

TABLES

Table 1. Borehole Logging Dates and Locations

BOREHOLE IDENTIFICATION NUMBER	INITIAL ID	DATE(S) LOGGED	COORDINATES ⁽¹⁾		
			NORTHING	EASTING	ELEVATION (FEET)
RC-20-017	B-18	12/6/2020	2488343.080	5983459.356	829.4
RC-20-005	B-28	10/19/2020	2484488.630	5984431.755	859.1
RC-20-014	B-29	11/6/2020	2485183.482	5983987.610	805.1
RC-20-011	B-32	10/26, 11/6-7/2020	2485835.490	5983413.964	698.5
RC-20-020	B-46	12/17/2020	2476836.949	5986058.169	210.4
RC-21-001	B-47	1/10-11/2021	2479547.482	5984956.757	408.4
RC-20-019	B-50	12/17-19/2020	2480954.393	5984842.403	474.7
RC-20-016	WP-3	12/5/2020	2485154.425	5983543.472	674.4

⁽¹⁾ Coordinates surveyed by Caltrans, California State Plane Zone I (0401), NAD83, US Survey Feet. Vertical Datum: NAVD88

Table 2. Logging Tools, Depth Ranges and Sample Intervals

BOREHOLE IDENTIFICATION NUMBER	INITIAL ID	TOOL AND RUN NUMBER	DEPTH RANGE (FEET)	SAMPLE INTERVAL (FEET)	DATE(S) LOGGED
RC-20-017	B-18	B-18-ABI-UP ⁽¹⁾	296.9 – 53	0.004	12/6/2020
RC-20-005	B-28	B-28-OBI-UP ⁽¹⁾	236.4 – 0	0.004	10/19/2020
RC-20-014	B-29	B-29-ABI-DOWN ⁽¹⁾	39.5 – 293.3	0.004	11/6/2020
RC-20-014	B-29	CAL UP 01-02	299.65 – 2.85	0.05	11/6/2020
RC-20-014	B-29	DUIN UP 01	299.6 – 3.65	0.05	11/6/2020
RC-20-014	B-29	SUSPENSION DOWN 02-03	109.9 – 282.2	1.6	11/6/2020
RC-20-011	B-32	DUIN UP-01	145.5 – 0	0.05	10/26/2020
RC-20-011	B-32	OTV UP-01	145.5 – 92.0	0.004	10/26/2020
RC-20-011	B-32	SUSPENSION DOWN 01	96.8 – 132.9	1.6	10/26/2020
RC-20-011	B-32	CAL UP 01	301.95 – 188.7	0.05	11/6/2020
RC-20-011	B-32	DUIN UP 02	301.9 – 100.5	0.05	11/7/2020
RC-20-011	B-32	SUSPENSION DOWN 02	223.1 – 288.7	1.6	11/7/2020
RC-20-011	B-32	B-32-ABI-UP ⁽¹⁾	297.6 – 210.5	0.004	11/7/2020
RC-20-020	B-46	CAL UP 01	32.2 – 3.6	0.05	12/17/2020
RC-21-001	B-47	B-47-ABI ⁽¹⁾	81.0 – 144.1	0.004	1/10/2021
RC-21-001	B-47	B-47-OBI ⁽¹⁾	33.5 – 80.0	0.004	1/11/2021
RC-20-019	B-50	CAL UP 01	87.9 – 1.55	0.05	12/17/2020
RC-20-019	B-50	DUIN UP 01	88.15 – 2.7	0.05	12/17/2020
RC-20-019	B-50	SUSPENSION DOWN 01	13.1 – 75.5	1.6	12/17/2020
RC-20-019	B-50	B-50-ABI-UP ⁽¹⁾	142.4 – 6.5	0.004	12/19/2020
RC-20-016	WP-3	B-WP3-OBI-UP ⁽¹⁾	273.0 – 117.4	0.004	12/5/2020

⁽¹⁾ Logged by Crux Subsurface, Inc.

Table 3. Televiewer Deviation Data Summary

BOREHOLE IDENTIFICATION NUMBER	BOREHOLE NUMBER	MEAN AZIMUTH (DEGREES TN)	MEAN DEVIATION (DEGREES)	SURVEY DEPTH (FEET)	VERTICAL DEPTH (FEET)	MAXIMUM DEPTH OFFSET (FEET)	HORIZONTAL OFFSET (FEET)
RC-20-017	B-18	N318	0.4	296.88	296.87	0.01	0.43
RC-20-005	B-28	N060	2.7	236.45	236.22	0.23	9.34
RC-20-014	B-29	N061	0.7	293.31	293.28	0.03	1.04
RC-20-011	B-32 ⁽¹⁾	N266	0.4	298.04	298.03	0.01	0.43
RC-21-001	B-47 ⁽¹⁾	N174	0.6	144.12	144.11	0.01	1.33
RC-20-019	B-50	N310	1.1	142.49	142.47	0.02	2.34
RC-20-016	WP-3	N221	0.4	273.27	273.27	0.00	0.85

⁽¹⁾ For boreholes where both optical and acoustic data were acquired, the deeper acoustic televiewer log was used for summary

Table 4. Borehole RC-20-017 (B-18),
Acoustic Televiewer Feature depth, dip azimuth, dip, aperture, and type

Depth	Azimuth	Dip	Aperture	Type
ft	deg TN	deg	mm	
59.1	186.6	78.7	0.0	Filled Joint / Fracture
63.0	214.2	9.1	0.0	Bedding / Banding / Foliation
63.3	45.0	42.8	0.0	Filled Joint / Fracture
64.3	28.3	45.5	0.0	Filled Joint / Fracture
65.7	347.0	23.0	0.0	Filled Joint / Fracture
65.9	159.3	4.6	0.0	Filled Joint / Fracture
66.2	216.4	10.8	0.0	Filled Joint / Fracture
66.8	55.0	20.4	0.0	Filled Joint / Fracture
67.3	286.5	42.6	0.0	Filled Joint / Fracture
67.7	5.6	18.1	0.0	Filled Joint / Fracture
67.9	2.9	31.0	0.0	Filled Joint / Fracture
68.6	210.4	32.9	0.0	Filled Joint / Fracture
69.1	18.7	31.5	0.0	Bedding / Banding / Foliation
72.0	312.3	59.4	0.0	Filled Joint / Fracture
74.5	186.2	36.5	0.0	Filled Joint / Fracture
75.8	67.6	45.7	0.0	Filled Joint / Fracture
76.6	89.3	37.6	0.0	Filled Joint / Fracture
76.9	81.2	9.4	0.0	Filled Joint / Fracture
77.2	94.2	27.9	0.0	Filled Joint / Fracture
77.7	123.5	51.8	0.0	Filled Joint / Fracture
78.2	228.4	16.6	0.0	Filled Joint / Fracture
78.7	254.3	14.8	0.0	Filled Joint / Fracture
78.9	65.3	64.6	0.0	Filled Joint / Fracture
80.7	324.4	28.9	0.0	Filled Joint / Fracture
81.2	292.0	24.5	0.0	Filled Joint / Fracture
81.5	102.3	47.1	0.0	Filled Joint / Fracture
82.1	236.5	31.8	0.0	Filled Joint / Fracture
84.0	199.0	59.8	0.0	Open Joint / Fracture
84.4	155.6	20.1	0.0	Filled Joint / Fracture
85.5	226.3	75.0	0.0	Open Joint / Fracture
86.4	199.8	61.8	0.0	Open Joint / Fracture
87.4	92.2	57.0	0.0	Filled Joint / Fracture
88.3	37.6	69.5	0.0	Filled Joint / Fracture
88.5	231.2	45.5	0.0	Open Joint / Fracture
89.1	348.3	14.1	0.0	Filled Joint / Fracture
89.4	203.9	51.5	0.0	Filled Joint / Fracture

Depth	Azimuth	Dip	Aperture	Type
ft	deg TN	deg	mm	
89.8	46.2	17.8	0.0	Filled Joint / Fracture
90.0	224.8	53.4	0.0	Filled Joint / Fracture
90.4	14.0	29.1	0.0	Filled Joint / Fracture
90.8	223.6	46.0	0.0	Filled Joint / Fracture
90.8	58.8	50.2	0.0	Filled Joint / Fracture
91.4	214.2	37.3	60.8	Filled Joint / Fracture
91.8	303.0	24.4	3.3	Filled Joint / Fracture
92.1	202.4	38.4	44.7	Filled Joint / Fracture
93.0	191.7	56.5	0.0	Filled Joint / Fracture
93.3	308.2	46.7	0.0	Filled Joint / Fracture
94.2	104.0	63.4	0.0	Open Joint / Fracture
95.0	142.9	63.7	0.0	Open Joint / Fracture
95.4	130.3	32.2	0.0	Filled Joint / Fracture
95.6	198.7	50.8	0.0	Filled Joint / Fracture
96.2	327.5	44.7	0.0	Filled Joint / Fracture
96.4	146.2	62.2	0.0	Filled Joint / Fracture
98.2	96.9	47.1	0.0	Open Joint / Fracture
98.5	136.4	24.5	0.0	Filled Joint / Fracture
98.7	133.9	31.1	0.0	Filled Joint / Fracture
98.8	194.8	32.8	0.0	Filled Joint / Fracture
99.3	173.4	34.5	0.0	Filled Joint / Fracture
99.4	253.2	77.6	0.0	Filled Joint / Fracture
99.7	188.3	66.2	0.0	Filled Joint / Fracture
99.8	347.4	23.6	0.0	Filled Joint / Fracture
100.0	198.4	43.4	0.0	Filled Joint / Fracture
101.0	10.3	61.3	0.0	Filled Joint / Fracture
101.3	162.7	41.4	0.0	Open Joint / Fracture
101.9	107.2	26.8	0.0	Filled Joint / Fracture
102.4	128.9	42.8	0.0	Bedding / Banding / Foliation
103.3	124.9	38.2	0.0	Bedding / Banding / Foliation
103.7	111.5	53.3	0.0	Filled Joint / Fracture
104.1	137.8	77.0	0.0	Filled Joint / Fracture
104.5	128.3	45.1	0.0	Filled Joint / Fracture
105.1	52.5	63.7	0.0	Filled Joint / Fracture
105.5	99.4	57.9	0.0	Filled Joint / Fracture
105.9	4.7	32.3	27.0	Filled Joint / Fracture
106.4	78.4	39.3	0.0	Filled Joint / Fracture
106.7	89.0	47.7	0.0	Filled Joint / Fracture
108.3	97.3	16.0	43.5	Filled Joint / Fracture

