27	33.5	3280	5810	0.27
111.6	10260	17090	0.22	34.0	3130	5210	0.22
113.5	9520	18520	0.32	34.6	2900	5640	0.32
114.8	9460	17540	0.30	35.0	2880	5350	0.30

**Summary of Compressional Wave Velocity, Shear Wave Velocity, and Poisson's Ratio
Based on Receiver-to-Receiver Travel Time Data - Borehole MP-419**

American Units				Metric Units			
Depth at Midpoint Between Receivers	Velocity		Poisson's Ratio	Depth at Midpoint Between Receivers	Velocity		Poisson's Ratio
	V _s	V _p			V _s	V _p	
(ft)	(ft/s)	(ft/s)		(m)	(m/s)	(m/s)	
116.5	7170	16260	0.38	35.5	2180	4960	0.38
118.1	11700	20200	0.25	36.0	3560	6160	0.25
119.8	11200	20200	0.28	36.5	3420	6160	0.28
121.4	10840	20830	0.31	37.0	3300	6350	0.31
123.4	10260	17090	0.22	37.6	3130	5210	0.22
124.7	10030	20200	0.34	38.0	3060	6160	0.34
126.3	9950	18520	0.30	38.5	3030	5640	0.30
128.0	9950	18020	0.28	39.0	3030	5490	0.28
129.6	10100	18520	0.29	39.5	3080	5640	0.29
131.2	10260	18020	0.26	40.0	3130	5490	0.26
132.9	8890	18020	0.34	40.5	2710	5490	0.34
134.5	8550	18020	0.35	41.0	2610	5490	0.35
136.2	9520	15870	0.22	41.5	2900	4840	0.22
137.8	8030	13070	0.20	42.0	2450	3980	0.20
139.4	8950	15870	0.27	42.5	2730	4840	0.27
141.1	9800	18020	0.29	43.0	2990	5490	0.29
142.7	8440	16670	0.33	43.5	2570	5080	0.33
144.4	8230	16670	0.34	44.0	2510	5080	0.34
146.0	7170	14810	0.35	44.5	2180	4520	0.35
147.6	10750	19610	0.28	45.0	3280	5980	0.28
149.3	9130	17540	0.31	45.5	2780	5350	0.31
150.9	9200	17540	0.31	46.0	2800	5350	0.31
152.6	10180	20200	0.33	46.5	3100	6160	0.33
154.2	9880	19610	0.33	47.0	3010	5980	0.33
155.8	9590	19610	0.34	47.5	2920	5980	0.34
157.5	9200	17540	0.31	48.0	2800	5350	0.31
159.1	8180	15870	0.32	48.5	2490	4840	0.32
160.8	8770	19050	0.37	49.0	2670	5810	0.37
162.4	8830	17090	0.32	49.5	2690	5210	0.32
164.0	11490	20200	0.26	50.0	3500	6160	0.26
166.0	10840	19610	0.28	50.6	3300	5980	0.28
167.3	10100	19610	0.32	51.0	3080	5980	0.32
169.0	10420	19610	0.30	51.5	3180	5980	0.30
170.6	10840	18520	0.24	52.0	3300	5640	0.24
172.6	10180	17090	0.23	52.6	3100	5210	0.23
173.9	9590	16260	0.23	53.0	2920	4960	0.23
175.5	10580	17540	0.21	53.5	3230	5350	0.21
177.2	9880	16260	0.21	54.0	3010	4960	0.21
178.8	10340	19050	0.29	54.5	3150	5810	0.29
180.5	11200	18520	0.21	55.0	3420	5640	0.21

**Summary of Compressional Wave Velocity, Shear Wave Velocity, and Poisson's Ratio
Based on Receiver-to-Receiver Travel Time Data - Borehole MP-419**

American Units				Metric Units			
Depth at Midpoint Between Receivers	Velocity		Poisson's Ratio	Depth at Midpoint Between Receivers	Velocity		Poisson's Ratio
	V _s	V _p			V _s	V _p	
(ft)	(ft/s)	(ft/s)		(m)	(m/s)	(m/s)	
182.1	9390	18520	0.33	55.5	2860	5640	0.33
183.7	9590	19050	0.33	56.0	2920	5810	0.33
185.4	9880	19050	0.32	56.5	3010	5810	0.32
187.0	10100	19610	0.32	57.0	3080	5980	0.32
188.7	10340	18520	0.27	57.5	3150	5640	0.27
190.3	10580	19610	0.29	58.0	3230	5980	0.29
191.9	10840	19610	0.28	58.5	3300	5980	0.28
193.6	11700	19610	0.22	59.0	3560	5980	0.22
195.2	11020	20200	0.29	59.5	3360	6160	0.29
196.9	11700	20200	0.25	60.0	3560	6160	0.25
198.5	11900	20200	0.23	60.5	3630	6160	0.23
200.1	11900	20200	0.23	61.0	3630	6160	0.23
201.8	11800	20830	0.26	61.5	3600	6350	0.26
203.4	11700	19610	0.22	62.0	3560	5980	0.22
205.1	12120	20200	0.22	62.5	3690	6160	0.22
206.7	10670	19610	0.29	63.0	3250	5980	0.29
208.7	10420	19050	0.29	63.6	3180	5810	0.29
210.0	11400	19050	0.22	64.0	3470	5810	0.22
211.6	10500	18520	0.26	64.5	3200	5640	0.26
213.3	9950	20200	0.34	65.0	3030	6160	0.34
214.9	10500	19050	0.28	65.5	3200	5810	0.28
216.5	11110	19050	0.24	66.0	3390	5810	0.24
218.2	11400	20830	0.29	66.5	3470	6350	0.29
219.8	9520	18520	0.32	67.0	2900	5640	0.32
221.5	8890	16260	0.29	67.5	2710	4960	0.29
223.1	9950	18520	0.30	68.0	3030	5640	0.30
224.7	10420	19610	0.30	68.5	3180	5980	0.30
226.4	9950	18520	0.30	69.0	3030	5640	0.30
228.0	10840	19610	0.28	69.5	3300	5980	0.28
229.7	10930	19610	0.27	70.0	3330	5980	0.27
231.3	10750	20200	0.30	70.5	3280	6160	0.30
232.9	10580	18020	0.24	71.0	3230	5490	0.24
234.6	10670	17540	0.21	71.5	3250	5350	0.21
236.2	10750	19050	0.27	72.0	3280	5810	0.27
237.9	11200	18020	0.18	72.5	3420	5490	0.18
239.5	11700	20200	0.25	73.0	3560	6160	0.25
241.1	11800	19610	0.22	73.5	3600	5980	0.22
242.8	12010	20830	0.25	74.0	3660	6350	0.25
244.4	11200	20830	0.30	74.5	3420	6350	0.30
246.1	11020	20200	0.29	75.0	3360	6160	0.29

**Summary of Compressional Wave Velocity, Shear Wave Velocity, and Poisson's Ratio
Based on Receiver-to-Receiver Travel Time Data - Borehole MP-419**

American Units			
Depth at Midpoint Between Receivers	Velocity		Poisson's Ratio
	V _s	V _p	
(ft)	(ft/s)	(ft/s)	
247.7	11490	20830	0.28
249.3	11490	20830	0.28
251.0	11490	20830	0.28
252.6	10420	19050	0.29
254.3	11200	20830	0.30
255.9	10840	19610	0.28
257.6	10750	20200	0.30
259.2	10030	17540	0.26
260.8	9730	19610	0.34
262.5	9800	19050	0.32
264.1	10030	19050	0.31
265.8	9070	19050	0.35
267.4	7530	14490	0.31
269.0	9200	17540	0.31
270.7	9010	16670	0.29
272.3	9880	18520	0.30
274.0	10580	19610	0.29
275.6	10580	21510	0.34
277.2	11400	19610	0.24
278.9	10580	20830	0.33
280.5	10930	19610	0.27
282.2	11700	20200	0.25
283.8	11590	20200	0.25
285.4	11490	19610	0.24
287.1	10180	20200	0.33
288.7	11490	20200	0.26
290.4	11590	20200	0.25
292.0	11110	19050	0.24
293.6	10260	19050	0.30
295.3	10670	20200	0.31
296.9	10030	17540	0.26
298.6	10750	19050	0.27
300.2	10580	19050	0.28
301.8	10580	18520	0.26
303.5	10340	19050	0.29
305.1	10580	18020	0.24
306.8	10930	18520	0.23

Metric Units			
Depth at Midpoint Between Receivers	Velocity		Poisson's Ratio
	V _s	V _p	
(m)	(m/s)	(m/s)	
75.5	3500	6350	0.28
76.0	3500	6350	0.28
76.5	3500	6350	0.28
77.0	3180	5810	0.29
77.5	3420	6350	0.30
78.0	3300	5980	0.28
78.5	3280	6160	0.30
79.0	3060	5350	0.26
79.5	2970	5980	0.34
80.0	2990	5810	0.32
80.5	3060	5810	0.31
81.0	2760	5810	0.35
81.5	2300	4420	0.31
82.0	2800	5350	0.31
82.5	2750	5080	0.29
83.0	3010	5640	0.30
83.5	3230	5980	0.29
84.0	3230	6550	0.34
84.5	3470	5980	0.24
85.0	3230	6350	0.33
85.5	3330	5980	0.27
86.0	3560	6160	0.25
86.5	3530	6160	0.25
87.0	3500	5980	0.24
87.5	3100	6160	0.33
88.0	3500	6160	0.26
88.5	3530	6160	0.25
89.0	3390	5810	0.24
89.5	3130	5810	0.30
90.0	3250	6160	0.31
90.5	3060	5350	0.26
91.0	3280	5810	0.27
91.5	3230	5810	0.28
92.0	3230	5640	0.26
92.5	3150	5810	0.29
93.0	3230	5490	0.24
93.5	3330	5640	0.23

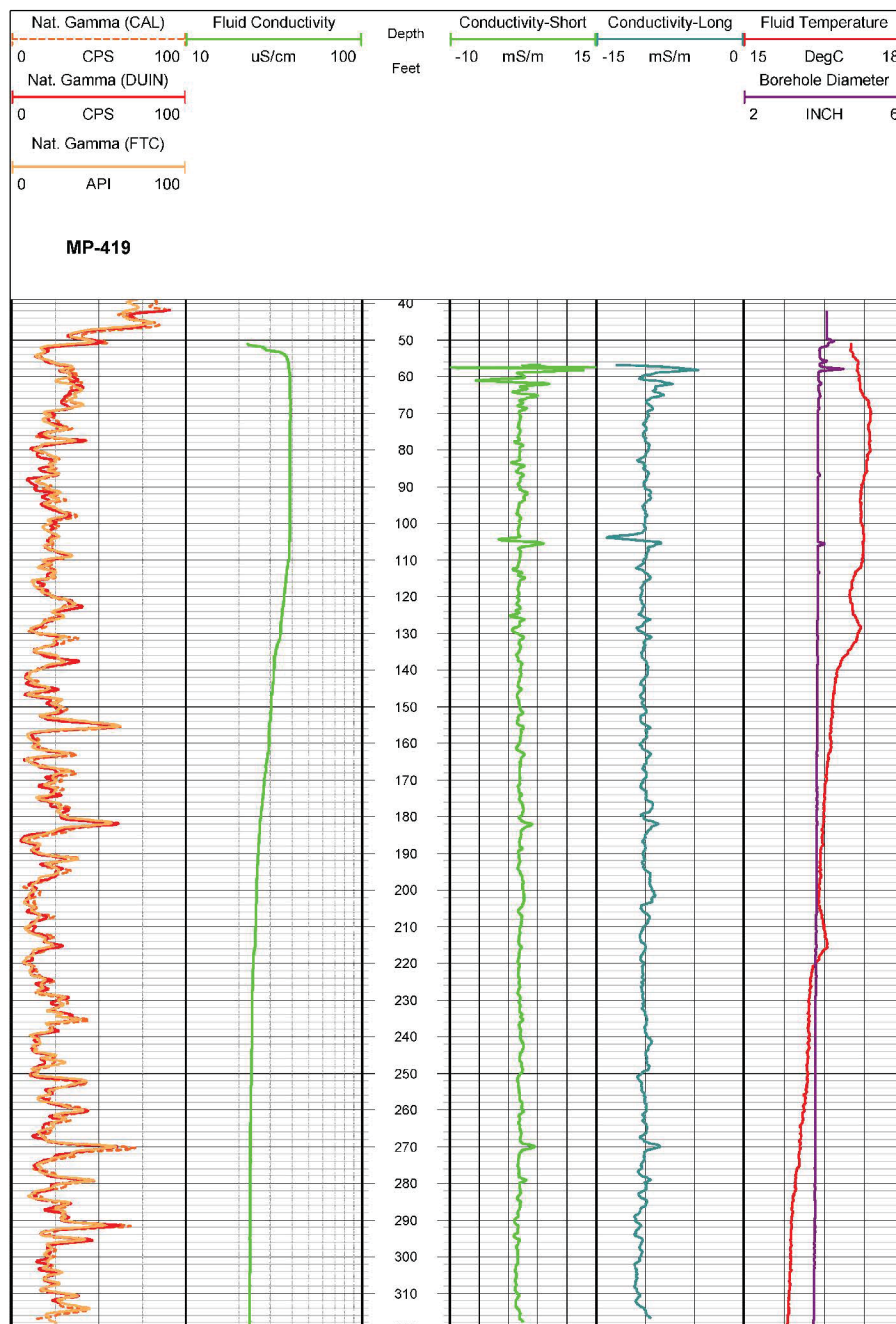


Figure 84. Boring MP-419, Induction, Fluid Temperature/Conductivity, Natural Gamma and Caliper logs

Table 45. Boring MP-419, Acoustic Televiewer Feature depth, dip azimuth, dip and description

Depth (feet)	Dip azimuth	Dip	Structure description
52.1	N165	37	Primary-structure Planar Bedding
52.7	N170	32	Primary-structure Planar Bedding
52.9	N011	78	Fracture Discontinuous Hairline-fracture
53.1	N004	80	Fracture Discontinuous Hairline-fracture
53.4	N158	34	Fracture Planar Open-fracture
53.6	N183	30	Primary-structure Planar Bedding
54.0	N157	38	Primary-structure Planar Bedding
54.3	N318	54	Fracture Irregular Hairline-fracture
54.4	N348	73	Fracture Discontinuous Hairline-fracture
54.7	N170	74	Fracture Discontinuous Hairline-fracture
55.2	N346	41	Fracture Discontinuous Hairline-fracture
55.7	N134	36	Fracture Planar Open-fracture
56.2	N034	32	Fracture Planar Hairline-fracture
56.6	N338	60	Fracture Discontinuous Hairline-fracture
57.0	N042	36	Fracture Planar Hairline-fracture
57.3	N037	22	Fracture Planar Hairline-fracture
57.3	N065	62	Fracture Planar Hairline-fracture
57.7	N018	35	Fracture Planar Open-fracture
58.1	N145	49	Fracture Planar Hairline-fracture
59.1	N202	40	Fracture Discontinuous Hairline-fracture
60.0	N154	56	Fracture Irregular Hairline-fracture
60.8	N143	50	Fracture Planar Hairline-fracture
61.2	N144	45	Fracture Discontinuous Hairline-fracture
61.8	N320	31	Fracture Planar Open-fracture
62.1	N016	59	Fracture Planar Hairline-fracture
62.2	N147	51	Fracture Planar Open-fracture
62.4	N348	59	Fracture Discontinuous Open-fracture
62.8	N141	51	Fracture Planar Hairline-fracture
63.2	N330	51	Fracture Planar Hairline-fracture
63.3	N137	51	Fracture Planar Hairline-fracture
63.6	N181	38	Fracture Planar Hairline-fracture
64.1	N149	45	Primary-structure Planar Bedding
64.4	N184	36	Fracture Planar Hairline-fracture
64.6	N127	37	Fracture Planar Open-fracture
64.7	N347	59	Fracture Discontinuous Hairline-fracture
64.8	N340	44	Fracture Planar Hairline-fracture
65.3	N157	37	Fracture Planar Open-fracture