Depth	Azimuth	Dip	Aperture	Type
ft	deg TN	deg	mm	
109.0	125.5	46.9	0.0	Filled Joint / Fracture
109.4	96.4	60.3	0.0	Filled Joint / Fracture
110.1	158.9	32.1	0.0	Filled Joint / Fracture
110.4	60.4	25.4	0.0	Filled Joint / Fracture
110.5	212.8	43.4	0.0	Filled Joint / Fracture
110.9	247.7	26.3	0.0	Open Joint / Fracture
111.1	208.3	18.1	0.0	Filled Joint / Fracture
111.2	182.2	26.9	0.0	Filled Joint / Fracture
111.3	182.1	53.6	0.0	Filled Joint / Fracture
112.3	229.9	63.3	0.0	Open Joint / Fracture
112.6	313.1	34.0	0.0	Filled Joint / Fracture
113.8	227.6	44.3	0.0	Filled Joint / Fracture
114.4	10.0	49.6	0.0	Filled Joint / Fracture
115.8	199.8	36.5	0.0	Bedding / Banding / Foliation
116.3	107.0	27.9	0.0	Bedding / Banding / Foliation
116.5	339.7	35.0	0.0	Open Joint / Fracture
117.5	320.7	30.4	0.0	Open Joint / Fracture
117.7	109.3	60.2	0.0	Filled Joint / Fracture
118.2	9.8	22.1	0.0	Filled Joint / Fracture
118.7	356.2	31.8	0.0	Filled Joint / Fracture
119.1	79.6	51.0	0.0	Open Joint / Fracture
119.3	240.9	54.2	0.0	Filled Joint / Fracture
119.9	332.3	45.0	0.0	Filled Joint / Fracture
120.6	36.1	42.0	0.0	Open Joint / Fracture
120.7	14.4	40.0	0.0	Filled Joint / Fracture
121.0	355.7	43.3	0.0	Open Joint / Fracture
121.5	15.1	52.4	0.0	Filled Joint / Fracture
121.7	5.0	53.7	0.0	Filled Joint / Fracture
122.8	298.8	61.8	0.0	Filled Joint / Fracture
123.5	6.6	48.4	35.3	Filled Joint / Fracture
124.1	14.1	45.7	0.0	Filled Joint / Fracture
124.7	15.5	34.2	0.0	Filled Joint / Fracture
125.0	231.8	20.6	0.0	Filled Joint / Fracture
125.4	123.2	19.5	0.0	Filled Joint / Fracture
125.6	355.2	22.3	0.0	Filled Joint / Fracture
126.1	65.0	13.6	0.0	Filled Joint / Fracture
126.1	98.9	46.2	0.0	Filled Joint / Fracture
126.4	347.5	32.9	0.0	Filled Joint / Fracture
126.7	90.9	64.1	0.0	Filled Joint / Fracture

Depth	Azimuth	Dip	Aperture	Type
ft	deg TN	deg	mm	
127.6	354.8	28.2	0.0	Open Joint / Fracture
127.9	78.9	50.4	0.0	Filled Joint / Fracture
128.2	72.4	64.4	36.0	Filled Joint / Fracture
128.6	105.7	45.1	0.0	Filled Joint / Fracture
128.9	359.5	34.3	0.0	Open Joint / Fracture
130.5	60.9	53.4	0.0	Filled Joint / Fracture
130.7	81.5	50.0	0.0	Filled Joint / Fracture
131.0	25.4	44.2	0.0	Filled Joint / Fracture
131.3	82.8	55.3	0.0	Filled Joint / Fracture
132.4	244.7	58.2	0.0	Filled Joint / Fracture
132.9	152.0	25.0	0.0	Bedding / Banding / Foliation
133.0	42.3	74.9	0.0	Filled Joint / Fracture
133.2	145.5	52.5	0.0	Open Joint / Fracture
134.0	123.9	32.7	0.0	Bedding / Banding / Foliation
134.5	184.3	82.4	0.0	Filled Joint / Fracture
135.1	243.8	28.4	0.0	Open Joint / Fracture
135.4	141.1	12.6	0.0	Filled Joint / Fracture
135.8	211.1	52.7	0.0	Filled Joint / Fracture
136.0	256.5	40.0	0.0	Filled Joint / Fracture
136.6	242.0	24.4	0.0	Filled Joint / Fracture
136.7	242.7	34.1	0.0	Filled Joint / Fracture
137.9	123.1	57.2	0.0	Filled Joint / Fracture
138.3	88.0	60.1	0.0	Filled Joint / Fracture
138.5	262.1	49.2	0.0	Filled Joint / Fracture
140.1	16.4	51.6	0.0	Filled Joint / Fracture
140.4	357.5	35.5	0.0	Bedding / Banding / Foliation
140.9	358.7	31.9	0.0	Bedding / Banding / Foliation
141.5	33.3	30.7	0.0	Filled Joint / Fracture
141.9	355.9	28.6	0.0	Filled Joint / Fracture
142.0	13.2	29.7	0.0	Filled Joint / Fracture
143.3	330.6	64.8	0.0	Filled Joint / Fracture
143.6	6.0	29.8	0.0	Filled Joint / Fracture
143.8	329.7	8.1	0.0	Filled Joint / Fracture
144.1	81.9	24.8	0.0	Filled Joint / Fracture
144.2	92.8	50.5	0.0	Filled Joint / Fracture
144.9	38.7	30.1	0.0	Filled Joint / Fracture
145.2	126.4	33.4	0.0	Filled Joint / Fracture
145.4	161.6	66.5	0.0	Filled Joint / Fracture
146.3	48.0	54.2	15.8	Filled Joint / Fracture

Depth	Azimuth	Dip	Aperture	Type
ft	deg TN	deg	mm	
146.6	46.5	60.3	14.9	Filled Joint / Fracture
147.7	66.5	39.5	0.0	Filled Joint / Fracture
147.8	48.6	27.8	0.0	Filled Joint / Fracture
148.1	41.0	17.0	0.0	Filled Joint / Fracture
148.5	87.4	21.1	0.0	Filled Joint / Fracture
148.7	143.5	41.2	0.0	Filled Joint / Fracture
149.4	43.7	32.6	0.0	Filled Joint / Fracture
149.7	14.5	42.8	0.0	Filled Joint / Fracture
150.0	347.9	64.8	0.0	Filled Joint / Fracture
150.6	50.4	51.0	0.0	Bedding / Banding / Foliation
152.5	98.1	43.8	0.0	Bedding / Banding / Foliation
154.6	291.7	19.1	0.0	Filled Joint / Fracture
155.0	56.1	12.4	0.0	Filled Joint / Fracture
155.3	79.1	15.9	49.8	Filled Joint / Fracture
156.0	301.9	47.7	0.0	Open Joint / Fracture
157.0	99.3	75.8	0.0	Open Joint / Fracture
157.4	96.1	53.7	0.0	Filled Joint / Fracture
157.6	110.5	42.5	0.0	Filled Joint / Fracture
157.9	48.3	26.6	0.0	Bedding / Banding / Foliation
158.9	295.4	38.8	0.0	Filled Joint / Fracture
159.1	271.1	50.1	0.0	Filled Joint / Fracture
159.4	102.3	42.7	0.0	Filled Joint / Fracture
159.9	106.2	58.8	0.0	Open Joint / Fracture
160.7	62.3	58.1	0.0	Filled Joint / Fracture
161.7	108.8	48.7	0.0	Filled Joint / Fracture
161.9	46.3	19.4	0.0	Filled Joint / Fracture
162.4	65.1	62.7	0.0	Filled Joint / Fracture
162.7	15.5	35.5	0.0	Filled Joint / Fracture
162.9	97.5	41.3	0.0	Filled Joint / Fracture
163.2	5.7	33.6	0.0	Filled Joint / Fracture
163.7	36.1	34.1	0.0	Filled Joint / Fracture
164.1	11.4	49.4	0.0	Filled Joint / Fracture
167.7	67.4	60.8	0.0	Open Joint / Fracture
167.8	29.2	37.8	0.0	Filled Joint / Fracture
169.0	25.9	39.7	0.0	Filled Joint / Fracture
169.3	19.5	26.1	0.0	Filled Joint / Fracture
169.4	21.2	41.6	0.0	Filled Joint / Fracture
172.4	114.6	45.8	0.0	Filled Joint / Fracture
173.4	30.1	43.7	0.0	Open Joint / Fracture

Depth	Azimuth	Dip	Aperture	Type
ft	deg TN	deg	mm	
174.3	187.3	53.5	0.0	Filled Joint / Fracture
174.9	189.7	55.0	0.0	Filled Joint / Fracture
175.4	235.6	34.6	0.0	Filled Joint / Fracture
177.3	200.1	27.5	0.0	Filled Joint / Fracture
178.2	13.0	36.6	0.0	Filled Joint / Fracture
178.6	196.0	35.3	0.0	Filled Joint / Fracture
178.8	279.9	11.3	0.0	Filled Joint / Fracture
179.8	236.3	25.6	0.0	Filled Joint / Fracture
180.2	195.0	37.0	44.3	Filled Joint / Fracture
180.9	185.7	42.6	0.0	Filled Joint / Fracture
181.0	210.2	23.7	0.0	Filled Joint / Fracture
181.5	200.5	24.9	0.0	Filled Joint / Fracture
183.6	57.3	59.8	0.0	Filled Joint / Fracture
183.7	233.8	60.4	0.0	Filled Joint / Fracture
184.1	256.2	42.1	0.0	Filled Joint / Fracture
185.0	287.1	48.2	0.0	Filled Joint / Fracture
187.0	358.0	47.8	0.0	Filled Joint / Fracture
188.2	59.3	67.8	0.0	Filled Joint / Fracture
189.4	196.5	68.4	0.0	Open Joint / Fracture
190.0	187.8	22.3	0.0	Filled Joint / Fracture
190.3	80.9	75.4	0.0	Filled Joint / Fracture
191.8	272.8	69.1	0.0	Filled Joint / Fracture
194.5	202.4	58.2	0.0	Filled Joint / Fracture
195.5	345.1	54.4	0.0	Filled Joint / Fracture
196.4	301.8	83.1	0.0	Open Joint / Fracture
198.1	154.2	53.2	0.0	Filled Joint / Fracture
198.3	51.8	65.5	0.0	Filled Joint / Fracture
201.2	202.9	73.5	0.0	Filled Joint / Fracture
201.3	325.5	41.6	0.0	Filled Joint / Fracture
202.3	195.6	31.3	0.0	Filled Joint / Fracture
202.6	172.8	27.4	0.0	Filled Joint / Fracture
203.9	204.9	55.8	0.0	Open Joint / Fracture
204.5	276.8	21.0	0.0	Filled Joint / Fracture
204.8	215.9	29.9	0.0	Filled Joint / Fracture
205.2	173.9	73.2	20.3	Filled Joint / Fracture
206.9	201.4	16.4	0.0	Filled Joint / Fracture
207.2	248.1	80.9	14.7	Open Joint / Fracture
209.3	30.4	55.5	0.0	Filled Joint / Fracture
209.6	227.4	62.1	0.0	Filled Joint / Fracture

Depth	Azimuth	Dip	Aperture	Type
ft	deg TN	deg	mm	
209.9	275.1	38.3	0.0	Filled Joint / Fracture
210.5	260.7	59.3	0.0	Filled Joint / Fracture
210.9	274.2	47.5	0.0	Filled Joint / Fracture
211.5	290.9	45.5	0.0	Filled Joint / Fracture
211.5	309.5	46.1	0.0	Filled Joint / Fracture
212.1	278.3	39.4	0.0	Filled Joint / Fracture
213.4	272.9	44.9	0.0	Open Joint / Fracture
214.4	250.9	25.6	0.0	Filled Joint / Fracture
215.0	163.0	38.3	50.2	Filled Joint / Fracture
215.4	172.1	52.2	0.0	Filled Joint / Fracture
216.0	185.6	21.6	0.0	Filled Joint / Fracture
216.6	257.3	56.1	0.0	Filled Joint / Fracture
218.0	192.2	49.2	0.0	Filled Joint / Fracture
218.2	203.2	24.2	0.0	Filled Joint / Fracture
218.6	153.3	34.4	0.0	Filled Joint / Fracture
219.5	243.3	53.7	0.0	Filled Joint / Fracture
219.8	235.4	35.6	0.0	Filled Joint / Fracture
221.1	331.3	33.7	0.0	Filled Joint / Fracture
222.2	96.3	63.3	0.0	Filled Joint / Fracture
223.0	63.9	50.9	0.0	Filled Joint / Fracture
224.1	160.6	7.5	0.0	Filled Joint / Fracture
224.8	15.1	42.1	1.4	Filled Joint / Fracture
225.5	325.7	40.3	0.0	Filled Joint / Fracture
225.7	104.4	36.6	0.0	Filled Joint / Fracture
226.0	21.6	43.7	0.0	Filled Joint / Fracture
226.3	84.3	39.3	0.0	Filled Joint / Fracture
226.5	112.1	23.5	0.0	Filled Joint / Fracture
227.7	199.2	33.5	0.0	Bedding / Banding / Foliation
228.7	56.5	53.6	28.5	Filled Joint / Fracture
229.1	344.5	39.3	0.0	Filled Joint / Fracture
229.5	92.0	33.6	0.0	Filled Joint / Fracture
230.7	72.0	69.2	0.0	Filled Joint / Fracture
231.3	59.8	60.1	0.0	Filled Joint / Fracture
231.8	81.2	50.4	0.0	Filled Joint / Fracture
232.5	83.2	19.3	0.0	Filled Joint / Fracture
232.8	337.4	62.4	0.0	Filled Joint / Fracture
233.2	14.5	62.7	0.0	Filled Joint / Fracture
234.1	46.5	49.9	0.0	Open Joint / Fracture
235.3	201.7	11.3	0.0	Filled Joint / Fracture

Depth	Azimuth	Dip	Aperture	Type
ft	deg TN	deg	mm	
239.6	197.5	28.9	0.0	Filled Joint / Fracture
240.2	350.4	63.2	0.0	Filled Joint / Fracture
241.8	30.7	8.2	0.0	Bedding / Banding / Foliation
242.0	169.5	69.0	0.0	Filled Joint / Fracture
243.9	266.1	4.6	0.0	Filled Joint / Fracture
244.3	358.5	60.4	0.0	Filled Joint / Fracture
244.8	352.0	45.7	0.0	Filled Joint / Fracture
246.0	294.2	29.4	0.0	Filled Joint / Fracture
247.8	179.4	76.0	0.0	Open Joint / Fracture
250.4	40.0	53.3	139.5	Filled Joint / Fracture
251.7	282.5	83.6	0.0	Filled Joint / Fracture
252.1	104.6	58.7	0.0	Filled Joint / Fracture
254.2	348.2	17.7	0.0	Filled Joint / Fracture
254.7	82.1	30.0	0.0	Filled Joint / Fracture
255.2	320.3	46.4	0.0	Filled Joint / Fracture
255.6	352.9	50.0	0.9	Filled Joint / Fracture
255.7	80.7	81.2	0.0	Filled Joint / Fracture
256.2	353.8	53.4	0.0	Filled Joint / Fracture
257.8	260.3	50.2	0.0	Filled Joint / Fracture
260.8	236.3	67.7	0.0	Filled Joint / Fracture
260.9	226.1	81.5	0.0	Filled Joint / Fracture
260.9	225.1	63.8	0.0	Filled Joint / Fracture
262.1	171.4	25.1	0.0	Filled Joint / Fracture
263.2	156.9	13.9	0.0	Filled Joint / Fracture
263.5	259.9	43.7	0.0	Filled Joint / Fracture
264.3	245.6	47.8	18.7	Open Joint / Fracture
266.0	211.6	61.2	0.0	Filled Joint / Fracture
267.9	261.0	54.4	0.0	Filled Joint / Fracture
269.7	191.3	35.9	0.0	Filled Joint / Fracture
269.8	198.1	42.6	0.0	Filled Joint / Fracture
270.6	210.3	55.6	0.0	Filled Joint / Fracture
271.1	201.9	45.5	29.7	Filled Joint / Fracture
273.4	211.0	76.4	10.9	Open Joint / Fracture
273.6	79.0	48.8	0.0	Filled Joint / Fracture
274.2	76.1	49.7	0.0	Filled Joint / Fracture
275.9	103.7	78.2	0.0	Open Joint / Fracture
277.7	25.7	42.3	0.0	Bedding / Banding / Foliation
280.8	3.0	54.8	0.0	Filled Joint / Fracture
281.6	269.1	69.7	0.0	Filled Joint / Fracture

Depth	Azimuth	Dip	Aperture	Type
ft	deg TN	deg	mm	
283.0	105.9	41.6	0.0	Filled Joint / Fracture
283.6	345.8	10.1	0.0	Bedding / Banding / Foliation
285.4	328.3	42.2	0.0	Bedding / Banding / Foliation
285.6	265.4	26.5	0.0	Bedding / Banding / Foliation
285.9	314.9	46.5	0.1	Bedding / Banding / Foliation
286.6	300.5	57.1	0.0	Bedding / Banding / Foliation
287.1	329.8	45.8	0.0	Filled Joint / Fracture
287.3	276.9	43.3	0.0	Filled Joint / Fracture
296.2	282.1	23.1	0.0	Filled Joint / Fracture
296.4	308.9	46.9	0.0	Filled Joint / Fracture

Table 5. Borehole RC-20-005 (B-28),
Optical Televiewer Feature depth, dip azimuth, dip, aperture, and type

Depth	Azimuth	Dip	Aperture	Type
ft	deg TN	deg	mm	
31.5	56.4	63.5	0.0	Open Joint / Fracture
33.3	237.7	13.0	0.0	Bedding / Banding / Foliation
36.3	169.0	76.8	0.0	Filled Joint / Fracture
36.4	84.9	64.6	0.0	Filled Joint / Fracture
37.5	244.8	53.9	0.0	Filled Joint / Fracture
40.5	236.5	58.5	0.0	Filled Joint / Fracture
41.9	67.2	63.0	0.0	Open Joint / Fracture
45.9	89.1	23.3	0.0	Filled Joint / Fracture
45.9	102.0	20.3	0.0	Filled Joint / Fracture
47.1	273.9	68.8	0.0	Filled Joint / Fracture
49.6	315.3	58.2	0.0	Filled Joint / Fracture
51.1	254.1	76.1	0.0	Filled Joint / Fracture
51.2	131.4	29.8	0.0	Filled Joint / Fracture
51.6	69.0	45.2	0.0	Filled Joint / Fracture
53.6	219.1	61.5	0.0	Filled Joint / Fracture
53.9	212.1	59.5	0.0	Filled Joint / Fracture
54.1	186.8	40.5	0.0	Bedding / Banding / Foliation
55.3	35.4	6.0	0.0	Bedding / Banding / Foliation
56.8	54.9	50.5	0.0	Bedding / Banding / Foliation
59.1	55.2	16.3	0.0	Bedding / Banding / Foliation
60.5	354.6	40.6	0.0	Filled Joint / Fracture
61.9	323.6	38.1	0.0	Filled Joint / Fracture
62.0	101.1	52.7	0.0	Filled Joint / Fracture
63.6	74.7	37.4	0.0	Filled Joint / Fracture
65.5	329.5	54.7	0.0	Filled Joint / Fracture
66.3	34.2	6.7	0.0	Bedding / Banding / Foliation
67.4	69.9	36.2	0.0	Filled Joint / Fracture
68.4	129.7	46.7	0.0	Filled Joint / Fracture
69.7	116.3	41.8	0.0	Filled Joint / Fracture
70.1	117.5	49.2	0.0	Filled Joint / Fracture
70.4	100.3	47.9	0.0	Filled Joint / Fracture
71.1	95.4	50.9	0.0	Filled Joint / Fracture
71.3	52.5	48.1	0.0	Filled Joint / Fracture
72.2	90.5	26.5	0.0	Filled Joint / Fracture
72.9	73.0	37.5	0.0	Open Joint / Fracture
76.2	195.5	59.9	0.0	Filled Joint / Fracture

Depth	Azimuth	Dip	Aperture	Type
ft	deg TN	deg	mm	
77.3	42.1	31.5	0.0	Filled Joint / Fracture
78.4	273.6	51.1	0.0	Filled Joint / Fracture
79.1	222.6	26.6	0.0	Bedding / Banding / Foliation
79.6	263.9	38.0	0.0	Bedding / Banding / Foliation
81.3	52.0	45.7	0.0	Filled Joint / Fracture
82.8	44.6	47.8	0.0	Filled Joint / Fracture
86.4	139.5	74.6	0.0	Filled Joint / Fracture
88.8	271.5	50.9	0.0	Open Joint / Fracture
89.1	303.7	78.2	0.0	Open Joint / Fracture
90.9	179.3	76.7	0.0	Filled Joint / Fracture
92.6	157.7	77.9	0.0	Filled Joint / Fracture
94.4	52.2	56.9	0.0	Filled Joint / Fracture
95.3	85.2	41.1	0.0	Filled Joint / Fracture
96.9	90.5	49.0	0.0	Filled Joint / Fracture
98.9	14.5	62.9	0.0	Filled Joint / Fracture
99.5	109.8	46.4	0.0	Filled Joint / Fracture
100.0	32.0	59.7	0.0	Filled Joint / Fracture
100.0	2.1	74.2	0.0	Filled Joint / Fracture
103.4	9.7	67.2	0.0	Filled Joint / Fracture
104.1	83.0	44.7	0.0	Open Joint / Fracture
106.1	52.6	65.3	0.0	Filled Joint / Fracture
108.8	82.8	53.7	0.0	Filled Joint / Fracture
109.3	30.6	64.2	0.0	Filled Joint / Fracture
114.7	18.0	69.3	0.0	Filled Joint / Fracture
115.2	66.2	29.2	0.0	Open Joint / Fracture
115.9	227.9	63.7	0.0	Open Joint / Fracture
116.1	27.0	71.8	0.0	Open Joint / Fracture
116.6	57.8	74.9	0.0	Filled Joint / Fracture
117.5	169.7	82.7	0.0	Filled Joint / Fracture
118.4	272.5	58.0	0.0	Open Joint / Fracture
118.8	61.3	62.0	0.0	Filled Joint / Fracture
120.0	60.9	68.8	0.0	Filled Joint / Fracture
122.9	352.0	76.3	0.0	Filled Joint / Fracture
124.5	79.2	50.0	0.0	Filled Joint / Fracture
125.3	29.3	57.5	0.0	Filled Joint / Fracture
126.3	46.2	70.8	0.0	Filled Joint / Fracture
127.4	270.3	63.3	0.0	Filled Joint / Fracture
128.0	291.8	53.2	0.0	Filled Joint / Fracture
128.3	292.5	22.1	0.0	Filled Joint / Fracture