Depth (feet)	Dip azimuth	Dip	Structure description
65.4	N118	29	Fracture Planar Open-fracture
65.9	N131	33	Primary-structure Planar Bedding
66.1	N145	39	Primary-structure Planar Bedding
67.1	N268	80	Fracture Discontinuous Hairline-fracture
67.4	N133	33	Fracture Planar Hairline-fracture
67.6	N145	35	Primary-structure Planar Bedding
68.4	N146	33	Primary-structure Planar Bedding
68.9	N344	58	Fracture Discontinuous Open-fracture
69.0	N143	36	Primary-structure Planar Bedding
69.6	N342	73	Fracture Discontinuous Hairline-fracture
69.8	N144	39	Fracture Planar Hairline-fracture
70.9	N145	32	Primary-structure Planar Bedding
71.8	N138	36	Primary-structure Planar Bedding
72.5	N009	70	Fracture Discontinuous Hairline-fracture
73.1	N142	30	Fracture Planar Hairline-fracture
73.6	N182	30	Primary-structure Planar Bedding
74.7	N147	34	Primary-structure Planar Bedding
75.0	N339	64	Fracture Discontinuous Hairline-fracture
75.4	N325	58	Fracture Discontinuous Hairline-fracture
75.5	N314	62	Fracture Planar Hairline-fracture
75.9	N134	29	Primary-structure Planar Bedding
76.6	N132	28	Primary-structure Planar Bedding
76.8	N353	38	Fracture Discontinuous Hairline-fracture
77.4	N132	37	Primary-structure Planar Bedding
78.0	N141	78	Fracture Discontinuous Hairline-fracture
78.3	N340	61	Fracture Irregular Hairline-fracture
78.4	N344	72	Fracture Irregular Hairline-fracture
78.7	N261	59	Fracture Planar Hairline-fracture
78.7	N147	26	Primary-structure Planar Bedding
79.3	N167	79	Fracture Discontinuous Hairline-fracture
80.0	N161	58	Fracture Discontinuous Hairline-fracture
80.4	N008	49	Fracture Discontinuous Hairline-fracture
80.5	N139	31	Fracture Planar Hairline-fracture
80.9	N148	30	Primary-structure Planar Bedding
81.0	N006	59	Fracture Planar Hairline-fracture
81.0	N140	29	Primary-structure Planar Bedding
81.2	N326	42	Fracture Discontinuous Hairline-fracture
81.5	N159	64	Fracture Discontinuous Hairline-fracture
82.3	N356	52	Fracture Discontinuous Hairline-fracture

Depth (feet)	Dip azimuth	Dip	Structure description
82.5	N144	28	Primary-structure Planar Bedding
82.6	N331	72	Fracture Discontinuous Hairline-fracture
83.0	N133	43	Fracture Discontinuous Hairline-fracture
84.5	N134	29	Primary-structure Planar Bedding
85.0	N136	28	Fracture Irregular Hairline-fracture
86.4	N148	30	Fracture Irregular Hairline-fracture
86.9	N151	38	Fracture Planar Open-fracture
87.3	N351	83	Fracture Discontinuous Hairline-fracture
89.7	N166	40	Primary-structure Planar Bedding
90.0	N131	42	Fracture Irregular Hairline-fracture
90.5	N156	37	Primary-structure Planar Bedding
91.3	N005	41	Fracture Discontinuous Hairline-fracture
91.9	N148	30	Primary-structure Planar Bedding
92.0	N339	45	Fracture Discontinuous Hairline-fracture
92.3	N149	33	Primary-structure Planar Bedding
92.8	N159	22	Primary-structure Planar Bedding
93.6	N158	45	Primary-structure Irregular Bedding
95.7	N160	63	Fracture Planar Hairline-fracture
95.9	N152	29	Primary-structure Planar Bedding
96.7	N154	39	Primary-structure Planar Bedding
96.9	N008	43	Fracture Planar Hairline-fracture
97.4	N353	47	Fracture Irregular Hairline-fracture
97.5	N133	57	Fracture Planar Hairline-fracture
98.0	N150	36	Primary-structure Planar Bedding
98.2	N157	34	Primary-structure Planar Bedding
98.4	N141	40	Fracture Planar Hairline-fracture
98.6	N157	43	Primary-structure Planar Bedding
99.4	N158	50	Fracture Irregular Hairline-fracture
100.2	N142	45	Primary-structure Planar Bedding
101.4	N355	78	Fracture Planar Hairline-fracture
102.4	N136	45	Primary-structure Planar Bedding
103.6	N320	52	Fracture Irregular Hairline-fracture
104.1	N141	45	Fracture Irregular Hairline-fracture
105.5	N137	20	Fracture Planar Hairline-fracture
105.9	N166	55	Fracture Planar Hairline-fracture
106.9	N348	16	Fracture Planar Hairline-fracture
107.0	N137	54	Fracture Discontinuous Hairline-fracture
107.5	N157	24	Fracture Planar Hairline-fracture
109.6	N155	46	Primary-structure Planar Bedding

Depth (feet)	Dip azimuth	Dip	Structure description
110.7	N157	42	Primary-structure Planar Bedding
111.2	N155	50	Primary-structure Planar Bedding
112.8	N163	41	Primary-structure Planar Bedding
113.5	N127	43	Fracture Planar Open-fracture
114.8	N292	1	Fracture Planar Open-fracture
114.9	N069	18	Fracture Planar Hairline-fracture
115.8	N154	56	Fracture Discontinuous Hairline-fracture
116.1	N154	53	Fracture Discontinuous Hairline-fracture
116.8	N141	38	Primary-structure Planar Bedding
118.0	N156	58	Fracture Irregular Hairline-fracture
120.8	N352	71	Fracture Irregular Hairline-fracture
121.0	N048	39	Fracture Irregular Hairline-fracture
121.2	N116	44	Fracture Irregular Hairline-fracture
121.8	N168	50	Fracture Discontinuous Hairline-fracture
122.7	N056	66	Fracture Discontinuous Hairline-fracture
122.7	N176	71	Fracture Discontinuous Hairline-fracture
123.1	N151	42	Primary-structure Planar Bedding
123.2	N306	34	Fracture Discontinuous Hairline-fracture
123.2	N020	67	Fracture Discontinuous Hairline-fracture
123.6	N325	48	Fracture Discontinuous Hairline-fracture
124.0	N148	42	Primary-structure Irregular Bedding
124.6	N143	44	Primary-structure Planar Bedding
125.2	N140	44	Primary-structure Planar Bedding
125.6	N152	42	Primary-structure Planar Bedding
126.1	N334	16	Fracture Irregular Open-fracture
127.0	N152	38	Primary-structure Planar Bedding
127.2	N325	76	Fracture Discontinuous Hairline-fracture
127.5	N359	39	Fracture Discontinuous Hairline-fracture
128.2	N148	47	Primary-structure Planar Bedding
128.4	N190	17	Fracture Planar Hairline-fracture
129.4	N345	46	Fracture Planar Hairline-fracture
130.5	N349	32	Fracture Planar Hairline-fracture
131.5	N151	46	Fracture Planar Open-fracture
133.5	N348	26	Fracture Planar Hairline-fracture
133.8	N153	43	Primary-structure Planar Bedding
136.0	N147	45	Primary-structure Planar Bedding
136.6	N149	44	Primary-structure Planar Bedding
137.2	N267	41	Fracture Irregular Hairline-fracture
137.6	N234	30	Fracture Irregular Hairline-fracture

Depth (feet)	Dip azimuth	Dip	Structure description
138.0	N179	73	Fracture Discontinuous Hairline-fracture
138.1	N197	50	Fracture Irregular Hairline-fracture
138.6	N297	70	Fracture Irregular Hairline-fracture
140.5	N152	37	Primary-structure Planar Bedding
141.2	N144	30	Primary-structure Planar Bedding
141.6	N155	34	Primary-structure Planar Bedding
141.8	N350	25	Fracture Planar Hairline-fracture
143.0	N155	62	Fracture Planar Hairline-fracture
144.9	N163	39	Primary-structure Planar Bedding
145.2	N025	9	Fracture Irregular Hairline-fracture
145.6	N301	59	Fracture Irregular Hairline-fracture
147.8	N239	50	Fracture Discontinuous Hairline-fracture
148.3	N316	60	Fracture Irregular Hairline-fracture
148.7	N146	28	Fracture Irregular Hairline-fracture
149.7	N281	65	Fracture Irregular Hairline-fracture
151.5	N165	27	Primary-structure Planar Bedding
151.7	N155	30	Primary-structure Planar Bedding
151.7	N337	47	Fracture Planar Hairline-fracture
153.2	N310	63	Fracture Discontinuous Hairline-fracture
153.3	N157	38	Primary-structure Planar Bedding
153.9	N144	35	Primary-structure Planar Bedding
154.5	N165	48	Primary-structure Planar Bedding
154.9	N323	42	Fracture Discontinuous Hairline-fracture
156.4	N143	60	Fracture Irregular Hairline-fracture
157.4	N177	39	Primary-structure Planar Bedding
158.3	N152	31	Primary-structure Planar Bedding
159.2	N148	36	Primary-structure Planar Bedding
160.6	N159	36	Primary-structure Planar Bedding
161.3	N329	55	Fracture Discontinuous Hairline-fracture
161.5	N311	77	Fracture Discontinuous Hairline-fracture
161.5	N153	33	Primary-structure Planar Bedding
162.0	N006	59	Fracture Discontinuous Hairline-fracture
162.0	N153	30	Primary-structure Planar Bedding
163.2	N155	49	Fracture Irregular Hairline-fracture
164.3	N137	25	Primary-structure Planar Bedding
165.1	N007	60	Fracture Discontinuous Hairline-fracture
165.8	N139	20	Primary-structure Planar Bedding
167.0	N159	27	Primary-structure Planar Bedding
167.8	N159	33	Primary-structure Planar Bedding

Depth (feet)	Dip azimuth	Dip	Structure description
168.5	N165	17	Primary-structure Planar Bedding
169.1	N002	72	Fracture Irregular Hairline-fracture
169.9	N156	36	Primary-structure Planar Bedding
170.3	N340	46	Fracture Planar Hairline-fracture
170.5	N185	43	Fracture Discontinuous Hairline-fracture
170.6	N250	81	Fracture Discontinuous Hairline-fracture
172.0	N147	63	Fracture Discontinuous Hairline-fracture
172.3	N172	27	Primary-structure Planar Bedding
172.4	N072	65	Fracture Discontinuous Hairline-fracture
173.7	N294	66	Fracture Discontinuous Hairline-fracture
174.1	N161	28	Primary-structure Planar Bedding
174.4	N151	59	Fracture Discontinuous Hairline-fracture
175.4	N312	54	Fracture Irregular Hairline-fracture
175.7	N162	32	Primary-structure Irregular Bedding
175.9	N151	40	Fracture Irregular Hairline-fracture
176.5	N151	43	Primary-structure Irregular Bedding
177.2	N157	23	Primary-structure Planar Bedding
178.3	N194	32	Fracture Planar Hairline-fracture
179.4	N160	31	Primary-structure Planar Bedding
179.6	N313	62	Fracture Discontinuous Hairline-fracture
182.2	N172	48	Primary-structure Planar Bedding
182.4	N187	41	Primary-structure Planar Bedding
182.4	N325	70	Fracture Discontinuous Hairline-fracture
185.0	N162	37	Primary-structure Planar Bedding
185.1	N051	42	Fracture Discontinuous Hairline-fracture
185.2	N160	29	Primary-structure Planar Bedding
187.2	N336	57	Fracture Irregular Hairline-fracture
187.6	N325	58	Fracture Discontinuous Hairline-fracture
187.9	N158	32	Primary-structure Planar Bedding
188.0	N307	60	Fracture Discontinuous Hairline-fracture
188.8	N146	33	Primary-structure Planar Bedding
189.2	N155	36	Primary-structure Planar Bedding
189.3	N318	52	Fracture Irregular Hairline-fracture
190.3	N149	34	Primary-structure Planar Bedding
190.9	N349	74	Fracture Irregular Hairline-fracture
191.1	N150	34	Primary-structure Planar Bedding
191.6	N353	63	Fracture Irregular Hairline-fracture
192.0	N155	78	Fracture Discontinuous Hairline-fracture
192.3	N150	37	Primary-structure Planar Bedding

Depth (feet)	Dip azimuth	Dip	Structure description
192.8	N349	61	Fracture Discontinuous Hairline-fracture
193.4	N349	61	Fracture Discontinuous Hairline-fracture
195.1	N150	35	Primary-structure Planar Bedding
199.0	N352	57	Fracture Discontinuous Hairline-fracture
199.5	N340	45	Fracture Discontinuous Hairline-fracture
200.4	N154	30	Primary-structure Irregular Bedding
201.6	N141	39	Primary-structure Planar Bedding
203.5	N306	47	Fracture Planar Hairline-fracture
204.8	N151	36	Primary-structure Planar Bedding
205.7	N331	61	Fracture Planar Hairline-fracture
207.1	N158	39	Primary-structure Planar Bedding
208.4	N148	34	Primary-structure Planar Bedding
209.4	N325	56	Fracture Planar Hairline-fracture
209.9	N159	41	Primary-structure Planar Bedding
211.1	N149	21	Primary-structure Planar Bedding
211.6	N330	56	Fracture Irregular Hairline-fracture
212.2	N158	80	Fracture Discontinuous Hairline-fracture
212.4	N171	47	Primary-structure Planar Bedding
214.3	N341	67	Fracture Irregular Hairline-fracture
214.5	N343	55	Fracture Planar Hairline-fracture
215.7	N152	34	Primary-structure Planar Bedding
216.1	N334	67	Fracture Planar Hairline-fracture
219.2	N156	26	Primary-structure Irregular Bedding
220.5	N331	54	Fracture Planar Hairline-fracture
220.6	N142	46	Primary-structure Irregular Bedding
226.6	N152	41	Primary-structure Planar Bedding
229.1	N165	35	Primary-structure Irregular Bedding
231.6	N162	32	Primary-structure Irregular Bedding
234.2	N151	42	Primary-structure Planar Bedding
235.4	N160	36	Primary-structure Planar Bedding
238.2	N354	50	Fracture Irregular Hairline-fracture
238.8	N166	38	Primary-structure Irregular Bedding
240.7	N154	36	Primary-structure Irregular Bedding
241.7	N149	33	Primary-structure Irregular Bedding
243.8	N146	38	Primary-structure Irregular Bedding
243.8	N160	66	Fracture Discontinuous Hairline-fracture
245.3	N148	39	Primary-structure Irregular Bedding
245.5	N285	53	Fracture Discontinuous Hairline-fracture
246.8	N150	39	Primary-structure Planar Bedding

Depth (feet)	Dip azimuth	Dip	Structure description
247.6	N332	61	Fracture Discontinuous Hairline-fracture
248.2	N153	31	Primary-structure Planar Bedding
248.6	N161	53	Primary-structure Planar Bedding
249.5	N149	35	Primary-structure Planar Bedding
250.2	N158	39	Primary-structure Planar Bedding
251.1	N351	79	Fracture Discontinuous Hairline-fracture
251.6	N164	36	Primary-structure Planar Bedding
252.3	N150	40	Primary-structure Irregular Bedding
253.3	N002	34	Fracture Planar Hairline-fracture
254.0	N157	35	Primary-structure Planar Bedding
254.1	N343	44	Fracture Planar Hairline-fracture
257.9	N351	67	Fracture Planar Hairline-fracture
258.5	N165	36	Primary-structure Planar Bedding
260.1	N010	27	Fracture Planar Hairline-fracture
260.6	N152	31	Primary-structure Planar Bedding
262.5	N321	49	Fracture Discontinuous Hairline-fracture
262.7	N156	33	Primary-structure Planar Bedding
263.0	N001	71	Fracture Irregular Hairline-fracture
264.9	N156	32	Primary-structure Planar Bedding
268.0	N359	52	Fracture Discontinuous Hairline-fracture
268.9	N139	37	Primary-structure Irregular Bedding
269.6	N350	73	Fracture Discontinuous Hairline-fracture
270.0	N159	26	Primary-structure Planar Bedding
270.8	N314	50	Fracture Discontinuous Hairline-fracture
271.1	N002	58	Fracture Discontinuous Hairline-fracture
271.4	N156	32	Primary-structure Planar Bedding
272.1	N153	33	Primary-structure Planar Bedding
272.2	N004	41	Fracture Discontinuous Hairline-fracture
275.2	N298	69	Fracture Irregular Hairline-fracture
275.4	N320	76	Fracture Irregular Hairline-fracture
278.7	N023	70	Fracture Irregular Hairline-fracture
279.4	N142	34	Primary-structure Planar Bedding
280.5	N301	67	Fracture Discontinuous Hairline-fracture
281.3	N332	57	Fracture Discontinuous Hairline-fracture
281.7	N156	32	Primary-structure Planar Bedding
285.3	N140	33	Primary-structure Planar Bedding
289.1	N095	45	Fracture Discontinuous Hairline-fracture
291.2	N184	50	Primary-structure Planar Bedding
292.1	N144	43	Primary-structure Planar Bedding

Depth (feet)	Dip azimuth	Dip	Structure description
292.5	N326	51	Fracture Planar Hairline-fracture
293.1	N348	55	Fracture Discontinuous Hairline-fracture
293.4	N222	74	Fracture Discontinuous Hairline-fracture
295.5	N159	34	Primary-structure Planar Bedding
297.5	N160	38	Primary-structure Planar Bedding
301.1	N157	32	Primary-structure Irregular Bedding
304.1	N340	52	Fracture Discontinuous Hairline-fracture
304.5	N148	29	Primary-structure Planar Bedding
307.7	N152	32	Primary-structure Irregular Bedding
310.7	N142	36	Primary-structure Planar Bedding
314.6	N146	38	Primary-structure Planar Bedding
315.3	N149	41	Primary-structure Planar Bedding
316.4	N145	37	Primary-structure Planar Bedding
317.2	N212	36	Fracture Planar Hairline-fracture
317.3	N145	38	Primary-structure Planar Bedding
317.8	N149	36	Primary-structure Planar Bedding
318.1	N330	52	Fracture Planar Hairline-fracture
318.7	N164	36	Primary-structure Planar Bedding
319.0	N330	71	Fracture Planar Hairline-fracture



Figure 85. Boring MP-419, Rose Diagram

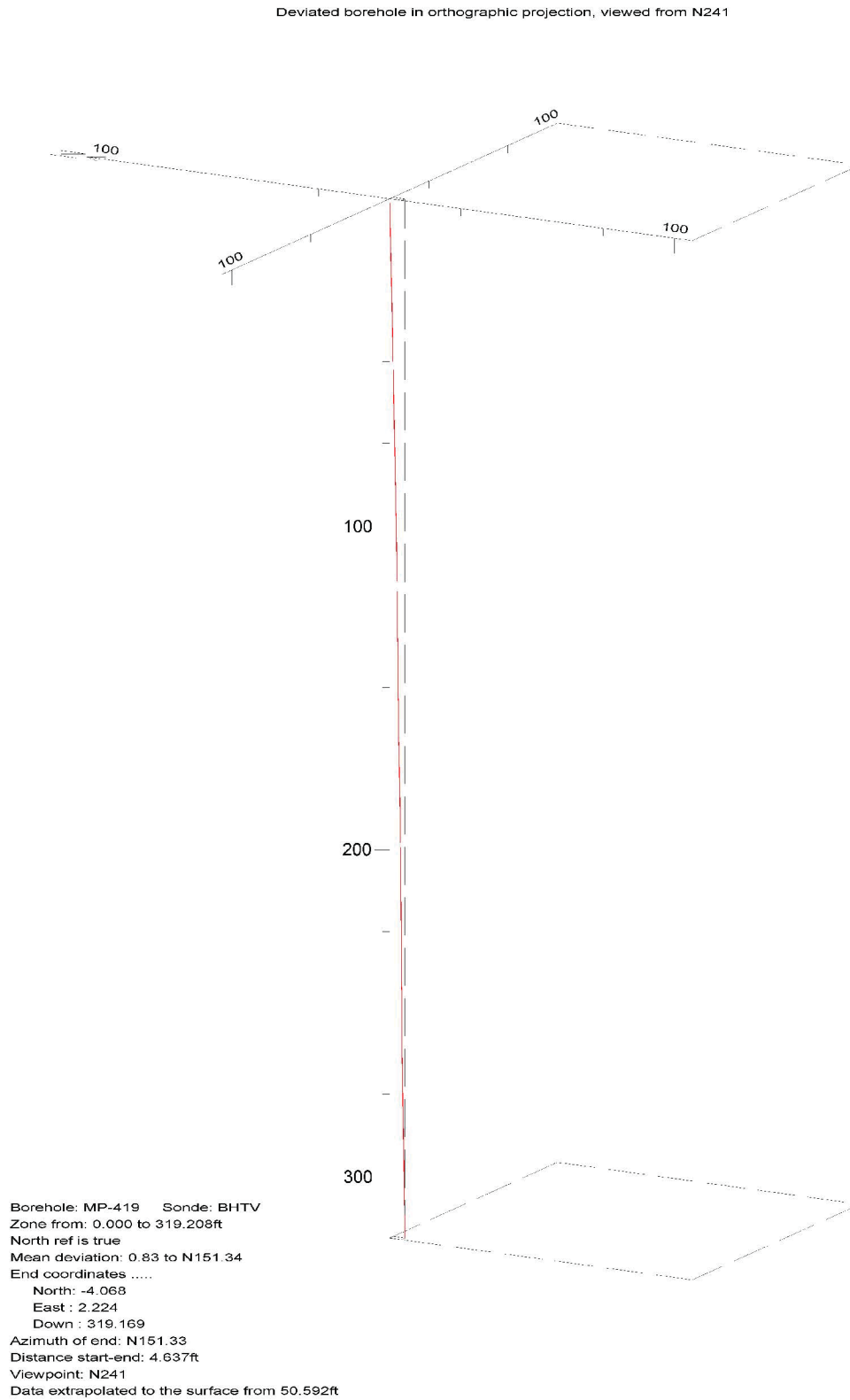


Figure 86. Boring MP-419, Up Deviation Projection

CLINCH RIVER SMR PROJECT BOREHOLE MP-420 Receiver to Receiver V_s and V_p Analysis

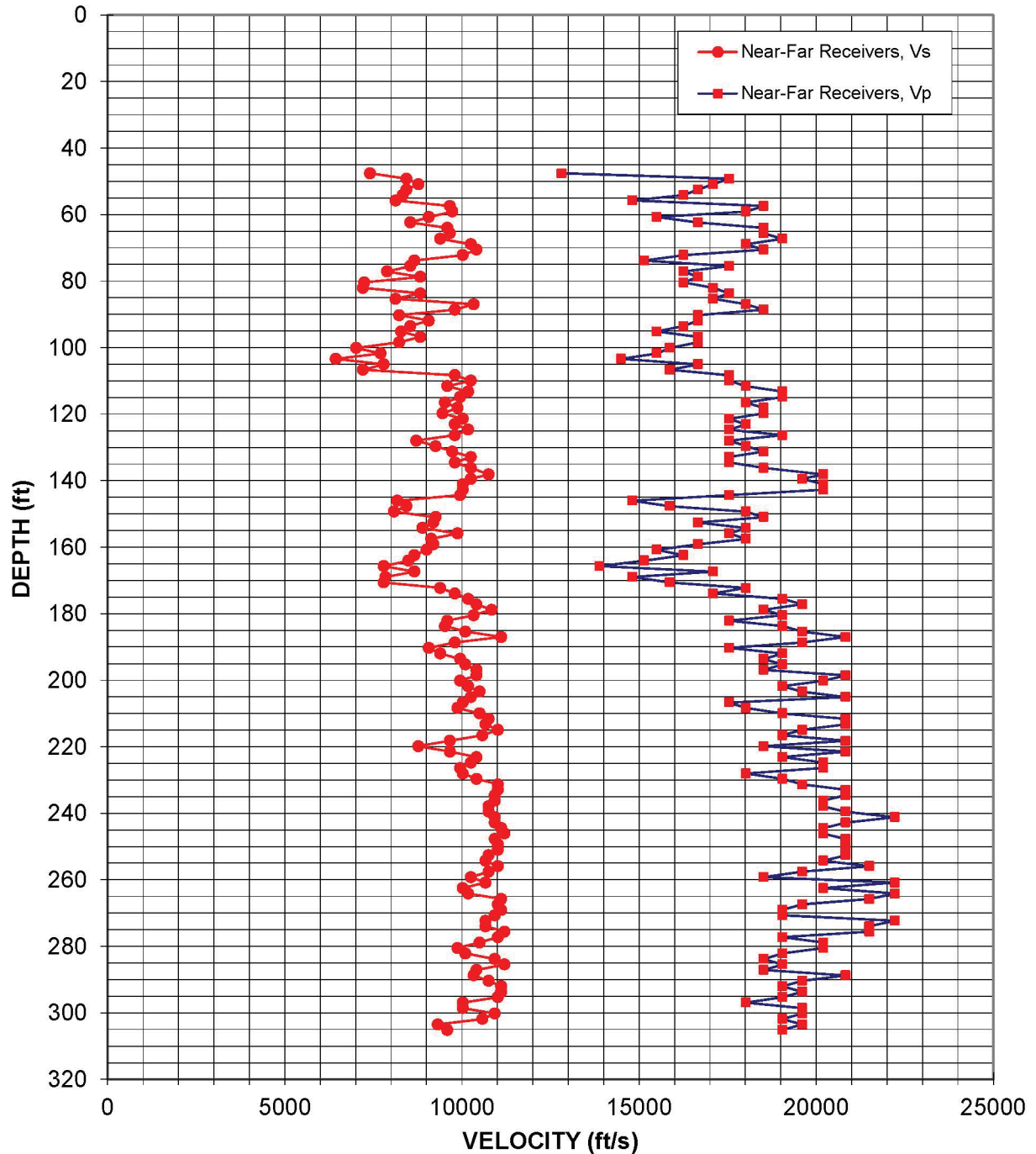


Figure 87: Boring MP-420, Suspension R1-R2 P- and S_H -wave velocities

Table 46. Boring MP-420, Suspension R1-R2 depths and P- and S_H-wave velocities

**Summary of Compressional Wave Velocity, Shear Wave Velocity, and Poisson's Ratio
Based on Receiver-to-Receiver Travel Time Data - Borehole MP-420**

American Units				Metric Units			
Depth at Midpoint Between Receivers	Velocity		Poisson's Ratio	Depth at Midpoint Between Receivers	Velocity		Poisson's Ratio
	V _s	V _p			V _s	V _p	
(ft)	(ft/s)	(ft/s)		(m)	(m/s)	(m/s)	
47.6	7410	12820	0.25	14.5	2260	3910	0.25
49.2	8440	17540	0.35	15.0	2570	5350	0.35
50.9	8770	17090	0.32	15.5	2670	5210	0.32
52.5	8440	16670	0.33	16.0	2570	5080	0.33
54.1	8330	16260	0.32	16.5	2540	4960	0.32
55.8	8130	14810	0.28	17.0	2480	4520	0.28
57.4	9660	18520	0.31	17.5	2940	5640	0.31
59.1	9730	18020	0.29	18.0	2970	5490	0.29
60.7	9070	15500	0.24	18.5	2760	4730	0.24
62.3	8550	16670	0.32	19.0	2610	5080	0.32
64.0	9590	18520	0.32	19.5	2920	5640	0.32
65.6	9660	18520	0.31	20.0	2940	5640	0.31
67.3	9390	19050	0.34	20.5	2860	5810	0.34
68.9	10260	18020	0.26	21.0	3130	5490	0.26
70.5	10420	18520	0.27	21.5	3180	5640	0.27
72.2	10030	16260	0.19	22.0	3060	4960	0.19
73.8	8660	15150	0.26	22.5	2640	4620	0.26
75.5	8550	17540	0.34	23.0	2610	5350	0.34
77.1	7890	16260	0.35	23.5	2400	4960	0.35
78.7	8830	16670	0.30	24.0	2690	5080	0.30
80.4	7250	16260	0.38	24.5	2210	4960	0.38
82.0	7210	17090	0.39	25.0	2200	5210	0.39
83.7	8830	17540	0.33	25.5	2690	5350	0.33
85.3	8130	17090	0.35	26.0	2480	5210	0.35
86.9	10340	18020	0.25	26.5	3150	5490	0.25
88.6	9800	18520	0.31	27.0	2990	5640	0.31
90.2	8230	16670	0.34	27.5	2510	5080	0.34
91.9	9070	16670	0.29	28.0	2760	5080	0.29
93.5	8550	16260	0.31	28.5	2610	4960	0.31
95.1	8280	15500	0.30	29.0	2520	4730	0.30
96.8	8830	16670	0.30	29.5	2690	5080	0.30
98.4	8230	16670	0.34	30.0	2510	5080	0.34
100.1	7020	15870	0.38	30.5	2140	4840	0.38
101.7	7710	15500	0.34	31.0	2350	4730	0.34
103.4	6440	14490	0.38	31.5	1960	4420	0.38
105.0	7800	16670	0.36	32.0	2380	5080	0.36
106.6	7210	15870	0.37	32.5	2200	4840	0.37

**Summary of Compressional Wave Velocity, Shear Wave Velocity, and Poisson's Ratio
Based on Receiver-to-Receiver Travel Time Data - Borehole MP-420**