Depth	Azimuth	Dip	Aperture	Type
ft	deg TN	deg	mm	
128.9	60.2	38.2	0.0	Filled Joint / Fracture
131.2	111.1	15.5	0.0	Filled Joint / Fracture
132.2	312.9	31.7	0.0	Bedding / Banding / Foliation
132.9	209.1	66.5	0.0	Filled Joint / Fracture
134.0	272.9	39.6	0.0	Bedding / Banding / Foliation
135.0	87.0	52.4	0.0	Open Joint / Fracture
135.0	271.5	50.9	0.0	Open Joint / Fracture
135.7	10.9	25.3	0.0	Filled Joint / Fracture
136.8	44.2	65.3	0.0	Open Joint / Fracture
137.0	279.2	74.2	0.0	Open Joint / Fracture
137.4	93.4	33.6	0.0	Filled Joint / Fracture
137.4	268.3	50.5	0.0	Filled Joint / Fracture
138.5	61.1	49.1	0.0	Filled Joint / Fracture
138.7	54.2	65.5	0.0	Filled Joint / Fracture
141.4	104.1	47.3	0.0	Filled Joint / Fracture
145.7	271.3	66.2	0.0	Filled Joint / Fracture
147.0	277.8	42.2	0.0	Filled Joint / Fracture
147.4	315.8	20.3	0.0	Filled Joint / Fracture
147.5	6.4	24.4	0.0	Filled Joint / Fracture
147.7	63.0	62.1	0.0	Filled Joint / Fracture
148.3	209.7	30.6	0.0	Filled Joint / Fracture
148.7	261.6	34.4	0.0	Bedding / Banding / Foliation
149.4	248.8	46.6	0.0	Filled Joint / Fracture
150.7	254.0	58.3	0.0	Filled Joint / Fracture
155.1	293.1	37.2	0.0	Bedding / Banding / Foliation
157.9	330.3	36.5	0.0	Bedding / Banding / Foliation
167.6	69.3	7.6	0.0	Bedding / Banding / Foliation
168.6	197.1	60.8	0.0	Open Joint / Fracture
171.6	274.1	14.1	0.0	Bedding / Banding / Foliation
173.0	64.2	50.1	0.0	Filled Joint / Fracture
174.3	225.8	69.5	0.0	Filled Joint / Fracture
176.0	221.8	50.4	0.0	Filled Joint / Fracture
177.5	276.3	23.3	0.0	Filled Joint / Fracture
177.5	282.2	42.1	0.0	Filled Joint / Fracture
178.6	224.0	57.3	0.0	Filled Joint / Fracture
180.0	132.5	43.5	0.0	Filled Joint / Fracture
181.7	237.2	52.7	0.0	Filled Joint / Fracture
184.5	162.3	63.4	0.0	Open Joint / Fracture
186.0	242.8	81.6	0.0	Open Joint / Fracture

Depth	Azimuth	Dip	Aperture	Type
ft	deg TN	deg	mm	
186.7	301.5	76.9	0.0	Filled Joint / Fracture
186.8	295.1	87.9	0.0	Open Joint / Fracture
187.7	231.1	26.2	0.0	Open Joint / Fracture
188.7	200.2	28.1	0.0	Open Joint / Fracture
192.2	103.3	75.2	0.0	Open Joint / Fracture
193.2	241.0	60.2	0.0	Open Joint / Fracture
193.7	114.8	31.1	0.0	Filled Joint / Fracture
194.7	134.5	29.8	37.8	Filled Joint / Fracture
197.1	112.6	33.4	0.0	Filled Joint / Fracture
197.6	237.1	44.3	0.0	Open Joint / Fracture
201.6	279.7	54.7	0.0	Filled Joint / Fracture
203.4	273.8	70.5	0.0	Filled Joint / Fracture
205.8	198.1	52.2	0.0	Filled Joint / Fracture
206.1	223.5	69.2	0.0	Filled Joint / Fracture
206.4	288.1	49.0	0.0	Filled Joint / Fracture
206.8	77.5	47.4	0.0	Filled Joint / Fracture
207.1	327.3	72.4	0.0	Filled Joint / Fracture
208.1	81.0	54.3	0.0	Filled Joint / Fracture
208.2	242.0	37.3	0.0	Open Joint / Fracture
209.6	75.8	57.9	0.0	Open Joint / Fracture
210.2	115.5	59.9	0.0	Open Joint / Fracture
210.9	85.1	62.8	0.0	Open Joint / Fracture
211.2	75.1	54.5	0.0	Open Joint / Fracture
211.5	289.2	65.2	0.0	Filled Joint / Fracture
212.0	75.5	59.2	0.0	Filled Joint / Fracture
212.8	80.9	65.5	0.0	Open Joint / Fracture
213.3	155.6	62.5	0.0	Filled Joint / Fracture
213.5	77.9	63.2	0.0	Filled Joint / Fracture
213.6	73.6	52.9	0.0	Filled Joint / Fracture
215.8	191.5	72.9	0.0	Filled Joint / Fracture
216.7	175.6	42.6	0.0	Bedding / Banding / Foliation
216.9	98.7	29.2	0.0	Open Joint / Fracture
218.9	56.3	70.0	0.0	Filled Joint / Fracture
219.5	86.7	49.9	0.0	Filled Joint / Fracture
220.2	74.9	44.7	0.0	Filled Joint / Fracture
221.0	81.9	38.3	0.0	Filled Joint / Fracture
221.4	84.9	59.2	0.0	Filled Joint / Fracture
222.1	279.1	52.8	0.0	Filled Joint / Fracture
222.6	117.8	57.2	0.0	Filled Joint / Fracture

Depth	Azimuth	Dip	Aperture	Type
ft	deg TN	deg	mm	
224.2	207.3	29.1	0.0	Bedding / Banding / Foliation
224.6	99.8	39.9	0.0	Filled Joint / Fracture
225.4	232.9	30.7	0.0	Bedding / Banding / Foliation
225.9	267.9	61.0	0.0	Filled Joint / Fracture
226.5	288.7	30.7	0.0	Bedding / Banding / Foliation
226.9	109.6	17.9	0.0	Filled Joint / Fracture
227.0	250.4	33.2	0.0	Open Joint / Fracture
227.3	234.7	21.7	0.0	Filled Joint / Fracture
227.6	218.0	21.5	0.0	Open Joint / Fracture
227.8	278.3	28.4	0.0	Open Joint / Fracture
228.0	230.0	14.9	0.0	Open Joint / Fracture
228.5	315.3	56.9	0.0	Filled Joint / Fracture
234.7	267.7	35.8	36.7	Filled Joint / Fracture

Table 6. Borehole RC-20-014 (B-29),
Suspension R1-R2 depths and P- and SH-wave velocities

**Summary of Compressional Wave Velocity, Shear Wave Velocity, and Poisson's Ratio
Based on Receiver-to-Receiver Travel Time Data - Borehole RC-20-014 (B-29)**

American Units			
Depth at Midpoint Between Receivers	Velocity		Poisson's Ratio
	V _s	V _p	
(ft)	(ft/s)	(ft/s)	
109.9	5130	11700	0.38
111.6	3940	10930	0.43
113.2	3440	7170	0.35
114.8	3400	7170	0.35
116.5	6010	13070	0.37
118.1	4830	9260	0.31
119.8	4440	8890	0.33
121.4	4140	8130	0.32
123.0	4830	11110	0.38
124.7	5560	11110	0.33
126.3	7940	15500	0.32
128.0	6870	13890	0.34
129.6	9800	18520	0.31
131.2	7490	15500	0.35
132.9	5420	13070	0.40
134.5	4270	9950	0.39
136.2	4940	13330	0.42
137.8	6870	14810	0.36
139.4	7490	13070	0.26
141.1	6840	12580	0.29
142.7	4900	11300	0.38
144.4	5030	10580	0.35
146.0	5560	13070	0.39
147.6	8080	17090	0.36
149.3	6630	15870	0.39
150.9	5670	12350	0.37
152.6	5490	12350	0.38
154.2	6440	13610	0.36
155.8	4880	10420	0.36
157.5	7330	13610	0.30
159.1	4400	9950	0.38
160.8	4550	10930	0.40
162.4	5090	11700	0.38
164.0	4940	9130	0.29
165.7	4610	11110	0.40
167.3	4360	15500	0.46

Metric Units			
Depth at Midpoint Between Receivers	Velocity		Poisson's Ratio
	V _s	V _p	
(m)	(m/s)	(m/s)	
33.5	1560	3560	0.38
34.0	1200	3330	0.43
34.5	1050	2180	0.35
35.0	1040	2180	0.35
35.5	1830	3980	0.37
36.0	1470	2820	0.31
36.5	1350	2710	0.33
37.0	1260	2480	0.32
37.5	1470	3390	0.38
38.0	1690	3390	0.33
38.5	2420	4730	0.32
39.0	2090	4230	0.34
39.5	2990	5640	0.31
40.0	2280	4730	0.35
40.5	1650	3980	0.40
41.0	1300	3030	0.39
41.5	1510	4060	0.42
42.0	2090	4520	0.36
42.5	2280	3980	0.26
43.0	2080	3830	0.29
43.5	1490	3440	0.38
44.0	1530	3230	0.35
44.5	1690	3980	0.39
45.0	2460	5210	0.36
45.5	2020	4840	0.39
46.0	1730	3760	0.37
46.5	1670	3760	0.38
47.0	1960	4150	0.36
47.5	1490	3180	0.36
48.0	2230	4150	0.30
48.5	1340	3030	0.38
49.0	1390	3330	0.40
49.5	1550	3560	0.38
50.0	1510	2780	0.29
50.5	1410	3390	0.40
51.0	1330	4730	0.46