American Units				Metric Units			
Depth at Midpoint Between Receivers	Velocity		Poisson's Ratio	Depth at Midpoint Between Receivers	Velocity		Poisson's Ratio
	V _s	V _p			V _s	V _p	
(ft)	(ft/s)	(ft/s)		(m)	(m/s)	(m/s)	
108.3	9800	17540	0.27	33.0	2990	5350	0.27
109.9	10260	17540	0.24	33.5	3130	5350	0.24
111.6	9590	18020	0.30	34.0	2920	5490	0.30
113.2	10180	19050	0.30	34.5	3100	5810	0.30
114.8	9950	19050	0.31	35.0	3030	5810	0.31
116.5	9520	18020	0.31	35.5	2900	5490	0.31
118.1	9880	18520	0.30	36.0	3010	5640	0.30
119.8	9460	18520	0.32	36.5	2880	5640	0.32
121.4	10030	17540	0.26	37.0	3060	5350	0.26
123.0	9800	18020	0.29	37.5	2990	5490	0.29
124.7	10180	17540	0.25	38.0	3100	5350	0.25
126.3	9800	19050	0.32	38.5	2990	5810	0.32
128.0	8710	17540	0.34	39.0	2660	5350	0.34
129.6	9260	18020	0.32	39.5	2820	5490	0.32
131.2	9730	18520	0.31	40.0	2970	5640	0.31
132.9	10260	17540	0.24	40.5	3130	5350	0.24
134.5	9800	17540	0.27	41.0	2990	5350	0.27
136.2	10260	18520	0.28	41.5	3130	5640	0.28
138.1	10750	20200	0.30	42.1	3280	6160	0.30
139.4	10260	19610	0.31	42.5	3130	5980	0.31
141.1	10030	20200	0.34	43.0	3060	6160	0.34
142.7	10030	20200	0.34	43.5	3060	6160	0.34
144.4	9950	17540	0.26	44.0	3030	5350	0.26
146.0	8180	14810	0.28	44.5	2490	4520	0.28
147.6	8440	15870	0.30	45.0	2570	4840	0.30
149.3	8080	18020	0.37	45.5	2460	5490	0.37
150.9	9260	18520	0.33	46.0	2820	5640	0.33
152.6	9200	16670	0.28	46.5	2800	5080	0.28
154.2	8890	18020	0.34	47.0	2710	5490	0.34
155.8	9880	17540	0.27	47.5	3010	5350	0.27
157.5	9130	18020	0.33	48.0	2780	5490	0.33
159.1	9200	16670	0.28	48.5	2800	5080	0.28
160.8	9010	15500	0.25	49.0	2750	4730	0.25
162.4	8660	16260	0.30	49.5	2640	4960	0.30
164.0	8490	15150	0.27	50.0	2590	4620	0.27
165.7	7800	13890	0.27	50.5	2380	4230	0.27
167.3	8660	17090	0.33	51.0	2640	5210	0.33
169.0	7840	14810	0.31	51.5	2390	4520	0.31
170.6	7800	15870	0.34	52.0	2380	4840	0.34

**Summary of Compressional Wave Velocity, Shear Wave Velocity, and Poisson's Ratio
Based on Receiver-to-Receiver Travel Time Data - Borehole MP-420**

American Units				Metric Units			
Depth at Midpoint Between Receivers	Velocity		Poisson's Ratio	Depth at Midpoint Between Receivers	Velocity		Poisson's Ratio
	V _s	V _p			V _s	V _p	
(ft)	(ft/s)	(ft/s)		(m)	(m/s)	(m/s)	
172.2	9390	18020	0.31	52.5	2860	5490	0.31
173.9	9800	17090	0.25	53.0	2990	5210	0.25
175.5	10180	19050	0.30	53.5	3100	5810	0.30
177.2	10420	19610	0.30	54.0	3180	5980	0.30
178.8	10840	18520	0.24	54.5	3300	5640	0.24
180.5	10340	19050	0.29	55.0	3150	5810	0.29
182.1	9590	17540	0.29	55.5	2920	5350	0.29
183.7	9520	19050	0.33	56.0	2900	5810	0.33
185.4	10100	19610	0.32	56.5	3080	5980	0.32
187.0	11110	20830	0.30	57.0	3390	6350	0.30
188.7	9800	19610	0.33	57.5	2990	5980	0.33
190.3	9070	17540	0.32	58.0	2760	5350	0.32
191.9	9390	19050	0.34	58.5	2860	5810	0.34
193.6	9950	18520	0.30	59.0	3030	5640	0.30
195.2	10100	19050	0.30	59.5	3080	5810	0.30
196.9	10420	18520	0.27	60.0	3180	5640	0.27
198.5	10420	20830	0.33	60.5	3180	6350	0.33
200.1	9950	20200	0.34	61.0	3030	6160	0.34
201.8	10180	19050	0.30	61.5	3100	5810	0.30
203.4	10500	19610	0.30	62.0	3200	5980	0.30
205.1	10260	20830	0.34	62.5	3130	6350	0.34
206.7	10030	17540	0.26	63.0	3060	5350	0.26
208.3	9880	18020	0.29	63.5	3010	5490	0.29
210.0	10500	19050	0.28	64.0	3200	5810	0.28
211.6	10750	20830	0.32	64.5	3280	6350	0.32
213.3	10670	20830	0.32	65.0	3250	6350	0.32
214.9	11020	19610	0.27	65.5	3360	5980	0.27
216.5	10580	19050	0.28	66.0	3230	5810	0.28
218.2	9660	20830	0.36	66.5	2940	6350	0.36
219.8	8770	18520	0.36	67.0	2670	5640	0.36
221.5	9660	20830	0.36	67.5	2940	6350	0.36
223.1	10420	19050	0.29	68.0	3180	5810	0.29
224.7	10260	20200	0.33	68.5	3130	6160	0.33
226.4	9950	20200	0.34	69.0	3030	6160	0.34
228.0	10030	18020	0.28	69.5	3060	5490	0.28
229.7	10420	19050	0.29	70.0	3180	5810	0.29
231.3	11020	19610	0.27	70.5	3360	5980	0.27
232.9	11020	20830	0.31	71.0	3360	6350	0.31
234.6	10930	20830	0.31	71.5	3330	6350	0.31

**Summary of Compressional Wave Velocity, Shear Wave Velocity, and Poisson's Ratio
Based on Receiver-to-Receiver Travel Time Data - Borehole MP-420**

American Units				Metric Units			
Depth at Midpoint Between Receivers	Velocity		Poisson's Ratio	Depth at Midpoint Between Receivers	Velocity		Poisson's Ratio
	V _s	V _p			V _s	V _p	
(ft)	(ft/s)	(ft/s)		(m)	(m/s)	(m/s)	
236.2	10930	20200	0.29	72.0	3330	6160	0.29
237.9	10750	20200	0.30	72.5	3280	6160	0.30
239.5	10750	20830	0.32	73.0	3280	6350	0.32
241.1	10930	22220	0.34	73.5	3330	6770	0.34
242.8	10930	20830	0.31	74.0	3330	6350	0.31
244.4	11110	20200	0.28	74.5	3390	6160	0.28
246.1	11200	20200	0.28	75.0	3420	6160	0.28
247.7	10930	20830	0.31	75.5	3330	6350	0.31
249.3	11020	20830	0.31	76.0	3360	6350	0.31
251.0	11020	20830	0.31	76.5	3360	6350	0.31
252.6	10750	20830	0.32	77.0	3280	6350	0.32
254.3	10670	20200	0.31	77.5	3250	6160	0.31
255.9	11020	21510	0.32	78.0	3360	6550	0.32
257.6	10750	19610	0.28	78.5	3280	5980	0.28
259.2	10260	18520	0.28	79.0	3130	5640	0.28
260.8	10670	22220	0.35	79.5	3250	6770	0.35
262.5	10030	20200	0.34	80.0	3060	6160	0.34
264.1	10180	22220	0.37	80.5	3100	6770	0.37
265.8	11110	21510	0.32	81.0	3390	6550	0.32
267.4	11020	19610	0.27	81.5	3360	5980	0.27
269.0	11110	19050	0.24	82.0	3390	5810	0.24
270.7	10930	19050	0.25	82.5	3330	5810	0.25
272.3	10670	22220	0.35	83.0	3250	6770	0.35
274.0	10670	21510	0.34	83.5	3250	6550	0.34
275.6	11200	21510	0.31	84.0	3420	6550	0.31
277.2	11020	19050	0.25	84.5	3360	5810	0.25
278.9	10500	20200	0.32	85.0	3200	6160	0.32
280.5	9880	20200	0.34	85.5	3010	6160	0.34
282.2	10100	19050	0.30	86.0	3080	5810	0.30
283.8	10930	18520	0.23	86.5	3330	5640	0.23
285.4	11200	19050	0.24	87.0	3420	5810	0.24
287.1	10420	18520	0.27	87.5	3180	5640	0.27
288.7	10340	20830	0.34	88.0	3150	6350	0.34
290.4	10750	19610	0.28	88.5	3280	5980	0.28
292.0	11110	19050	0.24	89.0	3390	5810	0.24
293.6	11110	19610	0.26	89.5	3390	5980	0.26
295.3	11020	19050	0.25	90.0	3360	5810	0.25
296.9	10030	18020	0.28	90.5	3060	5490	0.28
298.6	10030	19610	0.32	91.0	3060	5980	0.32

**Summary of Compressional Wave Velocity, Shear Wave Velocity, and Poisson's Ratio
Based on Receiver-to-Receiver Travel Time Data - Borehole MP-420**

American Units			
Depth at Midpoint Between Receivers	Velocity		Poisson's Ratio
	V _s	V _p	
(ft)	(ft/s)	(ft/s)	
300.2	10930	19610	0.27
301.8	10580	19050	0.28
303.5	9320	19610	0.35
305.1	9590	19050	0.33

Metric Units			
Depth at Midpoint Between Receivers	Velocity		Poisson's Ratio
	V _s	V _p	
(m)	(m/s)	(m/s)	
91.5	3330	5980	0.27
92.0	3230	5810	0.28
92.5	2840	5980	0.35
93.0	2920	5810	0.33

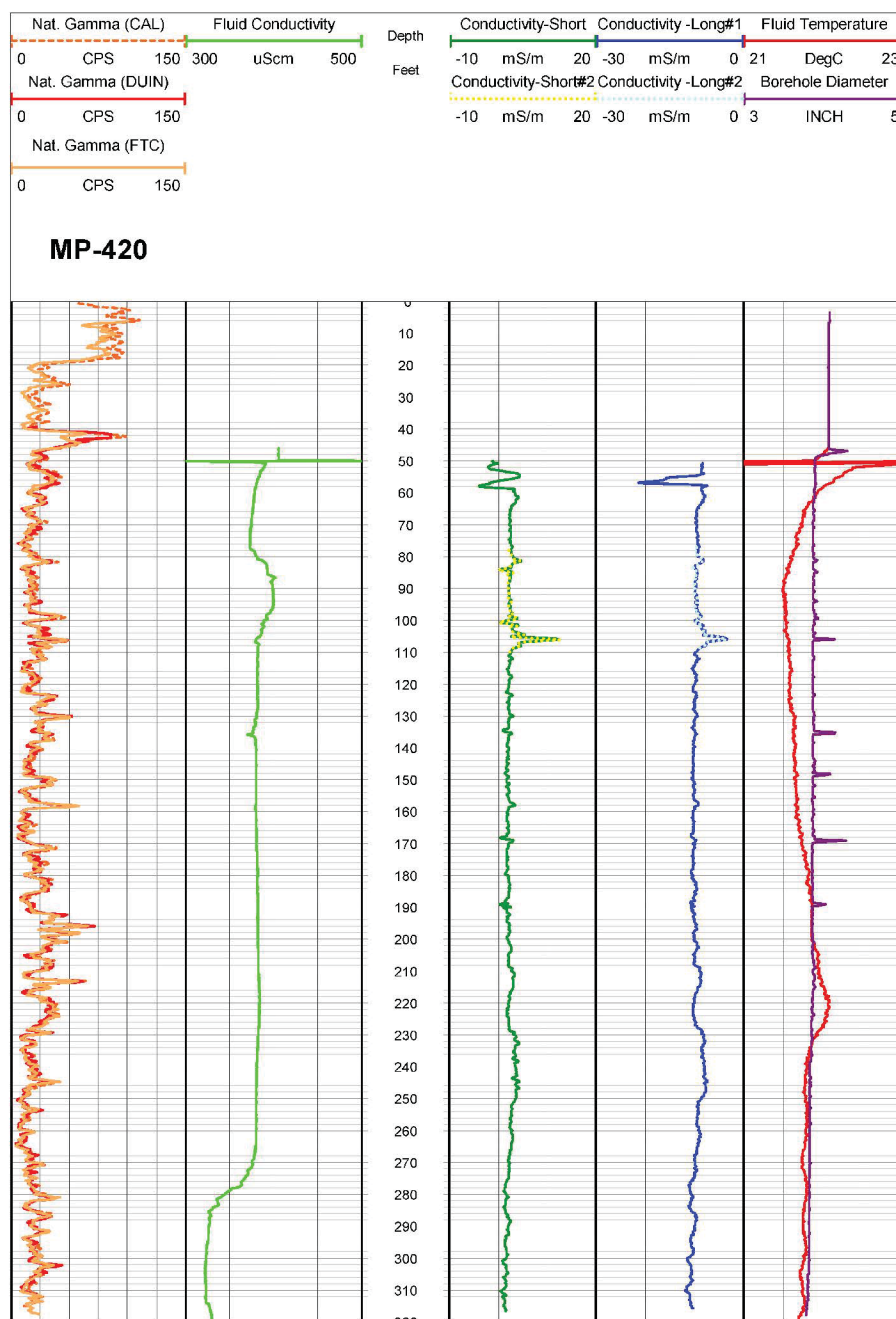


Figure 88. Boring MP-420, Induction, Fluid Temperature/Conductivity, Natural Gamma and Caliper logs

Table 47. Boring MP-420, Acoustic Televiewer Feature depth, dip azimuth, dip and description

Depth (feet)	Dip azimuth	Dip	Structure description
50.5	N321	62	Fracture Planar Hairline-fracture
50.8	N113	33	Primary-structure Planar Bedding
51.5	N332	60	Fracture Planar Hairline-fracture
52.0	N330	38	Fracture Planar Hairline-fracture
52.7	N323	64	Fracture Planar Hairline-fracture
52.9	N137	32	Primary-structure Planar Bedding
53.3	N108	41	Primary-structure Planar Bedding
54.3	N149	36	Primary-structure Irregular Bedding
55.8	N127	35	Primary-structure Planar Bedding
57.1	N160	31	Primary-structure Irregular Bedding
61.0	N166	40	Primary-structure Irregular Bedding
61.5	N178	45	Fracture Irregular Open-fracture
63.0	N149	28	Primary-structure Planar Bedding
65.1	N161	34	Primary-structure Planar Bedding
65.5	N174	61	Fracture Planar Hairline-fracture
66.1	N160	74	Fracture Planar Hairline-fracture
67.7	N150	43	Primary-structure Planar Bedding
67.8	N154	86	Fracture Planar Hairline-fracture
68.3	N171	34	Primary-structure Planar Bedding
74.2	N146	33	Primary-structure Planar Bedding
74.9	N151	36	Primary-structure Planar Bedding
75.8	N167	68	Fracture Planar Hairline-fracture
76.0	N358	80	Fracture Planar Hairline-fracture
76.2	N172	41	Primary-structure Planar Bedding
76.7	N166	32	Primary-structure Planar Bedding
77.1	N340	77	Fracture Planar Hairline-fracture
77.3	N175	24	Primary-structure Planar Bedding
77.8	N152	34	Primary-structure Planar Bedding
78.0	N013	76	Fracture Planar Hairline-fracture
78.4	N105	36	Primary-structure Planar Bedding
79.0	N156	34	Primary-structure Planar Bedding
79.3	N355	67	Fracture Planar Hairline-fracture
80.1	N347	86	Fracture Planar Hairline-fracture
80.5	N347	82	Fracture Planar Hairline-fracture
81.1	N153	47	Primary-structure Planar Bedding
81.5	N151	28	Fracture Planar Open-fracture