**Summary of Compressional Wave Velocity, Shear Wave Velocity, and Poisson's Ratio
Based on Receiver-to-Receiver Travel Time Data - Borehole RC-20-014 (B-29)**

American Units			
Depth at Midpoint Between Receivers	Velocity		Poisson's Ratio
	V _s	V _p	
(ft)	(ft/s)	(ft/s)	
169.0	4100	9520	0.39
170.6	4990	12580	0.41
172.2	6410	14180	0.37
173.9	6910	12580	0.28
175.5	7050	12580	0.27
177.2	5130	13890	0.42
178.8	6170	15500	0.41
180.5	6230	11490	0.29
182.1	6700	12580	0.30
183.7	6600	13610	0.35
185.4	6770	11490	0.23
187.0	7090	15150	0.36
188.7	7490	14490	0.32
190.3	7130	14490	0.34
191.9	9260	16670	0.28
193.6	5380	10750	0.33
195.2	5850	12120	0.35
196.9	6910	15150	0.37
198.5	6030	10580	0.26
200.1	7580	15870	0.35
201.8	5670	11900	0.35
203.4	6730	12120	0.28
205.1	10100	18520	0.29
206.7	8550	15870	0.30
208.3	8030	14490	0.28
210.0	7710	14490	0.30
211.6	7750	13610	0.26
213.3	9390	18520	0.33
214.9	9070	15870	0.26
216.5	8490	16670	0.32
218.2	7090	14810	0.35
219.8	7750	13330	0.24
221.5	5350	14180	0.42
223.1	6060	14810	0.40
224.7	8180	16670	0.34
226.4	8710	17090	0.32
228.0	9200	16260	0.26
229.7	8550	18520	0.36
231.3	8890	19050	0.36
232.9	8830	16260	0.29

Metric Units			
Depth at Midpoint Between Receivers	Velocity		Poisson's Ratio
	V _s	V _p	
(m)	(m/s)	(m/s)	
51.5	1250	2900	0.39
52.0	1520	3830	0.41
52.5	1950	4320	0.37
53.0	2110	3830	0.28
53.5	2150	3830	0.27
54.0	1560	4230	0.42
54.5	1880	4730	0.41
55.0	1900	3500	0.29
55.5	2040	3830	0.30
56.0	2010	4150	0.35
56.5	2060	3500	0.23
57.0	2160	4620	0.36
57.5	2280	4420	0.32
58.0	2170	4420	0.34
58.5	2820	5080	0.28
59.0	1640	3280	0.33
59.5	1780	3690	0.35
60.0	2110	4620	0.37
60.5	1840	3230	0.26
61.0	2310	4840	0.35
61.5	1730	3630	0.35
62.0	2050	3690	0.28
62.5	3080	5640	0.29
63.0	2610	4840	0.30
63.5	2450	4420	0.28
64.0	2350	4420	0.30
64.5	2360	4150	0.26
65.0	2860	5640	0.33
65.5	2760	4840	0.26
66.0	2590	5080	0.32
66.5	2160	4520	0.35
67.0	2360	4060	0.24
67.5	1630	4320	0.42
68.0	1850	4520	0.40
68.5	2490	5080	0.34
69.0	2660	5210	0.32
69.5	2800	4960	0.26
70.0	2610	5640	0.36
70.5	2710	5810	0.36
71.0	2690	4960	0.29

**Summary of Compressional Wave Velocity, Shear Wave Velocity, and Poisson's Ratio
Based on Receiver-to-Receiver Travel Time Data - Borehole RC-20-014 (B-29)**

American Units			
Depth at Midpoint Between Receivers	Velocity		Poisson's Ratio
	V _s	V _p	
(ft)	(ft/s)	(ft/s)	
234.6	8280	16670	0.34
236.2	8550	15870	0.30
237.9	8770	16670	0.31
239.5	8330	15870	0.31
241.1	8830	17090	0.32
242.8	9320	21510	0.38
244.4	10030	20830	0.35
246.1	10670	20830	0.32
247.7	10840	19050	0.26
249.3	9950	17540	0.26
251.0	9070	19050	0.35
252.6	8770	16670	0.31
254.3	9460	17540	0.30
255.9	10260	19610	0.31
257.6	9260	18020	0.32
259.2	8660	17540	0.34
260.8	9200	18020	0.32
262.5	9460	19050	0.34
264.1	9800	20830	0.36
265.8	9880	19050	0.32
267.4	9730	16670	0.24
269.0	9260	17090	0.29
270.7	10260	18520	0.28
272.3	10670	20830	0.32
274.0	11590	21510	0.30
275.6	10340	19610	0.31
277.2	9070	17540	0.32
278.9	7450	17540	0.39
280.5	7330	19050	0.41
282.2	7290	18520	0.41

Metric Units			
Depth at Midpoint Between Receivers	Velocity		Poisson's Ratio
	V _s	V _p	
(m)	(m/s)	(m/s)	
71.5	2520	5080	0.34
72.0	2610	4840	0.30
72.5	2670	5080	0.31
73.0	2540	4840	0.31
73.5	2690	5210	0.32
74.0	2840	6550	0.38
74.5	3060	6350	0.35
75.0	3250	6350	0.32
75.5	3300	5810	0.26
76.0	3030	5350	0.26
76.5	2760	5810	0.35
77.0	2670	5080	0.31
77.5	2880	5350	0.30
78.0	3130	5980	0.31
78.5	2820	5490	0.32
79.0	2640	5350	0.34
79.5	2800	5490	0.32
80.0	2880	5810	0.34
80.5	2990	6350	0.36
81.0	3010	5810	0.32
81.5	2970	5080	0.24
82.0	2820	5210	0.29
82.5	3130	5640	0.28
83.0	3250	6350	0.32
83.5	3530	6550	0.30
84.0	3150	5980	0.31
84.5	2760	5350	0.32
85.0	2270	5350	0.39
85.5	2230	5810	0.41
86.0	2220	5640	0.41

Table 7. Borehole RC-20-014 (B-29),
Acoustic Televiwer Feature depth, dip azimuth, dip, aperture, and type

Depth	Azimuth	Dip	Aperture	Type
ft	deg TN	deg	mm	
53.6	267.7	42.3	0.0	Filled Joint / Fracture
54.1	209.5	29.2	0.0	Filled Joint / Fracture
54.8	230.5	74.0	0.0	Filled Joint / Fracture
55.0	308.1	40.3	0.0	Bedding / Banding / Foliation
55.6	239.5	39.0	0.0	Filled Joint / Fracture
56.1	245.8	30.1	0.0	Filled Joint / Fracture
56.6	286.1	29.8	0.0	Bedding / Banding / Foliation
57.6	272.2	47.7	0.0	Filled Joint / Fracture
58.0	272.3	62.2	0.0	Filled Joint / Fracture
58.1	272.8	56.6	0.0	Filled Joint / Fracture
59.0	280.9	54.0	0.0	Filled Joint / Fracture
59.1	247.9	77.5	0.0	Filled Joint / Fracture
59.4	237.3	68.0	0.0	Filled Joint / Fracture
59.7	246.3	52.4	0.0	Filled Joint / Fracture
60.2	267.8	44.0	0.0	Filled Joint / Fracture
60.8	189.4	59.8	26.6	Filled Joint / Fracture
61.5	296.6	30.7	0.0	Filled Joint / Fracture
61.7	237.6	39.5	0.0	Filled Joint / Fracture
62.0	159.4	52.2	0.0	Filled Joint / Fracture
62.1	253.8	43.5	0.0	Filled Joint / Fracture
62.2	265.1	79.8	0.0	Filled Joint / Fracture
63.0	230.0	47.8	0.0	Filled Joint / Fracture
63.4	214.8	40.5	0.0	Filled Joint / Fracture
65.0	325.6	17.7	0.0	Filled Joint / Fracture
65.4	304.1	16.4	0.0	Filled Joint / Fracture
65.4	211.8	60.9	0.0	Filled Joint / Fracture
66.9	260.4	37.0	0.0	Filled Joint / Fracture
67.5	285.5	28.0	0.0	Filled Joint / Fracture
68.0	265.7	30.2	0.0	Bedding / Banding / Foliation
72.2	266.4	42.9	0.0	Bedding / Banding / Foliation
73.5	245.7	53.8	0.0	Bedding / Banding / Foliation
76.0	258.1	59.7	0.0	Bedding / Banding / Foliation
76.2	271.0	60.7	0.0	Filled Joint / Fracture
77.1	270.2	75.8	0.0	Filled Joint / Fracture
77.6	71.5	28.6	0.0	Filled Joint / Fracture

Depth	Azimuth	Dip	Aperture	Type
ft	deg TN	deg	mm	
77.8	98.2	31.9	0.0	Filled Joint / Fracture
77.8	278.7	54.2	0.0	Filled Joint / Fracture
79.2	263.4	20.8	0.0	Filled Joint / Fracture
79.3	237.0	30.1	0.0	Filled Joint / Fracture
79.6	122.6	5.4	0.0	Filled Joint / Fracture
81.3	249.4	26.0	0.0	Open Joint / Fracture
82.9	235.2	26.4	0.0	Filled Joint / Fracture
84.4	221.1	25.0	0.0	Filled Joint / Fracture
84.5	249.6	27.6	0.0	Filled Joint / Fracture
84.7	178.9	12.7	0.0	Filled Joint / Fracture
85.2	231.9	12.6	0.0	Filled Joint / Fracture
89.6	204.1	20.3	0.0	Filled Joint / Fracture
90.3	251.3	22.6	0.0	Filled Joint / Fracture
90.4	163.1	67.1	0.0	Filled Joint / Fracture
90.4	254.6	43.8	0.0	Filled Joint / Fracture
91.4	248.8	18.1	0.0	Filled Joint / Fracture
91.5	105.5	75.3	0.0	Filled Joint / Fracture
95.0	156.2	80.6	0.0	Filled Joint / Fracture
96.7	167.9	85.4	5.2	Filled Joint / Fracture
97.8	182.5	77.0	13.2	Filled Joint / Fracture
99.7	283.6	69.0	0.0	Filled Joint / Fracture
101.2	114.3	64.9	0.0	Filled Joint / Fracture
102.1	214.8	66.8	0.0	Filled Joint / Fracture
102.8	108.9	76.8	0.0	Filled Joint / Fracture
103.5	180.1	53.5	0.0	Filled Joint / Fracture
108.6	38.2	78.3	0.0	Filled Joint / Fracture
109.4	238.4	41.1	0.0	Filled Joint / Fracture
114.4	261.5	27.0	0.0	Filled Joint / Fracture
117.8	95.9	75.2	0.0	Filled Joint / Fracture
119.0	109.7	17.7	0.0	Filled Joint / Fracture
119.1	127.3	69.7	0.0	Filled Joint / Fracture
119.8	141.3	44.6	18.5	Filled Joint / Fracture
120.1	282.8	45.7	0.0	Filled Joint / Fracture
120.4	134.6	57.4	0.0	Filled Joint / Fracture
120.6	149.1	62.5	0.0	Filled Joint / Fracture
120.9	134.6	63.6	0.0	Filled Joint / Fracture
121.4	159.1	48.8	0.0	Filled Joint / Fracture
121.6	159.3	47.5	0.0	Filled Joint / Fracture
122.9	179.8	37.0	0.0	Filled Joint / Fracture

Depth	Azimuth	Dip	Aperture	Type
ft	deg TN	deg	mm	
123.0	39.0	82.7	0.0	Filled Joint / Fracture
124.5	61.7	80.4	0.0	Filled Joint / Fracture
125.5	153.7	51.0	0.0	Filled Joint / Fracture
125.8	136.1	74.7	0.0	Filled Joint / Fracture
126.4	141.0	77.0	0.0	Filled Joint / Fracture
126.7	35.1	75.3	0.0	Filled Joint / Fracture
127.4	51.9	60.7	0.0	Filled Joint / Fracture
128.1	119.2	61.1	0.0	Filled Joint / Fracture
128.4	101.3	29.2	0.0	Filled Joint / Fracture
128.6	114.9	55.8	0.0	Filled Joint / Fracture
129.1	132.3	61.1	0.0	Filled Joint / Fracture
129.4	139.8	55.8	0.0	Filled Joint / Fracture
129.6	142.1	48.9	0.0	Filled Joint / Fracture
130.6	118.2	41.3	0.0	Filled Joint / Fracture
131.0	22.2	24.2	0.0	Filled Joint / Fracture
131.5	290.2	70.7	0.0	Filled Joint / Fracture
132.4	40.2	47.1	0.0	Filled Joint / Fracture
132.6	73.5	48.5	0.0	Filled Joint / Fracture
133.0	259.3	65.7	0.0	Filled Joint / Fracture
134.2	280.4	72.0	0.0	Filled Joint / Fracture
139.0	318.5	57.7	0.0	Filled Joint / Fracture
140.2	300.5	69.3	0.0	Filled Joint / Fracture
141.4	151.4	56.9	0.0	Filled Joint / Fracture
141.9	148.9	63.0	0.0	Filled Joint / Fracture
142.5	159.9	76.9	0.0	Filled Joint / Fracture
143.4	2.1	69.2	0.0	Filled Joint / Fracture
144.4	332.9	72.2	0.0	Filled Joint / Fracture
144.4	111.6	66.6	0.0	Filled Joint / Fracture
145.2	275.8	67.1	0.0	Filled Joint / Fracture
146.2	62.1	59.3	0.0	Filled Joint / Fracture
146.8	262.0	63.6	0.0	Filled Joint / Fracture
147.5	324.8	62.7	0.0	Filled Joint / Fracture
148.4	290.9	68.6	0.0	Filled Joint / Fracture
153.4	311.7	50.2	0.0	Filled Joint / Fracture
153.7	304.0	72.6	0.0	Filled Joint / Fracture
154.2	336.1	64.6	0.0	Filled Joint / Fracture
155.7	138.8	56.5	0.0	Filled Joint / Fracture
156.0	62.1	58.7	0.0	Filled Joint / Fracture
156.7	149.3	53.7	0.0	Filled Joint / Fracture

Depth	Azimuth	Dip	Aperture	Type
ft	deg TN	deg	mm	
157.5	92.3	60.7	0.0	Filled Joint / Fracture
157.5	39.2	73.9	0.0	Filled Joint / Fracture
158.1	94.6	56.8	0.0	Filled Joint / Fracture
158.4	109.1	81.0	0.0	Filled Joint / Fracture
158.9	125.1	56.4	0.0	Filled Joint / Fracture
160.3	113.8	81.8	0.0	Filled Joint / Fracture
161.8	291.1	82.3	0.0	Filled Joint / Fracture
162.6	112.9	70.0	0.0	Open Joint / Fracture
163.6	130.3	72.2	0.0	Filled Joint / Fracture
165.9	113.3	48.7	0.0	Bedding / Banding / Foliation
166.2	108.8	52.5	0.8	Bedding / Banding / Foliation
167.6	21.5	53.1	0.0	Filled Joint / Fracture
168.4	87.1	57.9	0.0	Filled Joint / Fracture
168.6	97.5	31.7	0.0	Filled Joint / Fracture
168.9	118.6	56.2	0.0	Filled Joint / Fracture
169.2	121.3	40.2	0.0	Filled Joint / Fracture
170.2	48.3	47.7	0.0	Filled Joint / Fracture
170.4	50.7	60.0	0.0	Filled Joint / Fracture
170.6	76.7	52.8	0.0	Filled Joint / Fracture
171.7	218.9	75.0	0.0	Filled Joint / Fracture
172.9	15.4	53.1	0.0	Filled Joint / Fracture
174.9	5.8	79.5	0.0	Filled Joint / Fracture
175.0	290.9	52.5	0.0	Filled Joint / Fracture
175.8	188.6	62.5	0.0	Filled Joint / Fracture
176.9	100.8	75.2	0.0	Filled Joint / Fracture
177.7	306.6	5.3	0.0	Filled Joint / Fracture
177.8	174.4	14.6	0.0	Filled Joint / Fracture
178.1	251.8	25.9	0.0	Filled Joint / Fracture
178.3	255.0	31.0	0.0	Filled Joint / Fracture
178.8	249.3	58.2	0.0	Filled Joint / Fracture
183.9	325.5	71.8	0.0	Filled Joint / Fracture
188.6	293.0	54.1	0.0	Filled Joint / Fracture
188.8	313.8	62.9	0.0	Filled Joint / Fracture
190.4	106.7	77.2	0.0	Filled Joint / Fracture
192.1	10.4	69.3	0.0	Filled Joint / Fracture
193.0	327.5	55.7	0.0	Filled Joint / Fracture
194.5	20.3	57.5	0.0	Filled Joint / Fracture
196.1	274.9	43.5	0.0	Filled Joint / Fracture
197.2	255.2	64.0	0.0	Filled Joint / Fracture

Depth	Azimuth	Dip	Aperture	Type
ft	deg TN	deg	mm	
198.6	209.7	79.2	0.0	Filled Joint / Fracture
199.2	272.2	29.9	0.0	Filled Joint / Fracture
200.3	289.6	43.0	0.0	Filled Joint / Fracture
201.4	21.1	85.7	0.0	Filled Joint / Fracture
208.3	13.2	69.5	0.0	Filled Joint / Fracture
211.9	240.3	48.3	0.0	Filled Joint / Fracture
212.0	249.8	70.6	0.0	Filled Joint / Fracture
214.3	193.3	86.3	0.0	Filled Joint / Fracture
216.2	287.2	47.5	0.0	Filled Joint / Fracture
216.6	307.1	45.2	0.0	Filled Joint / Fracture
218.1	147.8	50.7	0.0	Filled Joint / Fracture
218.6	139.8	51.4	0.0	Filled Joint / Fracture
218.9	269.4	32.0	0.0	Filled Joint / Fracture
221.9	176.0	57.9	0.0	Filled Joint / Fracture
224.1	99.5	71.7	0.0	Filled Joint / Fracture
224.7	97.2	62.8	0.0	Filled Joint / Fracture
225.4	98.6	69.2	9.1	Open Joint / Fracture
226.7	80.6	69.9	0.0	Filled Joint / Fracture
227.2	102.5	62.5	0.0	Filled Joint / Fracture
228.2	85.1	66.2	0.0	Filled Joint / Fracture
231.6	32.4	65.2	0.0	Filled Joint / Fracture
232.8	200.9	78.3	0.0	Filled Joint / Fracture
233.8	107.7	62.3	0.0	Filled Joint / Fracture
241.7	11.4	80.1	0.0	Filled Joint / Fracture
241.8	144.5	80.9	0.0	Filled Joint / Fracture
244.4	77.3	73.4	0.0	Filled Joint / Fracture
246.2	278.8	74.5	0.0	Open Joint / Fracture
247.3	120.0	52.7	0.0	Filled Joint / Fracture
255.2	73.4	64.7	0.0	Filled Joint / Fracture
259.6	126.4	58.4	0.0	Filled Joint / Fracture
266.3	29.2	35.1	0.0	Filled Joint / Fracture
266.4	40.3	44.0	0.0	Filled Joint / Fracture
267.5	200.4	67.6	0.0	Filled Joint / Fracture
267.7	33.7	73.9	0.0	Filled Joint / Fracture
271.0	79.2	51.0	0.0	Filled Joint / Fracture
272.0	52.4	74.4	0.0	Filled Joint / Fracture
274.4	226.3	74.5	0.0	Filled Joint / Fracture
277.6	111.5	69.6	0.0	Filled Joint / Fracture
285.7	353.0	75.3	0.0	Filled Joint / Fracture

Depth	Azimuth	Dip	Aperture	Type
ft	deg TN	deg	mm	
286.5	320.0	52.0	0.0	Filled Joint / Fracture
286.6	107.0	51.5	0.0	Filled Joint / Fracture
290.9	100.0	69.8	0.0	Filled Joint / Fracture
291.7	111.3	82.6	0.0	Filled Joint / Fracture
292.3	127.1	47.2	0.0	Filled Joint / Fracture
292.4	94.9	69.7	0.0	Filled Joint / Fracture
293.1	82.5	62.8	0.0	Filled Joint / Fracture

Table 8. Borehole RC-20-011 (B-32),
Suspension R1-R2 depths and P- and SH-wave velocities

**Summary of Compressional Wave Velocity, Shear Wave Velocity, and Poisson's Ratio
Based on Receiver-to-Receiver Travel Time Data - Borehole RC-20-011 (B-32)**