Depth (feet)	Dip azimuth	Dip	Structure description
82.2	N151	42	Primary-structure Planar Bedding
83.0	N146	38	Primary-structure Planar Bedding
84.1	N158	33	Primary-structure Planar Bedding
84.8	N147	28	Primary-structure Planar Bedding
84.9	N160	40	Fracture Planar Open-fracture
88.4	N168	54	Fracture Planar Hairline-fracture
90.1	N161	35	Primary-structure Planar Bedding
90.9	N151	42	Primary-structure Planar Bedding
92.2	N203	69	Fracture Planar Hairline-fracture
92.5	N153	33	Primary-structure Planar Bedding
92.9	N008	47	Fracture Planar Hairline-fracture
94.1	N150	35	Primary-structure Irregular Bedding
95.0	N154	87	Fracture Planar Hairline-fracture
95.7	N237	84	Fracture Planar Hairline-fracture
95.9	N152	34	Primary-structure Irregular Bedding
96.8	N036	79	Fracture Planar Hairline-fracture
97.9	N209	84	Fracture Planar Hairline-fracture
98.1	N026	67	Fracture Planar Hairline-fracture
98.5	N145	34	Fracture Planar Open-fracture
99.4	N146	30	Fracture Planar Open-fracture
100.6	N158	37	Primary-structure Planar Bedding
101.1	N321	49	Fracture Planar Hairline-fracture
101.4	N353	57	Fracture Planar Hairline-fracture
102.4	N055	78	Fracture Planar Hairline-fracture
103.4	N146	26	Primary-structure Planar Bedding
104.2	N140	25	Primary-structure Planar Bedding
104.3	N331	79	Fracture Planar Hairline-fracture
105.2	N348	70	Fracture Planar Hairline-fracture
105.9	N164	24	Primary-structure Planar Bedding
106.8	N027	65	Fracture Planar Hairline-fracture
108.1	N159	29	Primary-structure Planar Bedding
109.2	N187	45	Primary-structure Planar Bedding
109.9	N157	28	Primary-structure Planar Bedding
110.0	N344	78	Fracture Planar Hairline-fracture
110.1	N006	72	Fracture Planar Hairline-fracture
111.0	N348	70	Fracture Planar Hairline-fracture
111.3	N159	47	Primary-structure Planar Bedding
112.1	N161	26	Primary-structure Planar Bedding
112.2	N155	35	Primary-structure Planar Bedding

Depth (feet)	Dip azimuth	Dip	Structure description
112.5	N323	69	Fracture Planar Hairline-fracture
112.8	N153	29	Primary-structure Planar Bedding
113.6	N280	44	Fracture Planar Hairline-fracture
113.8	N338	46	Fracture Planar Hairline-fracture
113.9	N022	72	Fracture Planar Hairline-fracture
114.3	N328	66	Fracture Planar Hairline-fracture
114.4	N165	38	Primary-structure Planar Bedding
115.2	N321	74	Fracture Planar Hairline-fracture
116.5	N349	65	Fracture Planar Hairline-fracture
116.8	N142	33	Primary-structure Irregular Bedding
117.9	N161	28	Primary-structure Irregular Bedding
123.5	N144	30	Fracture Planar Open-fracture
126.4	N154	21	Primary-structure Planar Bedding
126.7	N345	52	Fracture Planar Hairline-fracture
126.9	N138	32	Primary-structure Planar Bedding
127.1	N147	32	Primary-structure Planar Bedding
128.7	N144	25	Primary-structure Planar Bedding
130.2	N132	37	Primary-structure Planar Bedding
133.4	N150	26	Primary-structure Planar Bedding
135.1	N140	29	Primary-structure Planar Bedding
135.3	N153	28	Fracture Planar Open-fracture
135.5	N152	25	Fracture Planar Open-fracture
136.3	N150	30	Primary-structure Planar Bedding
137.2	N353	69	Fracture Planar Hairline-fracture
140.1	N161	25	Primary-structure Irregular Bedding
141.6	N156	27	Primary-structure Planar Bedding
143.9	N176	40	Primary-structure Planar Bedding
144.1	N234	66	Fracture Planar Hairline-fracture
144.1	N147	34	Primary-structure Planar Bedding
144.2	N329	53	Fracture Planar Hairline-fracture
144.5	N224	75	Fracture Planar Hairline-fracture
144.8	N314	52	Fracture Planar Hairline-fracture
145.2	N147	46	Primary-structure Planar Bedding
146.4	N345	60	Fracture Planar Hairline-fracture
146.8	N237	77	Fracture Planar Hairline-fracture
147.0	N248	63	Fracture Planar Hairline-fracture
147.3	N005	64	Fracture Planar Hairline-fracture
147.4	N138	39	Primary-structure Planar Bedding

Depth (feet)	Dip azimuth	Dip	Structure description
147.5	N047	63	Fracture Planar Hairline-fracture
148.2	N085	55	Fracture Planar Hairline-fracture
148.4	N244	65	Fracture Planar Hairline-fracture
148.8	N140	31	Primary-structure Planar Bedding
149.7	N145	35	Primary-structure Planar Bedding
150.2	N147	42	Fracture Planar Hairline-fracture
151.7	N150	39	Primary-structure Planar Bedding
152.0	N273	64	Fracture Planar Hairline-fracture
153.6	N326	71	Fracture Planar Hairline-fracture
154.7	N257	69	Fracture Planar Hairline-fracture
155.8	N047	70	Fracture Planar Hairline-fracture
156.0	N152	31	Primary-structure Planar Bedding
156.1	N136	30	Primary-structure Planar Bedding
156.6	N155	36	Primary-structure Planar Bedding
157.0	N028	75	Fracture Planar Hairline-fracture
157.7	N037	69	Fracture Planar Hairline-fracture
158.0	N130	36	Primary-structure Planar Bedding
161.6	N132	36	Primary-structure Planar Bedding
162.5	N156	84	Fracture Planar Hairline-fracture
162.8	N003	73	Fracture Planar Hairline-fracture
163.2	N135	32	Primary-structure Planar Bedding
163.6	N145	33	Primary-structure Planar Bedding
165.1	N231	39	Primary-structure Planar Bedding
168.4	N305	59	Fracture Planar Hairline-fracture
169.3	N179	38	Primary-structure Planar Bedding
169.3	N200	44	Fracture Planar Open-fracture
170.5	N214	43	Fracture Planar Hairline-fracture
172.9	N287	74	Fracture Planar Hairline-fracture
173.0	N052	77	Fracture Planar Hairline-fracture
173.1	N156	36	Primary-structure Planar Bedding
173.9	N142	35	Primary-structure Planar Bedding
173.9	N174	29	Primary-structure Planar Bedding
174.4	N148	37	Primary-structure Planar Bedding
174.7	N233	67	Fracture Planar Hairline-fracture
174.8	N063	72	Fracture Planar Hairline-fracture
175.6	N279	72	Fracture Planar Hairline-fracture
175.6	N027	44	Fracture Planar Hairline-fracture
177.4	N150	34	Primary-structure Planar Bedding
178.6	N135	45	Primary-structure Irregular Bedding

Depth (feet)	Dip azimuth	Dip	Structure description
179.5	N295	78	Fracture Planar Hairline-fracture
180.7	N140	45	Primary-structure Planar Bedding
184.4	N017	83	Fracture Planar Hairline-fracture
187.0	N205	79	Fracture Planar Hairline-fracture
188.2	N021	71	Fracture Planar Hairline-fracture
188.3	N082	80	Fracture Planar Hairline-fracture
189.0	N170	46	Fracture Planar Hairline-fracture
189.2	N029	73	Fracture Planar Hairline-fracture
189.5	N004	60	Fracture Planar Open-fracture
192.1	N040	59	Fracture Planar Hairline-fracture
192.2	N050	66	Fracture Planar Hairline-fracture
192.4	N145	35	Primary-structure Planar Bedding
193.9	N146	40	Primary-structure Planar Bedding
194.9	N140	35	Primary-structure Planar Bedding
195.1	N342	56	Fracture Planar Hairline-fracture
195.8	N155	35	Primary-structure Planar Bedding
197.6	N146	35	Primary-structure Planar Bedding
197.8	N146	35	Primary-structure Planar Bedding
199.2	N160	40	Primary-structure Planar Bedding
199.4	N158	32	Primary-structure Planar Bedding
201.2	N142	34	Primary-structure Planar Bedding
201.5	N150	38	Primary-structure Planar Bedding
201.9	N148	35	Primary-structure Planar Bedding
205.5	N322	25	Fracture Planar Hairline-fracture
205.6	N326	43	Fracture Planar Hairline-fracture
207.3	N142	27	Primary-structure Planar Bedding
209.6	N150	33	Primary-structure Planar Bedding
215.2	N146	30	Primary-structure Planar Bedding
215.3	N330	45	Fracture Planar Hairline-fracture
217.7	N319	38	Fracture Planar Hairline-fracture
218.0	N157	32	Primary-structure Planar Bedding
218.3	N149	36	Primary-structure Planar Bedding
218.4	N351	59	Fracture Planar Hairline-fracture
218.5	N147	35	Primary-structure Planar Bedding
221.1	N141	32	Primary-structure Planar Bedding
221.2	N153	37	Primary-structure Planar Bedding
221.2	N163	35	Primary-structure Planar Bedding
230.8	N331	49	Fracture Planar Hairline-fracture
231.5	N320	36	Fracture Planar Hairline-fracture

Depth (feet)	Dip azimuth	Dip	Structure description
236.9	N338	59	Fracture Planar Hairline-fracture
238.6	N326	73	Fracture Planar Hairline-fracture
238.8	N333	60	Fracture Planar Hairline-fracture
243.4	N342	55	Fracture Planar Hairline-fracture
243.7	N352	73	Fracture Planar Hairline-fracture
245.8	N335	74	Fracture Planar Hairline-fracture
246.5	N335	68	Fracture Planar Hairline-fracture
253.5	N143	30	Primary-structure Planar Bedding
255.6	N146	33	Primary-structure Planar Bedding
258.7	N002	61	Fracture Planar Hairline-fracture
259.6	N340	59	Fracture Planar Hairline-fracture
260.0	N149	45	Primary-structure Planar Bedding
262.8	N342	73	Fracture Planar Hairline-fracture
262.9	N325	29	Fracture Planar Hairline-fracture
265.7	N149	34	Primary-structure Planar Bedding
267.7	N005	59	Fracture Planar Hairline-fracture
267.9	N148	38	Primary-structure Planar Bedding
270.7	N145	28	Primary-structure Planar Bedding
272.9	N150	32	Primary-structure Planar Bedding
277.8	N139	34	Primary-structure Planar Bedding
285.4	N143	29	Primary-structure Planar Bedding
286.3	N135	35	Primary-structure Planar Bedding
286.9	N137	33	Primary-structure Planar Bedding
289.4	N037	84	Fracture Planar Hairline-fracture
290.3	N031	56	Fracture Planar Hairline-fracture
291.4	N157	23	Primary-structure Planar Bedding
292.8	N137	28	Primary-structure Planar Bedding
293.0	N143	36	Primary-structure Planar Bedding
293.2	N340	43	Fracture Planar Hairline-fracture
294.8	N144	34	Primary-structure Planar Bedding
295.7	N145	36	Primary-structure Planar Bedding
295.8	N140	31	Primary-structure Planar Bedding
297.1	N152	34	Primary-structure Planar Bedding
297.7	N150	35	Primary-structure Planar Bedding
298.2	N141	33	Primary-structure Planar Bedding
300.2	N144	31	Primary-structure Planar Bedding
302.2	N161	35	Primary-structure Planar Bedding
302.5	N152	30	Primary-structure Planar Bedding
305.0	N176	37	Fracture Irregular Open-fracture

Depth (feet)	Dip azimuth	Dip	Structure description
307.4	N134	36	Primary-structure Planar Bedding
308.1	N118	43	Primary-structure Planar Bedding
309.1	N164	37	Primary-structure Planar Bedding
309.5	N026	76	Fracture Planar Hairline-fracture
310.8	N147	47	Primary-structure Planar Bedding
311.4	N317	53	Fracture Planar Hairline-fracture
311.9	N166	45	Primary-structure Planar Bedding
313.1	N144	41	Primary-structure Planar Bedding
313.2	N140	39	Primary-structure Planar Bedding
313.3	N144	37	Primary-structure Planar Bedding
313.8	N287	57	Fracture Irregular Hairline-fracture
313.9	N125	68	Fracture Planar Hairline-fracture



Figure 89. Boring MP-420, Rose Diagram

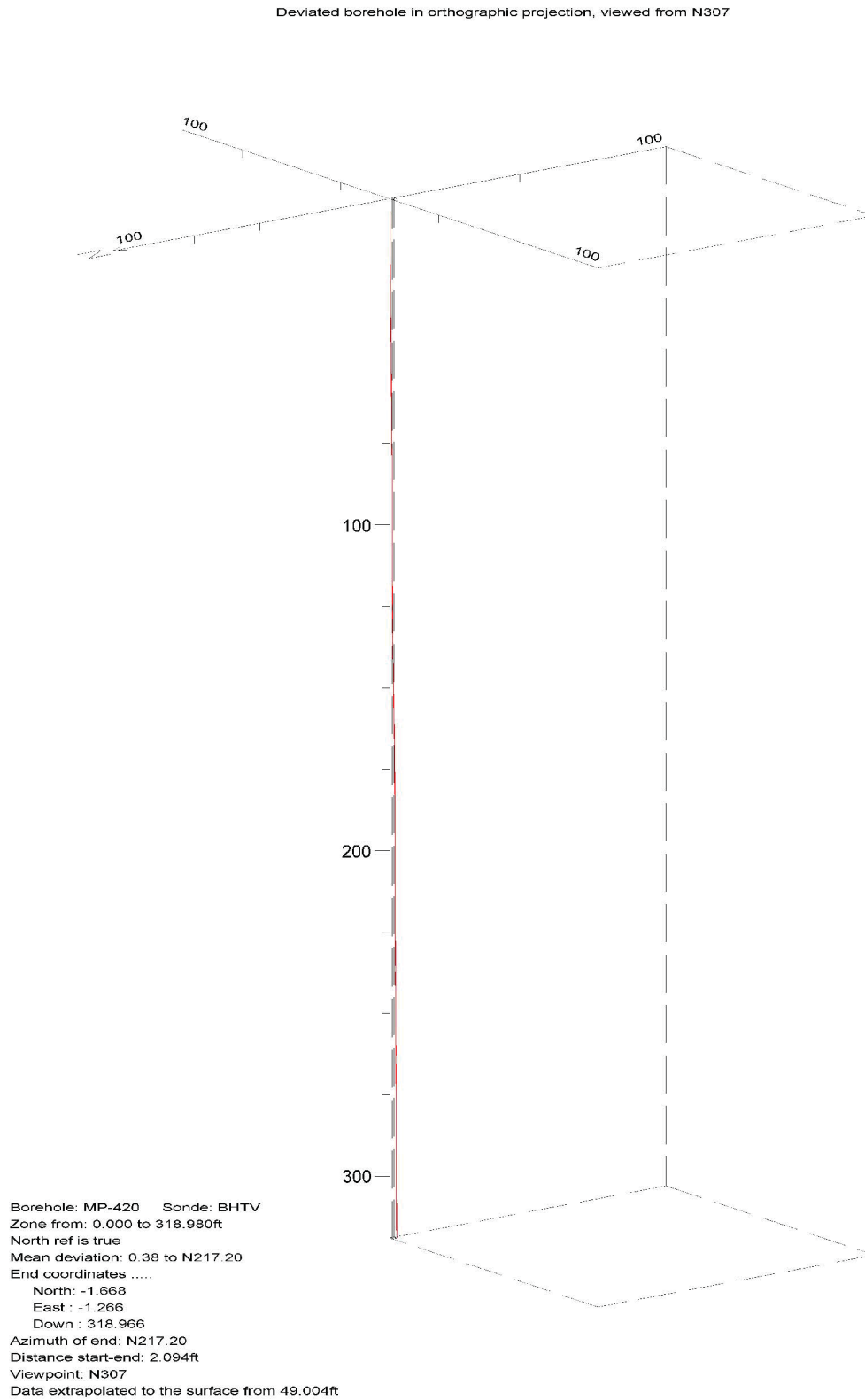


Figure 90. Boring MP-420, Up Deviation Projection

CLINCH RIVER SMR PROJECT BOREHOLE MP-421 Receiver to Receiver V_s and V_p Analysis