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)	
223.1	4490	12120	0.42	68.0	1370	3690	0.42
224.7	4940	13610	0.42	68.5	1510	4150	0.42
226.4	5170	12820	0.40	69.0	1580	3910	0.40
228.0	4730	13610	0.43	69.5	1440	4150	0.43
229.7	5230	13330	0.41	70.0	1590	4060	0.41
231.3	4870	13330	0.42	70.5	1480	4060	0.42
232.9	4610	13330	0.43	71.0	1410	4060	0.43
234.6	5380	13890	0.41	71.5	1640	4230	0.41
236.2	5270	11900	0.38	72.0	1610	3630	0.38
237.9	6090	13890	0.38	72.5	1860	4230	0.38
239.5	6410	15870	0.40	73.0	1950	4840	0.40
241.1	5900	13890	0.39	73.5	1800	4230	0.39
242.8	5170	10930	0.36	74.0	1580	3330	0.36
244.4	5380	15500	0.43	74.5	1640	4730	0.43
246.1	5530	15500	0.43	75.0	1690	4730	0.43
247.7	5900	10750	0.28	75.5	1800	3280	0.28
249.3	5420	12580	0.39	76.0	1650	3830	0.39
251.0	8600	16670	0.32	76.5	2620	5080	0.32
252.6	7290	12820	0.26	77.0	2220	3910	0.26
254.3	5380	9800	0.28	77.5	1640	2990	0.28
255.9	4660	10930	0.39	78.0	1420	3330	0.39
257.6	6030	11300	0.30	78.5	1840	3440	0.30
259.2	8890	15870	0.27	79.0	2710	4840	0.27
260.8	9730	18520	0.31	79.5	2970	5640	0.31
262.5	6770	13890	0.34	80.0	2060	4230	0.34
264.1	4440	14180	0.45	80.5	1350	4320	0.45
265.8	6060	13330	0.37	81.0	1850	4060	0.37
267.4	7530	14490	0.31	81.5	2300	4420	0.31
269.0	4850	12350	0.41	82.0	1480	3760	0.41
270.7	6700	12820	0.31	82.5	2040	3910	0.31
272.3	8660	16670	0.32	83.0	2640	5080	0.32
274.0	7170	15150	0.36	83.5	2180	4620	0.36
275.6	7020	13890	0.33	84.0	2140	4230	0.33
277.2	7250	17090	0.39	84.5	2210	5210	0.39
278.9	9460	19050	0.34	85.0	2880	5810	0.34
280.5	8660	15870	0.29	85.5	2640	4840	0.29

**Summary of Compressional Wave Velocity, Shear Wave Velocity, and Poisson's Ratio
Based on Receiver-to-Receiver Travel Time Data - Borehole RC-20-011 (B-32)**

American Units			
Depth at Midpoint Between Receivers	Velocity		Poisson's Ratio
	V _s	V _p	
(ft)	(ft/s)	(ft/s)	
282.2	7840	16260	0.35
283.8	8550	16260	0.31
285.4	9260	18020	0.32
287.1	8710	19610	0.38
288.7	8330	17540	0.35

Metric Units			
Depth at Midpoint Between Receivers	Velocity		Poisson's Ratio
	V _s	V _p	
(m)	(m/s)	(m/s)	
86.0	2390	4960	0.35
86.5	2610	4960	0.31
87.0	2820	5490	0.32
87.5	2660	5980	0.38
88.0	2540	5350	0.35

Table 9. Borehole RC-20-011 (B-32),
Acoustic Televiewer Feature depth, dip azimuth, dip, aperture, and type

Depth	Azimuth	Dip	Aperture	Type
ft	deg TN	deg	mm	
214.0	108.1	56.4	0.0	Filled Joint / Fracture
215.6	90.5	71.8	4.9	Open Joint / Fracture
216.7	262.5	45.4	0.0	Filled Joint / Fracture
217.4	265.3	21.1	0.0	Filled Joint / Fracture
217.7	279.2	26.6	30.1	Filled Joint / Fracture
218.5	278.5	36.1	21.4	Filled Joint / Fracture
219.7	88.7	81.0	0.0	Filled Joint / Fracture
221.0	275.4	34.1	0.0	Filled Joint / Fracture
221.2	271.5	24.2	0.0	Filled Joint / Fracture
222.7	242.1	26.3	0.0	Filled Joint / Fracture
222.7	202.4	77.6	0.0	Filled Joint / Fracture
224.0	317.1	25.0	0.0	Filled Joint / Fracture
224.2	103.8	37.9	0.0	Filled Joint / Fracture
224.6	267.6	17.4	0.0	Bedding / Banding / Foliation
225.9	286.5	30.0	3.1	Bedding / Banding / Foliation
226.2	265.5	15.7	0.0	Filled Joint / Fracture
226.6	235.6	37.2	0.0	Filled Joint / Fracture
226.7	131.1	62.1	0.0	Filled Joint / Fracture
227.0	163.4	60.2	0.0	Filled Joint / Fracture
227.7	226.3	51.1	0.0	Filled Joint / Fracture
227.9	260.0	9.0	0.0	Filled Joint / Fracture
228.3	226.9	63.0	0.0	Filled Joint / Fracture
228.8	311.6	21.0	0.0	Filled Joint / Fracture
229.3	119.8	51.3	30.7	Filled Joint / Fracture
229.9	198.7	8.1	0.0	Filled Joint / Fracture
230.4	184.5	55.1	0.0	Bedding / Banding / Foliation
230.9	191.0	55.7	0.0	Bedding / Banding / Foliation
232.8	71.8	67.6	0.0	Filled Joint / Fracture
232.9	166.7	75.3	0.0	Filled Joint / Fracture
233.6	62.1	65.2	0.0	Filled Joint / Fracture
234.0	284.6	15.2	15.4	Filled Joint / Fracture
234.4	256.2	46.7	0.0	Filled Joint / Fracture
234.5	267.4	20.3	13.0	Filled Joint / Fracture
236.1	96.1	68.6	0.0	Filled Joint / Fracture
236.6	157.6	57.0	0.0	Filled Joint / Fracture
237.8	51.4	74.6	0.0	Filled Joint / Fracture

Depth	Azimuth	Dip	Aperture	Type
ft	deg TN	deg	mm	
240.3	281.2	16.1	0.0	Filled Joint / Fracture
240.5	286.7	52.8	0.0	Filled Joint / Fracture
241.5	130.2	68.7	0.0	Filled Joint / Fracture
241.6	289.5	25.7	44.5	Filled Joint / Fracture
241.9	340.3	38.4	0.0	Filled Joint / Fracture
242.4	266.5	8.1	0.0	Filled Joint / Fracture
242.7	282.1	65.7	0.0	Filled Joint / Fracture
243.4	72.9	30.7	0.0	Filled Joint / Fracture
243.4	88.0	70.3	0.0	Filled Joint / Fracture
243.8	48.1	45.1	0.0	Filled Joint / Fracture
244.5	129.2	49.3	0.0	Filled Joint / Fracture
245.8	284.0	8.5	0.0	Filled Joint / Fracture
246.3	284.0	34.3	0.0	Bedding / Banding / Foliation
246.4	262.6	53.1	0.0	Filled Joint / Fracture
246.5	293.7	52.3	0.0	Filled Joint / Fracture
246.7	269.8	48.8	0.0	Filled Joint / Fracture
247.1	287.0	49.9	0.0	Filled Joint / Fracture
247.4	230.1	62.5	0.0	Filled Joint / Fracture
248.0	243.2	36.7	0.0	Filled Joint / Fracture
248.4	267.9	39.0	0.0	Filled Joint / Fracture
248.5	265.5	52.8	0.0	Filled Joint / Fracture
249.3	271.9	34.0	64.2	Open Joint / Fracture
249.7	272.4	24.6	0.0	Filled Joint / Fracture
250.3	257.7	29.5	0.0	Filled Joint / Fracture
250.6	56.1	43.9	0.0	Filled Joint / Fracture
251.0	8.7	40.7	0.0	Filled Joint / Fracture
251.0	96.1	51.2	0.0	Filled Joint / Fracture
251.3	127.0	51.5	0.0	Filled Joint / Fracture
252.2	12.4	65.6	0.0	Filled Joint / Fracture
252.5	31.1	62.3	0.0	Filled Joint / Fracture
252.7	73.0	28.3	0.0	Filled Joint / Fracture
252.8	93.6	20.8	0.0	Filled Joint / Fracture
253.4	29.7	51.3	0.0	Filled Joint / Fracture
253.5	39.5	56.7	0.0	Filled Joint / Fracture
254.1	265.9	26.4	0.0	Filled Joint / Fracture
254.3	64.2	35.1	0.0	Filled Joint / Fracture
254.6	127.2	65.6	0.0	Filled Joint / Fracture
255.1	264.8	24.9	0.0	Bedding / Banding / Foliation
255.9	293.8	27.5	0.0	Bedding / Banding / Foliation

Depth	Azimuth	Dip	Aperture	Type
ft	deg TN	deg	mm	
256.8	253.1	37.3	59.2	Filled Joint / Fracture
257.0	220.3	43.2	0.0	Filled Joint / Fracture
257.6	237.6	48.5	41.4	Filled Joint / Fracture
257.8	181.3	57.4	0.0	Filled Joint / Fracture
258.6	298.5	36.1	0.0	Filled Joint / Fracture
258.9	266.4	59.7	0.0	Filled Joint / Fracture
259.4	210.8	46.7	0.0	Filled Joint / Fracture
259.9	131.5	40.8	0.0	Filled Joint / Fracture
260.6	240.8	56.9	0.0	Filled Joint / Fracture
261.5	185.2	9.4	0.0	Filled Joint / Fracture
262.3	311.0	2.1	0.0	Filled Joint / Fracture
262.9	232.5	31.3	89.9	Filled Joint / Fracture
263.6	259.6	10.8	0.0	Bedding / Banding / Foliation
264.1	54.0	66.0	19.8	Filled Joint / Fracture
264.7	84.9	33.9	0.0	Filled Joint / Fracture
264.8	287.1	31.7	0.0	Filled Joint / Fracture
265.0	346.1	32.6	0.0	Filled Joint / Fracture
266.4	261.5	65.0	0.0	Filled Joint / Fracture
267.2	286.9	14.6	0.0	Filled Joint / Fracture
267.7	1.7	51.5	0.0	Filled Joint / Fracture
268.7	354.6	32.1	0.0	Open Joint / Fracture
273.8	233.0	32.1	0.0	Filled Joint / Fracture
274.2	197.1	10.9	0.0	Filled Joint / Fracture
275.4	301.3	25.8	0.0	Filled Joint / Fracture
276.2	221.6	79.6	0.0	Filled Joint / Fracture
278.5	237.6	14.8	0.0	Filled Joint / Fracture
278.7	16.2	13.2	0.0	Filled Joint / Fracture
278.9	40.4	25.4	0.0	Filled Joint / Fracture
279.1	59.3	30.3	0.0	Filled Joint / Fracture
280.4	65.9	41.5	0.0	Filled Joint / Fracture
282.2	207.9	66.9	0.0	Filled Joint / Fracture
284.9	95.2	65.6	0.0	Filled Joint / Fracture
289.6	64.0	42.4	0.0	Filled Joint / Fracture
292.0	199.2	54.0	0.0	Bedding / Banding / Foliation
294.0	208.7	51.7	0.0	Bedding / Banding / Foliation
294.6	259.4	22.4	0.0	Open Joint / Fracture
295.0	27.7	51.7	0.0	Filled Joint / Fracture
295.3	251.0	19.2	0.0	Filled Joint / Fracture
295.4	97.7	36.6	0.0	Filled Joint / Fracture

Depth	Azimuth	Dip	Aperture	Type
ft	deg TN	deg	mm	
295.8	222.0	6.0	0.0	Open Joint / Fracture
296.0	28.6	20.3	0.0	Filled Joint / Fracture
296.1	39.9	52.6	0.0	Filled Joint / Fracture
296.7	225.6	20.8	0.0	Filled Joint / Fracture
297.3	280.2	29.6	149.1	Broken Zone / Undifferentiated