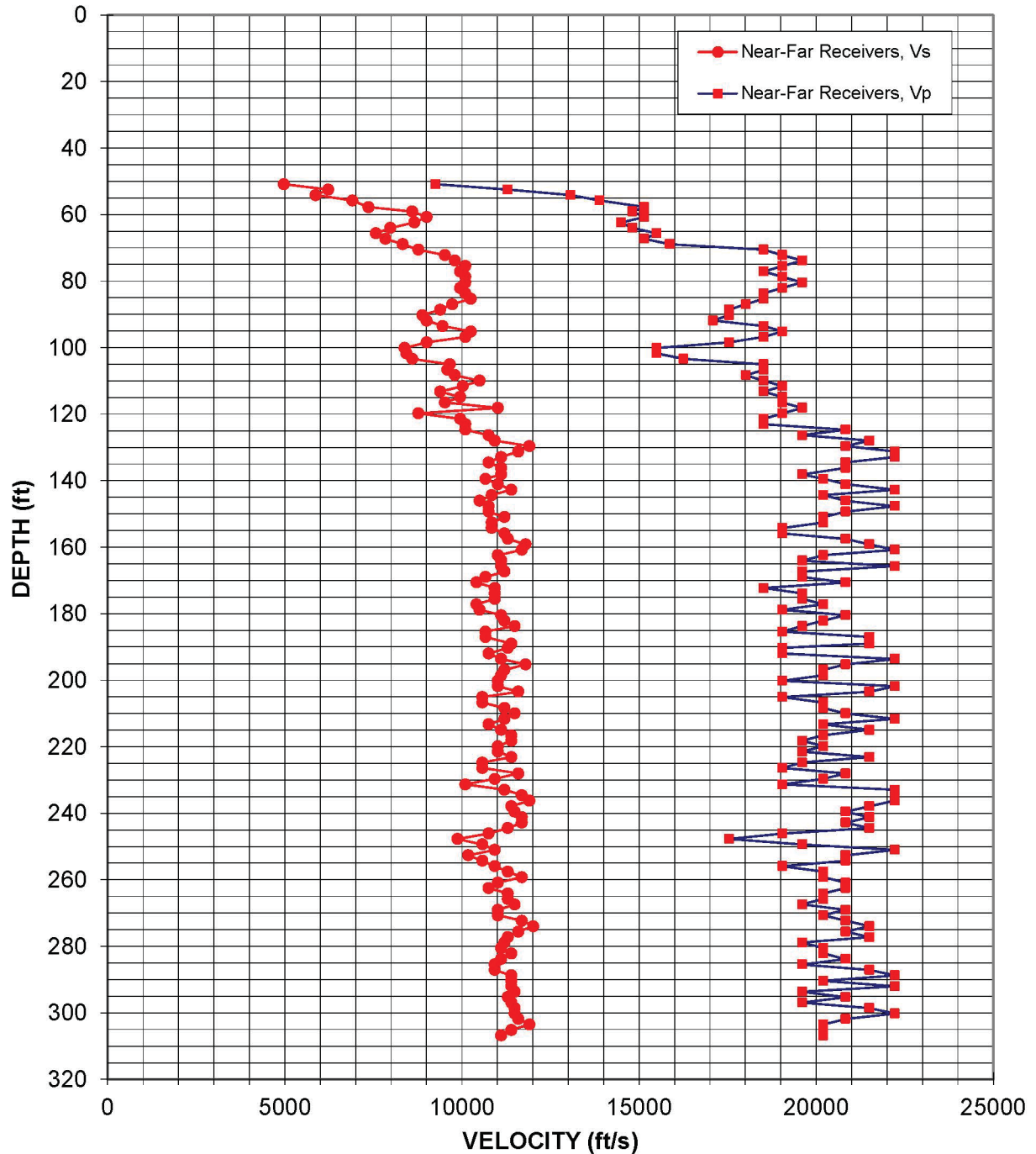


Figure 91: Boring MP-421, Suspension R1-R2 P- and S_H -wave velocities

Table 48. Boring MP-421, Suspension R1-R2 depths and P- and S_H-wave velocities

**Summary of Compressional Wave Velocity, Shear Wave Velocity, and Poisson's Ratio
Based on Receiver-to-Receiver Travel Time Data - Borehole MP-421**

American Units				Metric Units			
Depth at Midpoint Between Receivers	Velocity		Poisson's Ratio	Depth at Midpoint Between Receivers	Velocity		Poisson's Ratio
	V _s	V _p			V _s	V _p	
(ft)	(ft/s)	(ft/s)		(m)	(m/s)	(m/s)	
50.9	4980	9260	0.30	15.5	1520	2820	0.30
52.5	6230	11300	0.28	16.0	1900	3440	0.28
54.1	5870	13070	0.37	16.5	1790	3980	0.37
55.8	6910	13890	0.34	17.0	2110	4230	0.34
57.7	7370	15150	0.35	17.6	2250	4620	0.35
59.1	8600	14810	0.25	18.0	2620	4520	0.25
60.7	9010	15150	0.23	18.5	2750	4620	0.23
62.3	8660	14490	0.22	19.0	2640	4420	0.22
64.0	7980	14810	0.30	19.5	2430	4520	0.30
65.6	7580	15500	0.34	20.0	2310	4730	0.34
67.3	7840	15150	0.32	20.5	2390	4620	0.32
68.9	8330	15870	0.31	21.0	2540	4840	0.31
70.5	8770	18520	0.36	21.5	2670	5640	0.36
72.2	9520	19050	0.33	22.0	2900	5810	0.33
73.8	9800	19610	0.33	22.5	2990	5980	0.33
75.5	10100	19050	0.30	23.0	3080	5810	0.30
77.1	9950	18520	0.30	23.5	3030	5640	0.30
78.7	10100	19050	0.30	24.0	3080	5810	0.30
80.4	10100	19610	0.32	24.5	3080	5980	0.32
82.0	9950	19050	0.31	25.0	3030	5810	0.31
83.7	10100	18520	0.29	25.5	3080	5640	0.29
85.3	10260	18520	0.28	26.0	3130	5640	0.28
86.9	9730	18020	0.29	26.5	2970	5490	0.29
88.6	9390	17540	0.30	27.0	2860	5350	0.30
90.2	8890	17540	0.33	27.5	2710	5350	0.33
91.9	9010	17090	0.31	28.0	2750	5210	0.31
93.5	9460	18520	0.32	28.5	2880	5640	0.32
95.1	10260	19050	0.30	29.0	3130	5810	0.30
96.8	10100	18520	0.29	29.5	3080	5640	0.29
98.4	9010	17540	0.32	30.0	2750	5350	0.32
100.1	8390	15500	0.29	30.5	2560	4730	0.29
101.7	8440	15500	0.29	31.0	2570	4730	0.29
103.4	8600	16260	0.31	31.5	2620	4960	0.31
105.0	9660	18520	0.31	32.0	2940	5640	0.31
106.6	9590	18520	0.32	32.5	2920	5640	0.32
108.3	9800	18020	0.29	33.0	2990	5490	0.29
109.9	10500	18520	0.26	33.5	3200	5640	0.26
111.6	10030	19050	0.31	34.0	3060	5810	0.31

**Summary of Compressional Wave Velocity, Shear Wave Velocity, and Poisson's Ratio
Based on Receiver-to-Receiver Travel Time Data - Borehole MP-421**

American Units				Metric Units			
Depth at Midpoint Between Receivers	Velocity		Poisson's Ratio	Depth at Midpoint Between Receivers	Velocity		Poisson's Ratio
	V _s	V _p			V _s	V _p	
(ft)	(ft/s)	(ft/s)		(m)	(m/s)	(m/s)	
113.2	9390	18520	0.33	34.5	2860	5640	0.33
114.8	9950	19050	0.31	35.0	3030	5810	0.31
116.5	9520	19050	0.33	35.5	2900	5810	0.33
118.1	11020	19610	0.27	36.0	3360	5980	0.27
119.8	8770	19050	0.37	36.5	2670	5810	0.37
121.4	9950	18520	0.30	37.0	3030	5640	0.30
123.0	10100	18520	0.29	37.5	3080	5640	0.29
124.7	10100	20830	0.35	38.0	3080	6350	0.35
126.3	10750	19610	0.28	38.5	3280	5980	0.28
128.0	10930	21510	0.33	39.0	3330	6550	0.33
129.6	11900	20830	0.26	39.5	3630	6350	0.26
131.2	11590	22220	0.31	40.0	3530	6770	0.31
132.9	11110	22220	0.33	40.5	3390	6770	0.33
134.5	10750	20830	0.32	41.0	3280	6350	0.32
136.2	11110	20830	0.30	41.5	3390	6350	0.30
138.1	11110	19610	0.26	42.1	3390	5980	0.26
139.4	10670	20200	0.31	42.5	3250	6160	0.31
141.1	11020	20830	0.31	43.0	3360	6350	0.31
142.7	11400	22220	0.32	43.5	3470	6770	0.32
144.4	10840	20200	0.30	44.0	3300	6160	0.30
146.0	10500	20830	0.33	44.5	3200	6350	0.33
147.6	10750	22220	0.35	45.0	3280	6770	0.35
149.3	10750	20830	0.32	45.5	3280	6350	0.32
150.9	11200	20200	0.28	46.0	3420	6160	0.28
152.6	10840	20200	0.30	46.5	3300	6160	0.30
154.2	10840	19050	0.26	47.0	3300	5810	0.26
155.8	11200	19050	0.24	47.5	3420	5810	0.24
157.5	11300	20830	0.29	48.0	3440	6350	0.29
159.1	11800	21510	0.28	48.5	3600	6550	0.28
160.8	11700	22220	0.31	49.0	3560	6770	0.31
162.4	11020	20200	0.29	49.5	3360	6160	0.29
164.0	11110	19610	0.26	50.0	3390	5980	0.26
165.7	11110	22220	0.33	50.5	3390	6770	0.33
167.3	11200	19610	0.26	51.0	3420	5980	0.26
169.0	10670	19610	0.29	51.5	3250	5980	0.29
170.6	10420	20830	0.33	52.0	3180	6350	0.33
172.2	10930	18520	0.23	52.5	3330	5640	0.23
173.9	10930	19610	0.27	53.0	3330	5980	0.27
175.5	10930	19610	0.27	53.5	3330	5980	0.27
177.2	10420	20200	0.32	54.0	3180	6160	0.32

**Summary of Compressional Wave Velocity, Shear Wave Velocity, and Poisson's Ratio
Based on Receiver-to-Receiver Travel Time Data - Borehole MP-421**

American Units				Metric Units			
Depth at Midpoint Between Receivers	Velocity		Poisson's Ratio	Depth at Midpoint Between Receivers	Velocity		Poisson's Ratio
	V _s	V _p			V _s	V _p	
(ft)	(ft/s)	(ft/s)		(m)	(m/s)	(m/s)	
178.8	10500	19050	0.28	54.5	3200	5810	0.28
180.5	11110	20830	0.30	55.0	3390	6350	0.30
182.1	11200	20200	0.28	55.5	3420	6160	0.28
183.7	11490	19610	0.24	56.0	3500	5980	0.24
185.4	10670	19050	0.27	56.5	3250	5810	0.27
187.0	10670	21510	0.34	57.0	3250	6550	0.34
189.0	11400	21510	0.30	57.6	3470	6550	0.30
190.3	11300	19050	0.23	58.0	3440	5810	0.23
191.9	10750	19050	0.27	58.5	3280	5810	0.27
193.6	11110	22220	0.33	59.0	3390	6770	0.33
195.2	11800	20830	0.26	59.5	3600	6350	0.26
196.9	11200	20200	0.28	60.0	3420	6160	0.28
198.5	11110	20200	0.28	60.5	3390	6160	0.28
200.1	11020	19050	0.25	61.0	3360	5810	0.25
201.8	11020	22220	0.34	61.5	3360	6770	0.34
203.4	11590	21510	0.30	62.0	3530	6550	0.30
205.1	10580	19050	0.28	62.5	3230	5810	0.28
206.7	10580	20200	0.31	63.0	3230	6160	0.31
208.3	11200	20200	0.28	63.5	3420	6160	0.28
210.0	11490	20830	0.28	64.0	3500	6350	0.28
211.6	11200	22220	0.33	64.5	3420	6770	0.33
213.3	10750	20200	0.30	65.0	3280	6160	0.30
214.9	11110	21510	0.32	65.5	3390	6550	0.32
216.5	11400	20200	0.27	66.0	3470	6160	0.27
218.2	11400	19610	0.24	66.5	3470	5980	0.24
219.8	11020	20200	0.29	67.0	3360	6160	0.29
221.5	11020	19610	0.27	67.5	3360	5980	0.27
223.1	11400	21510	0.30	68.0	3470	6550	0.30
224.7	10580	19610	0.29	68.5	3230	5980	0.29
226.4	10580	19050	0.28	69.0	3230	5810	0.28
228.0	11590	20830	0.28	69.5	3530	6350	0.28
229.7	10930	20200	0.29	70.0	3330	6160	0.29
231.3	10100	19050	0.30	70.5	3080	5810	0.30
232.9	11200	22220	0.33	71.0	3420	6770	0.33
234.6	11700	22220	0.31	71.5	3560	6770	0.31
236.2	11900	22220	0.30	72.0	3630	6770	0.30
237.9	11400	21510	0.30	72.5	3470	6550	0.30
239.5	11490	20830	0.28	73.0	3500	6350	0.28
241.1	11700	21510	0.29	73.5	3560	6550	0.29
242.8	11700	20830	0.27	74.0	3560	6350	0.27

**Summary of Compressional Wave Velocity, Shear Wave Velocity, and Poisson's Ratio
Based on Receiver-to-Receiver Travel Time Data - Borehole MP-421**

American Units				Metric Units			
Depth at Midpoint Between Receivers	Velocity		Poisson's Ratio	Depth at Midpoint Between Receivers	Velocity		Poisson's Ratio
	V _s	V _p			V _s	V _p	
(ft)	(ft/s)	(ft/s)		(m)	(m/s)	(m/s)	
244.4	11300	21510	0.31	74.5	3440	6550	0.31
246.1	10750	19050	0.27	75.0	3280	5810	0.27
247.7	9880	17540	0.27	75.5	3010	5350	0.27
249.3	10580	19610	0.29	76.0	3230	5980	0.29
251.0	10930	22220	0.34	76.5	3330	6770	0.34
252.6	10180	20830	0.34	77.0	3100	6350	0.34
254.3	10580	20830	0.33	77.5	3230	6350	0.33
255.9	10930	19050	0.25	78.0	3330	5810	0.25
257.6	11300	20200	0.27	78.5	3440	6160	0.27
259.2	11700	20200	0.25	79.0	3560	6160	0.25
260.8	11020	20830	0.31	79.5	3360	6350	0.31
262.5	10750	20830	0.32	80.0	3280	6350	0.32
264.1	11300	20200	0.27	80.5	3440	6160	0.27
265.8	11300	20200	0.27	81.0	3440	6160	0.27
267.4	11490	19610	0.24	81.5	3500	5980	0.24
269.0	11020	20830	0.31	82.0	3360	6350	0.31
270.7	11020	20200	0.29	82.5	3360	6160	0.29
272.3	11700	20830	0.27	83.0	3560	6350	0.27
274.0	12010	21510	0.27	83.5	3660	6550	0.27
275.6	11590	20830	0.28	84.0	3530	6350	0.28
277.2	11300	21510	0.31	84.5	3440	6550	0.31
278.9	11200	19610	0.26	85.0	3420	5980	0.26
280.5	11110	20200	0.28	85.5	3390	6160	0.28
282.2	11400	20200	0.27	86.0	3470	6160	0.27
283.8	11110	20830	0.30	86.5	3390	6350	0.30
285.4	10930	19610	0.27	87.0	3330	5980	0.27
287.1	10930	21510	0.33	87.5	3330	6550	0.33
288.7	11400	22220	0.32	88.0	3470	6770	0.32
290.4	11400	20200	0.27	88.5	3470	6160	0.27
292.0	11400	22220	0.32	89.0	3470	6770	0.32
293.6	11490	19610	0.24	89.5	3500	5980	0.24
295.3	11300	20830	0.29	90.0	3440	6350	0.29
296.9	11400	19610	0.24	90.5	3470	5980	0.24
298.6	11490	21510	0.30	91.0	3500	6550	0.30
300.2	11490	22220	0.32	91.5	3500	6770	0.32
301.8	11590	20830	0.28	92.0	3530	6350	0.28
303.5	11900	20200	0.23	92.5	3630	6160	0.23
305.1	11400	20200	0.27	93.0	3470	6160	0.27
306.8	11110	20200	0.28	93.5	3390	6160	0.28

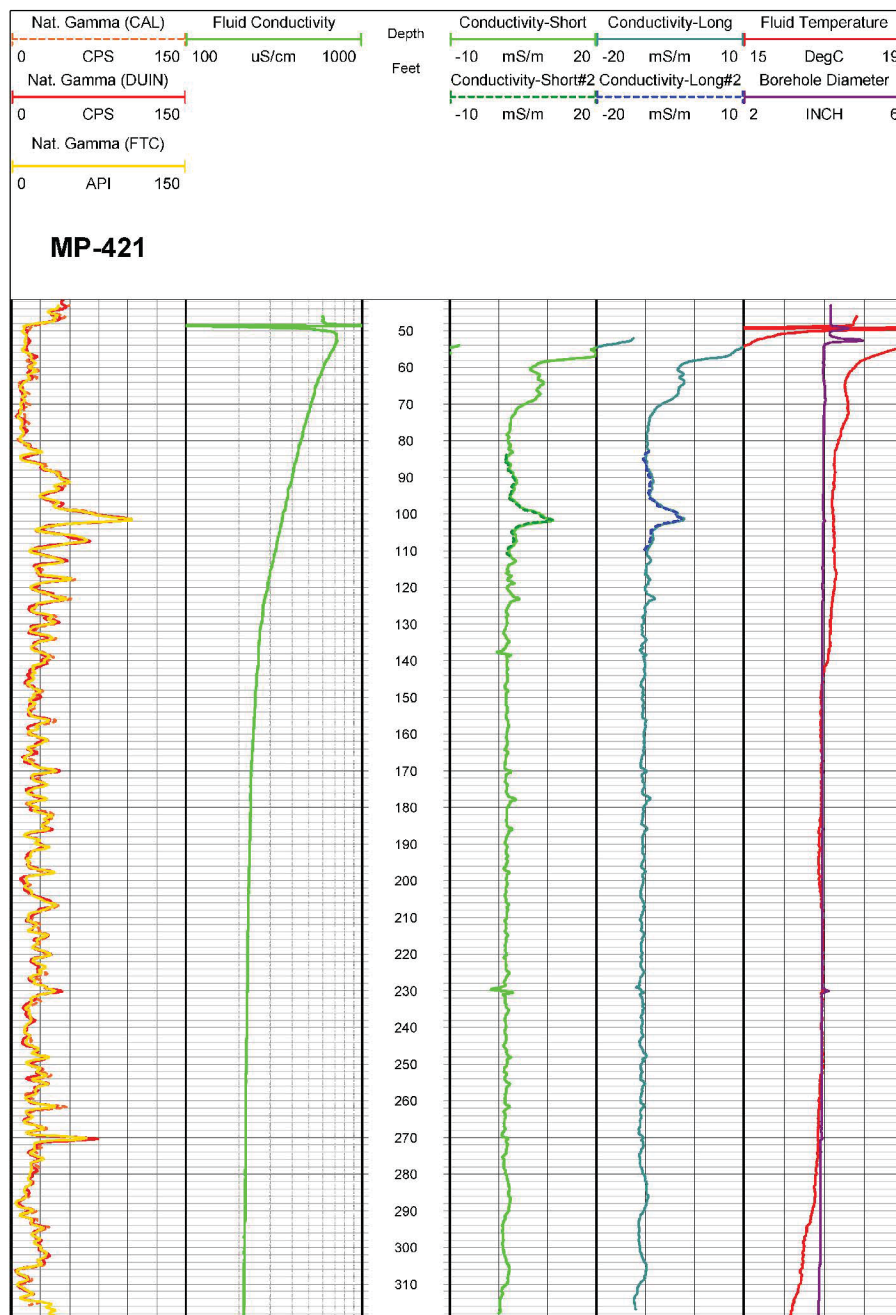


Figure 92. Boring MP-421, Induction, Fluid Temperature/Conductivity, Natural Gamma and Caliper logs

Table 49. Boring MP-421, Acoustic Televiewer Feature depth, dip azimuth, dip and description

Depth (feet)	Dip azimuth	Dip	Structure description
49.0	N341	61	Fracture Planar Hairline-fracture
49.1	N170	38	Primary-structure Planar Bedding
49.8	N339	49	Fracture Planar Hairline-fracture
50.2	N175	34	Primary-structure Planar Bedding
50.4	N168	31	Primary-structure Planar Bedding
50.5	N168	32	Primary-structure Planar Bedding
52.2	N130	43	Fracture Planar Open-fracture
52.6	N338	58	Fracture Discontinuous Hairline-fracture
52.7	N188	28	Fracture Planar Open-fracture
53.3	N177	30	Primary-structure Planar Bedding
54.8	N169	35	Primary-structure Planar Bedding
55.4	N164	31	Primary-structure Planar Bedding
56.0	N164	31	Primary-structure Planar Bedding
56.8	N168	30	Primary-structure Planar Bedding
57.7	N158	31	Primary-structure Planar Bedding
58.3	N157	34	Primary-structure Planar Bedding
58.7	N349	56	Fracture Planar Hairline-fracture
58.9	N170	33	Primary-structure Planar Bedding
59.7	N136	25	Primary-structure Planar Bedding
59.9	N162	33	Primary-structure Planar Bedding
60.3	N156	30	Primary-structure Planar Bedding
60.7	N330	66	Fracture Discontinuous Hairline-fracture
61.0	N161	26	Primary-structure Planar Bedding
61.8	N162	37	Primary-structure Planar Bedding
63.1	N159	33	Primary-structure Planar Bedding
64.3	N161	34	Primary-structure Planar Bedding
64.7	N157	35	Primary-structure Planar Bedding
65.5	N163	33	Primary-structure Planar Bedding
66.0	N159	34	Primary-structure Planar Bedding
66.5	N164	35	Primary-structure Planar Bedding
67.1	N159	32	Primary-structure Planar Bedding
67.3	N172	33	Primary-structure Planar Bedding
68.9	N163	33	Primary-structure Planar Bedding
69.8	N156	34	Primary-structure Planar Bedding
75.4	N163	37	Primary-structure Planar Bedding
77.9	N163	43	Primary-structure Planar Bedding
78.3	N335	56	Fracture Planar Hairline-fracture

Depth (feet)	Dip azimuth	Dip	Structure description
83.7	N161	35	Primary-structure Planar Bedding
85.5	N140	39	Primary-structure Planar Bedding
86.2	N348	58	Primary-structure Discontinuous Bedding
86.5	N338	54	Fracture Planar Hairline-fracture
90.4	N161	36	Primary-structure Planar Bedding
96.3	N161	34	Primary-structure Planar Bedding
98.9	N162	35	Primary-structure Planar Bedding
101.6	N171	33	Primary-structure Planar Bedding
101.9	N154	34	Primary-structure Planar Bedding
103.6	N322	65	Fracture Planar Hairline-fracture
107.4	N164	35	Primary-structure Planar Bedding
109.8	N163	30	Primary-structure Planar Bedding
112.5	N172	29	Primary-structure Planar Bedding
112.9	N161	33	Primary-structure Planar Bedding
113.1	N159	33	Primary-structure Planar Bedding
115.2	N185	27	Primary-structure Irregular Bedding
116.2	N002	56	Fracture Planar Hairline-fracture
117.5	N162	32	Primary-structure Planar Bedding
117.7	N019	83	Fracture Discontinuous Hairline-fracture
117.7	N162	31	Primary-structure Planar Bedding
118.2	N022	45	Fracture Discontinuous Hairline-fracture
119.3	N171	27	Primary-structure Planar Bedding
120.1	N165	34	Primary-structure Planar Bedding
120.6	N166	29	Primary-structure Planar Bedding
120.9	N165	29	Primary-structure Planar Bedding
122.4	N145	21	Primary-structure Planar Bedding
122.5	N004	75	Fracture Discontinuous Hairline-fracture
123.1	N121	39	Fracture Planar Hairline-fracture
123.4	N074	47	Fracture Planar Hairline-fracture
124.8	N188	39	Primary-structure Planar Bedding
126.1	N149	32	Primary-structure Planar Bedding
126.5	N095	29	Fracture Planar Hairline-fracture
127.1	N014	76	Fracture Discontinuous Hairline-fracture
127.4	N126	39	Primary-structure Planar Bedding
132.9	N343	63	Fracture Discontinuous Hairline-fracture
133.4	N359	52	Fracture Planar Hairline-fracture
134.0	N160	34	Primary-structure Irregular Bedding
134.3	N332	35	Fracture Planar Hairline-fracture
135.5	N003	66	Fracture Planar Hairline-fracture

Depth (feet)	Dip azimuth	Dip	Structure description
136.6	N175	37	Primary-structure Planar Bedding
137.9	N359	44	Fracture Planar Hairline-fracture
139.2	N185	23	Primary-structure Planar Bedding
140.2	N163	26	Primary-structure Planar Bedding
141.3	N008	75	Fracture Discontinuous Hairline-fracture
141.8	N321	42	Fracture Discontinuous Hairline-fracture
142.0	N166	32	Primary-structure Planar Bedding
144.8	N008	64	Fracture Discontinuous Hairline-fracture
146.4	N173	40	Primary-structure Planar Bedding
146.8	N331	67	Fracture Discontinuous Hairline-fracture
147.1	N155	28	Primary-structure Planar Bedding
148.2	N144	27	Primary-structure Planar Bedding
148.8	N341	80	Fracture Discontinuous Hairline-fracture
150.1	N175	35	Primary-structure Irregular Bedding
150.3	N018	81	Fracture Discontinuous Hairline-fracture
151.3	N160	35	Primary-structure Irregular Bedding
152.2	N011	66	Fracture Discontinuous Hairline-fracture
152.7	N155	33	Primary-structure Planar Bedding
153.9	N168	31	Primary-structure Planar Bedding
155.4	N161	31	Primary-structure Planar Bedding
155.8	N159	22	Primary-structure Planar Bedding
156.6	N014	78	Fracture Discontinuous Hairline-fracture
156.8	N177	28	Primary-structure Irregular Bedding
156.9	N135	87	Fracture Discontinuous Hairline-fracture
157.4	N326	65	Fracture Discontinuous Hairline-fracture
159.3	N157	27	Primary-structure Planar Bedding
160.0	N344	79	Fracture Discontinuous Hairline-fracture
161.2	N338	78	Fracture Discontinuous Hairline-fracture
164.6	N336	62	Fracture Irregular Hairline-fracture
165.0	N166	35	Primary-structure Planar Bedding
165.9	N324	84	Fracture Discontinuous Hairline-fracture
166.6	N297	61	Fracture Discontinuous Hairline-fracture
167.3	N125	84	Fracture Discontinuous Hairline-fracture
170.2	N148	36	Primary-structure Planar Bedding
171.8	N170	36	Primary-structure Irregular Bedding
173.9	N165	27	Primary-structure Planar Bedding
174.0	N168	23	Primary-structure Planar Bedding
174.9	N174	30	Primary-structure Planar Bedding
175.1	N312	58	Fracture Discontinuous Hairline-fracture

Depth (feet)	Dip azimuth	Dip	Structure description
175.2	N165	50	Primary-structure Planar Bedding
176.9	N162	43	Primary-structure Planar Bedding
177.8	N159	27	Primary-structure Planar Bedding
178.3	N157	29	Primary-structure Planar Bedding
179.5	N343	41	Fracture Discontinuous Hairline-fracture
181.5	N178	26	Primary-structure Planar Bedding
183.3	N156	29	Primary-structure Planar Bedding
184.8	N152	31	Primary-structure Planar Bedding
185.8	N140	30	Primary-structure Planar Bedding
186.2	N154	33	Primary-structure Planar Bedding
186.3	N018	54	Fracture Discontinuous Hairline-fracture
188.3	N152	30	Primary-structure Planar Bedding
190.5	N149	30	Primary-structure Planar Bedding
193.3	N163	31	Primary-structure Planar Bedding
194.9	N167	36	Primary-structure Irregular Bedding
197.0	N168	37	Primary-structure Irregular Bedding
197.6	N159	35	Primary-structure Planar Bedding
200.4	N353	34	Fracture Planar Hairline-fracture
200.7	N147	34	Primary-structure Planar Bedding
202.3	N136	84	Fracture Discontinuous Hairline-fracture
206.5	N155	35	Primary-structure Planar Bedding
207.9	N149	31	Primary-structure Planar Bedding
209.9	N164	37	Primary-structure Planar Bedding
212.7	N164	30	Primary-structure Planar Bedding
214.4	N318	64	Fracture Discontinuous Hairline-fracture
214.4	N160	32	Primary-structure Planar Bedding
215.4	N008	64	Fracture Planar Hairline-fracture
216.9	N160	39	Primary-structure Irregular Bedding
217.0	N323	70	Fracture Discontinuous Hairline-fracture
218.2	N324	49	Fracture Irregular Hairline-fracture
220.2	N167	39	Primary-structure Irregular Bedding
222.1	N171	38	Primary-structure Irregular Bedding
225.1	N162	25	Primary-structure Planar Bedding
226.0	N163	30	Fracture Planar Hairline-fracture
228.6	N159	46	Primary-structure Irregular Bedding
230.7	N184	69	Fracture Planar Hairline-fracture
231.0	N316	56	Fracture Planar Hairline-fracture
232.8	N149	33	Primary-structure Planar Bedding
236.1	N347	35	Fracture Planar Hairline-fracture

Depth (feet)	Dip azimuth	Dip	Structure description
237.3	N335	57	Fracture Planar Hairline-fracture
237.6	N161	27	Primary-structure Planar Bedding
238.5	N164	39	Primary-structure Irregular Bedding
239.4	N301	63	Fracture Discontinuous Hairline-fracture
239.5	N163	38	Primary-structure Irregular Bedding
241.5	N166	38	Primary-structure Irregular Bedding
243.2	N162	36	Primary-structure Planar Bedding
243.4	N157	35	Primary-structure Irregular Bedding
245.0	N309	41	Fracture Discontinuous Hairline-fracture
245.3	N167	26	Primary-structure Planar Bedding
246.1	N173	34	Primary-structure Planar Bedding
246.7	N161	37	Primary-structure Planar Bedding
246.7	N334	48	Fracture Discontinuous Hairline-fracture
247.4	N169	38	Primary-structure Planar Bedding
248.1	N166	39	Primary-structure Planar Bedding
248.5	N322	65	Fracture Discontinuous Hairline-fracture
249.3	N157	44	Primary-structure Planar Bedding
251.1	N307	59	Fracture Discontinuous Hairline-fracture
251.3	N162	33	Primary-structure Irregular Bedding
251.4	N330	60	Fracture Planar Hairline-fracture
251.6	N257	59	Fracture Planar Hairline-fracture
251.8	N173	43	Fracture Planar Hairline-fracture
251.9	N170	40	Fracture Planar Hairline-fracture
252.0	N323	65	Fracture Planar Hairline-fracture
252.7	N151	37	Primary-structure Planar Bedding
253.3	N157	34	Primary-structure Planar Bedding
253.5	N330	56	Fracture Planar Hairline-fracture
255.3	N153	32	Primary-structure Irregular Bedding
257.5	N165	30	Primary-structure Irregular Bedding
261.6	N167	22	Primary-structure Planar Bedding
261.6	N144	79	Fracture Planar Hairline-fracture
263.2	N162	32	Primary-structure Planar Bedding
266.4	N353	57	Fracture Discontinuous Hairline-fracture
267.6	N180	24	Primary-structure Planar Bedding
268.4	N310	46	Fracture Discontinuous Hairline-fracture
269.2	N337	78	Fracture Planar Hairline-fracture
269.7	N315	75	Fracture Planar Hairline-fracture
270.2	N173	35	Primary-structure Planar Bedding
270.4	N171	31	Primary-structure Planar Bedding

Depth (feet)	Dip azimuth	Dip	Structure description
272.5	N168	31	Primary-structure Planar Bedding
272.6	N322	73	Fracture Planar Hairline-fracture
273.5	N320	73	Fracture Planar Hairline-fracture
274.1	N313	80	Fracture Discontinuous Hairline-fracture
275.9	N155	29	Primary-structure Planar Bedding
276.9	N167	82	Fracture Discontinuous Hairline-fracture
277.1	N346	78	Fracture Discontinuous Hairline-fracture
279.0	N138	34	Primary-structure Planar Bedding
279.1	N146	31	Primary-structure Planar Bedding
279.9	N355	68	Fracture Discontinuous Hairline-fracture
280.9	N329	67	Fracture Discontinuous Hairline-fracture
281.2	N326	59	Fracture Discontinuous Hairline-fracture
281.3	N156	28	Primary-structure Planar Bedding
282.0	N339	78	Fracture Discontinuous Hairline-fracture
282.8	N155	27	Primary-structure Planar Bedding
283.0	N136	73	Fracture Discontinuous Hairline-fracture
283.5	N030	77	Fracture Discontinuous Hairline-fracture
284.3	N164	35	Primary-structure Planar Bedding
285.4	N153	27	Primary-structure Planar Bedding
285.7	N146	29	Primary-structure Planar Bedding
286.3	N160	34	Primary-structure Planar Bedding
286.7	N154	28	Primary-structure Planar Bedding
288.0	N155	51	Fracture Planar Hairline-fracture
290.4	N152	30	Primary-structure Planar Bedding
291.5	N172	34	Primary-structure Planar Bedding
292.0	N157	28	Primary-structure Planar Bedding
293.5	N300	68	Fracture Irregular Hairline-fracture
301.5	N146	29	Primary-structure Planar Bedding
303.9	N149	31	Primary-structure Planar Bedding
304.4	N144	25	Primary-structure Planar Bedding
305.3	N142	29	Primary-structure Planar Bedding
306.7	N168	34	Primary-structure Planar Bedding
309.2	N159	28	Primary-structure Planar Bedding
310.7	N347	65	Fracture Planar Hairline-fracture
311.0	N151	28	Primary-structure Planar Bedding
312.8	N158	31	Primary-structure Planar Bedding
313.7	N310	54	Fracture Planar Hairline-fracture
317.1	N140	28	Primary-structure Irregular Bedding
318.5	N147	25	Primary-structure Planar Bedding



Figure 93. Boring MP-421, Rose Diagram

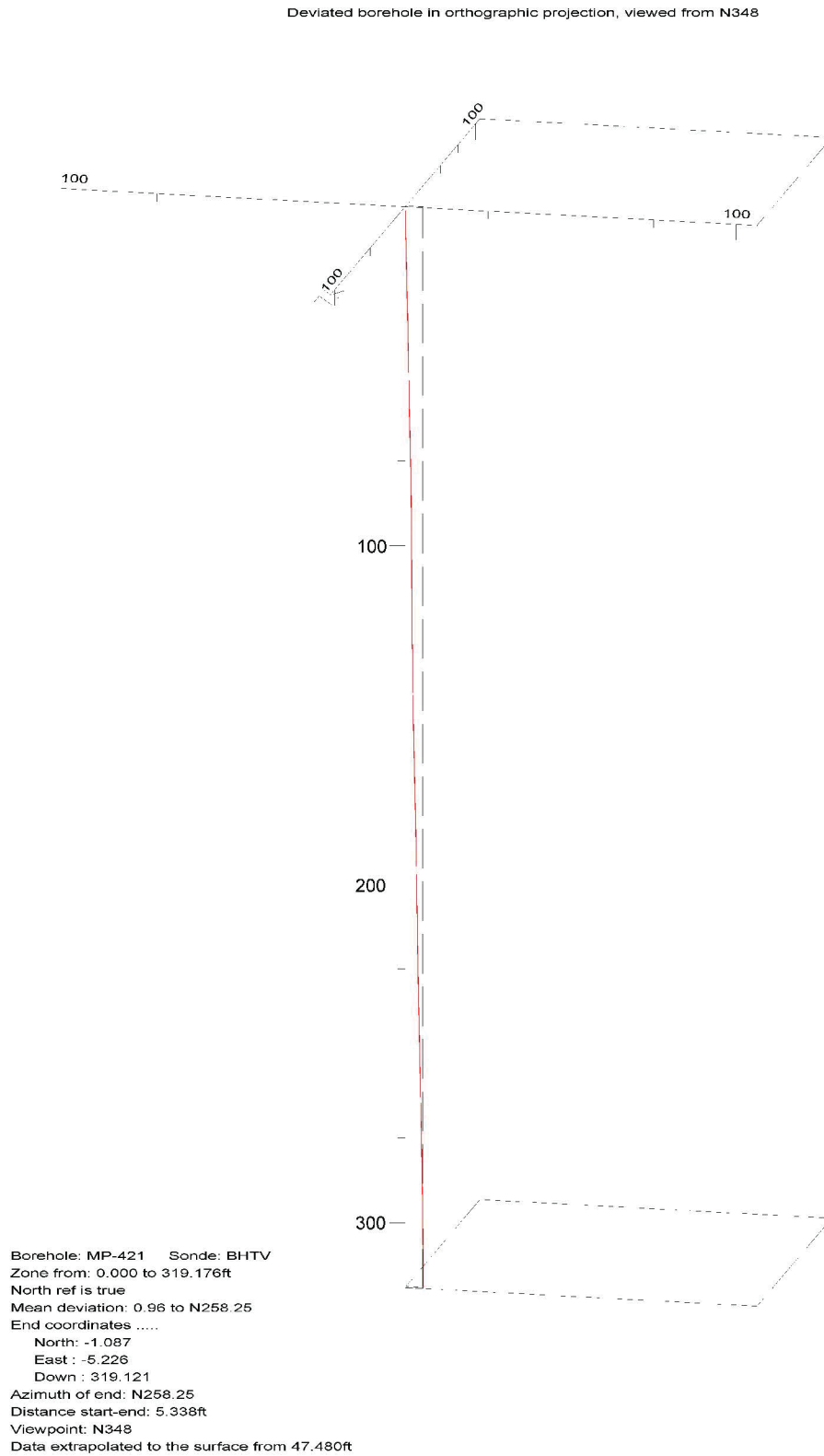


Figure 94. Boring MP-421, Up Deviation Projection

CLINCH RIVER SMR PROJECT BOREHOLE MP-422 Receiver to Receiver V_s and V_p Analysis

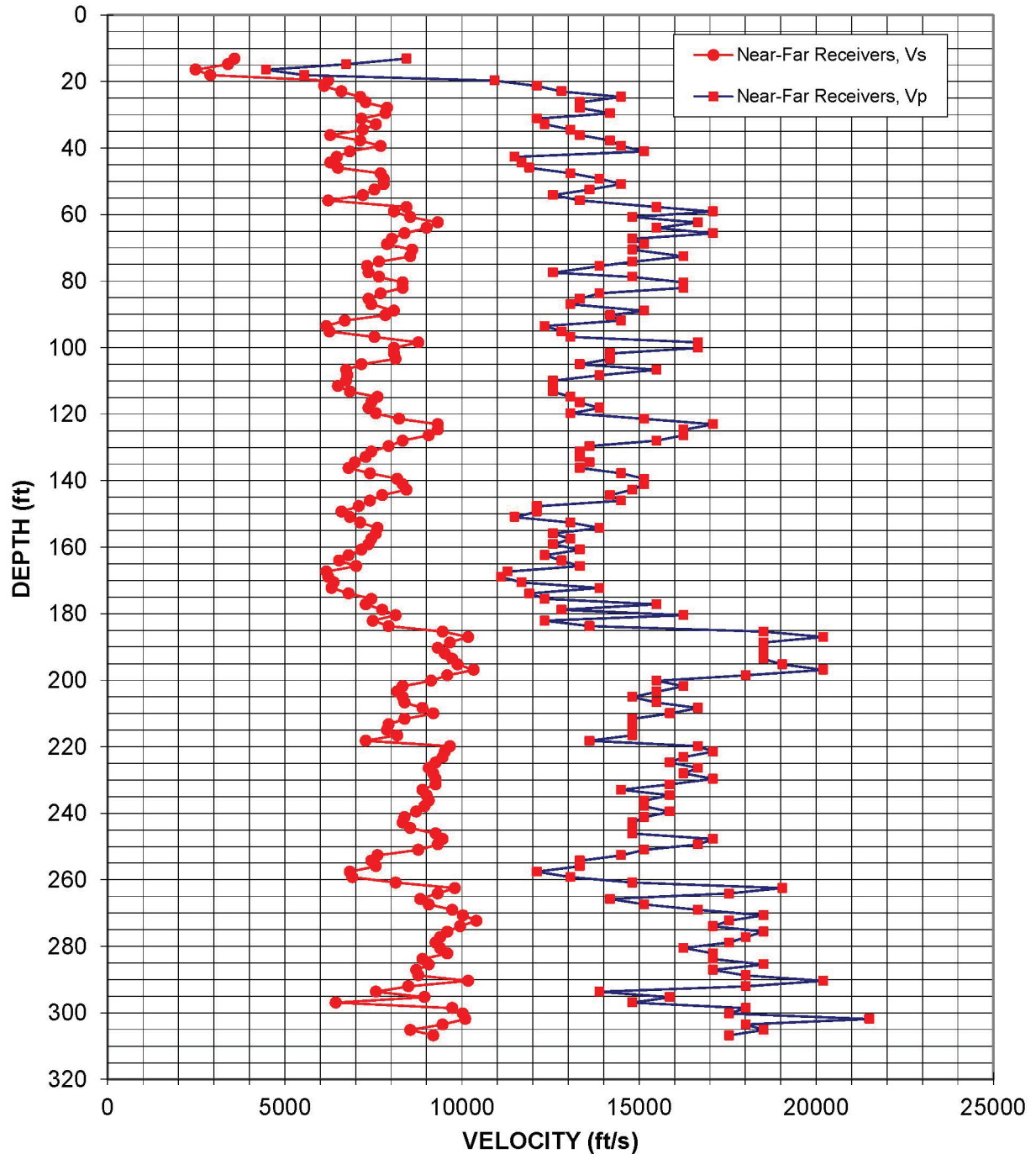


Figure 95: Boring MP-422, Suspension R1-R2 P- and S_H -wave velocities

Table 50. Boring MP-422, Suspension R1-R2 depths and P- and S_H-wave velocities

**Summary of Compressional Wave Velocity, Shear Wave Velocity, and Poisson's Ratio
Based on Receiver-to-Receiver Travel Time Data - Borehole MP-422**

American Units				Metric Units			
Depth at Midpoint Between Receivers	Velocity		Poisson's Ratio	Depth at Midpoint Between Receivers	Velocity		Poisson's Ratio
	V _s	V _p			V _s	V _p	
(ft)	(ft/s)	(ft/s)		(m)	(m/s)	(m/s)	
13.1	3580	8440	0.39	4.0	1090	2570	0.39
14.8	3400	6730	0.33	4.5	1040	2050	0.33
16.4	2490	4470	0.28	5.0	760	1360	0.28
18.0	2900	5560	0.31	5.5	880	1690	0.31
19.7	6230	10930	0.26	6.0	1900	3330	0.26
21.3	6120	12120	0.33	6.5	1860	3690	0.33
23.0	6600	12820	0.32	7.0	2010	3910	0.32
24.6	7130	14490	0.34	7.5	2170	4420	0.34
26.3	7290	13330	0.29	8.0	2220	4060	0.29
27.9	7890	13330	0.23	8.5	2400	4060	0.23
29.5	7840	14180	0.28	9.0	2390	4320	0.28
31.2	7170	12120	0.23	9.5	2180	3690	0.23
32.8	7580	12350	0.20	10.0	2310	3760	0.20
34.5	7210	13070	0.28	10.5	2200	3980	0.28
36.1	6290	13330	0.36	11.0	1920	4060	0.36
37.7	7130	14180	0.33	11.5	2170	4320	0.33
39.4	7710	14490	0.30	12.0	2350	4420	0.30
41.0	6840	15150	0.37	12.5	2080	4620	0.37
42.7	6470	11490	0.27	13.0	1970	3500	0.27
44.3	6290	11700	0.30	13.5	1920	3560	0.30
45.9	6500	11900	0.29	14.0	1980	3630	0.29
47.6	7710	13070	0.23	14.5	2350	3980	0.23
49.2	7800	13890	0.27	15.0	2380	4230	0.27
50.9	7800	14490	0.30	15.5	2380	4420	0.30
52.5	7530	13610	0.28	16.0	2300	4150	0.28
54.1	7210	12580	0.26	16.5	2200	3830	0.26
55.8	6230	13330	0.36	17.0	1900	4060	0.36
57.7	8440	15500	0.29	17.6	2570	4730	0.29
59.1	8080	17090	0.36	18.0	2460	5210	0.36
60.7	8550	14810	0.25	18.5	2610	4520	0.25
62.3	9320	16670	0.27	19.0	2840	5080	0.27
64.0	9010	15500	0.25	19.5	2750	4730	0.25
65.6	8390	17090	0.34	20.0	2560	5210	0.34
67.3	8030	14810	0.29	20.5	2450	4520	0.29
68.9	7890	15150	0.31	21.0	2400	4620	0.31
70.5	8600	14810	0.25	21.5	2620	4520	0.25
72.5	8550	16260	0.31	22.1	2610	4960	0.31