Table 10. Borehole RC-20-011 (B-32),
Optical Televiwer Feature depth, dip azimuth, dip, aperture, and type

Depth	Azimuth	Dip	Aperture	Type
ft	deg TN	deg	mm	
98.6	151.8	21.2	0.0	Filled Joint / Fracture
99.3	224.5	22.9	0.0	Filled Joint / Fracture
100.3	162.0	19.3	0.0	Filled Joint / Fracture
100.6	271.8	13.4	0.0	Filled Joint / Fracture
100.8	162.4	19.3	0.0	Filled Joint / Fracture
101.6	127.2	58.5	0.0	Filled Joint / Fracture
101.9	306.9	59.2	0.0	Filled Joint / Fracture
102.0	46.7	52.6	0.0	Filled Joint / Fracture
103.0	82.4	52.2	0.0	Filled Joint / Fracture
103.5	104.0	60.8	0.0	Filled Joint / Fracture
103.8	80.0	55.6	0.0	Filled Joint / Fracture
103.9	130.5	18.7	0.0	Filled Joint / Fracture
105.4	203.2	39.2	0.0	Filled Joint / Fracture
106.3	336.2	82.8	0.0	Filled Joint / Fracture
106.8	185.2	30.2	0.0	Filled Joint / Fracture
107.9	94.9	40.2	0.0	Filled Joint / Fracture
109.3	99.0	44.4	0.0	Filled Joint / Fracture
110.0	53.6	39.8	0.0	Filled Joint / Fracture
110.3	84.7	45.5	0.0	Filled Joint / Fracture
110.6	125.5	39.3	0.0	Filled Joint / Fracture
110.9	58.7	56.4	0.0	Filled Joint / Fracture
111.6	84.8	58.5	0.0	Filled Joint / Fracture
112.5	65.6	53.8	0.0	Filled Joint / Fracture
113.5	303.9	58.1	0.0	Filled Joint / Fracture
114.1	292.4	67.6	0.0	Filled Joint / Fracture
114.3	67.4	55.7	0.0	Filled Joint / Fracture
114.8	86.4	50.1	0.0	Broken Zone / Undifferentiated
116.4	208.0	63.8	0.0	Filled Joint / Fracture
116.9	123.7	64.3	0.0	Filled Joint / Fracture
117.9	153.4	48.4	0.0	Filled Joint / Fracture
118.2	142.7	47.7	0.0	Filled Joint / Fracture
118.6	281.1	73.6	0.0	Filled Joint / Fracture
118.9	115.1	73.1	0.0	Filled Joint / Fracture
119.6	120.5	74.6	0.0	Filled Joint / Fracture
119.6	116.6	63.3	0.0	Filled Joint / Fracture
120.0	90.5	68.9	0.0	Filled Joint / Fracture

Depth	Azimuth	Dip	Aperture	Type
ft	deg TN	deg	mm	
120.3	92.0	62.2	0.0	Filled Joint / Fracture
120.4	75.6	19.3	0.0	Filled Joint / Fracture
120.6	100.3	51.6	0.0	Filled Joint / Fracture
121.0	99.1	48.2	0.0	Filled Joint / Fracture
121.4	100.0	67.1	0.0	Filled Joint / Fracture
121.7	261.2	74.2	0.0	Filled Joint / Fracture
122.0	81.8	54.8	0.0	Filled Joint / Fracture
122.6	140.2	58.3	0.0	Broken Zone / Undifferentiated
122.9	333.9	59.1	0.0	Broken Zone / Undifferentiated
123.2	86.9	40.3	0.0	Filled Joint / Fracture
123.7	232.6	32.5	0.0	Filled Joint / Fracture
124.4	87.4	75.9	0.0	Filled Joint / Fracture
124.6	103.2	70.4	0.0	Filled Joint / Fracture
125.6	75.7	75.8	0.0	Filled Joint / Fracture
126.0	88.2	74.5	0.0	Filled Joint / Fracture
126.6	293.2	51.1	0.0	Filled Joint / Fracture
126.8	148.9	78.2	0.0	Filled Joint / Fracture
126.9	304.8	76.2	0.0	Filled Joint / Fracture
127.1	287.4	57.6	0.0	Filled Joint / Fracture
127.2	63.2	73.6	0.0	Filled Joint / Fracture
128.3	107.2	78.2	0.0	Filled Joint / Fracture
129.0	269.7	40.8	0.0	Filled Joint / Fracture
129.1	318.5	72.5	0.0	Filled Joint / Fracture
130.5	314.7	66.0	0.0	Filled Joint / Fracture
131.1	324.0	27.2	22.3	Filled Joint / Fracture
131.3	329.0	48.4	0.0	Filled Joint / Fracture
131.6	329.4	48.3	0.0	Filled Joint / Fracture
131.8	300.6	47.1	0.0	Filled Joint / Fracture
131.9	320.8	57.0	0.0	Filled Joint / Fracture
132.3	259.6	15.0	0.0	Broken Zone / Undifferentiated
133.5	217.6	26.1	0.0	Filled Joint / Fracture
133.7	210.9	22.5	0.0	Filled Joint / Fracture
134.0	139.2	25.2	0.0	Broken Zone / Undifferentiated
134.0	231.9	52.0	0.0	Filled Joint / Fracture
134.3	334.6	58.7	0.0	Filled Joint / Fracture
134.9	213.9	23.1	0.0	Bedding / Banding / Foliation
135.0	96.4	68.1	0.0	Filled Joint / Fracture
135.0	20.1	49.9	0.0	Filled Joint / Fracture
135.6	283.8	62.4	0.0	Filled Joint / Fracture

Depth	Azimuth	Dip	Aperture	Type
ft	deg TN	deg	mm	
135.7	27.9	57.4	0.0	Filled Joint / Fracture
136.3	169.1	74.9	0.0	Filled Joint / Fracture
136.7	94.5	77.9	0.0	Filled Joint / Fracture
137.0	261.2	50.0	0.0	Filled Joint / Fracture
137.0	241.0	31.7	0.0	Filled Joint / Fracture
137.4	330.1	57.8	0.0	Filled Joint / Fracture
137.5	101.8	73.1	0.0	Filled Joint / Fracture
137.8	228.5	21.6	0.0	Filled Joint / Fracture
137.9	220.9	72.1	0.0	Filled Joint / Fracture
138.0	55.9	57.2	0.0	Filled Joint / Fracture
138.0	190.5	19.3	0.0	Filled Joint / Fracture
138.2	180.4	17.2	0.0	Bedding / Banding / Foliation
138.4	256.7	39.3	0.0	Filled Joint / Fracture
138.4	259.4	21.6	0.0	Filled Joint / Fracture
138.5	210.3	20.7	0.0	Filled Joint / Fracture
138.7	98.7	66.7	0.0	Filled Joint / Fracture
139.3	208.1	25.1	0.0	Filled Joint / Fracture
139.4	97.9	65.3	0.0	Filled Joint / Fracture
139.4	147.5	73.0	0.0	Filled Joint / Fracture
139.5	96.7	81.4	0.0	Filled Joint / Fracture
139.5	14.0	60.6	0.0	Filled Joint / Fracture
140.1	222.6	16.3	0.0	Filled Joint / Fracture
140.2	256.3	37.2	0.0	Filled Joint / Fracture
140.7	122.5	79.9	0.0	Filled Joint / Fracture
141.6	62.8	41.1	0.0	Filled Joint / Fracture
142.0	107.0	57.2	0.0	Filled Joint / Fracture
142.4	145.6	29.5	0.0	Filled Joint / Fracture
142.9	219.9	27.7	0.0	Filled Joint / Fracture
143.0	229.2	32.7	0.0	Filled Joint / Fracture
143.8	258.2	34.7	0.0	Filled Joint / Fracture
143.9	259.9	51.8	0.0	Filled Joint / Fracture
144.3	69.3	70.6	0.0	Filled Joint / Fracture
144.9	235.5	29.5	0.0	Filled Joint / Fracture
144.9	47.9	54.2	0.0	Filled Joint / Fracture

Table 11. Borehole RC-21-001 (B-47),
Acoustic Televiewer Feature depth, dip azimuth, dip, aperture, and type

Depth	Azimuth	Dip	Aperture	Type
ft	deg TN	deg	mm	
37.4	6.5	36.7	0.0	Filled Joint / Fracture
42.5	24.6	41.2	0.0	Filled Joint / Fracture
46.4	155.9	68.3	0.0	Filled Joint / Fracture
50.0	247.1	66.4	0.0	Filled Joint / Fracture
50.5	19.0	62.8	0.0	Filled Joint / Fracture
51.4	78.9	55.0	0.0	Filled Joint / Fracture
52.0	79.9	39.4	0.0	Filled Joint / Fracture
52.2	99.5	68.9	0.0	Filled Joint / Fracture
53.0	218.2	40.3	0.0	Bedding / Banding / Foliation
53.3	304.8	25.8	0.0	Filled Joint / Fracture
54.4	297.1	65.6	0.0	Filled Joint / Fracture
55.6	278.1	70.3	0.0	Open Joint / Fracture
55.9	268.0	45.2	0.0	Open Joint / Fracture
56.5	266.5	23.5	0.0	Bedding / Banding / Foliation
56.7	233.1	53.7	0.0	Filled Joint / Fracture
56.8	305.6	40.4	0.0	Filled Joint / Fracture
57.4	267.0	46.0	0.0	Filled Joint / Fracture
87.6	39.5	12.2	0.0	Bedding / Banding / Foliation
88.0	226.8	5.3	0.0	Bedding / Banding / Foliation
89.7	184.3	48.1	0.0	Filled Joint / Fracture
101.7	3.2	35.3	0.0	Bedding / Banding / Foliation
102.3	274.0	9.1	0.0	Bedding / Banding / Foliation
106.9	232.9	66.4	0.0	Filled Joint / Fracture
117.8	295.6	8.4	0.0	Bedding / Banding / Foliation
119.5	289.8	6.3	0.0	Bedding / Banding / Foliation
119.8	280.9	46.0	0.0	Filled Joint / Fracture
120.7	310.4	53.4	0.0	Filled Joint / Fracture
125.7	183.7	10.3	0.0	Bedding / Banding / Foliation
132.5	236.8	44.9	0.0	Filled Joint / Fracture
138.3	237.2	37.6	0.0	Bedding / Banding / Foliation
140.3	216.6	55.7	0.0	Filled Joint / Fracture
142.7	204.4	34.3	0.0	Bedding / Banding / Foliation

Table 12. Borehole RC-21-001 (B-47),
Optical Televiewer Feature depth, dip azimuth, dip, aperture, and type

Depth	Azimuth	Dip	Aperture	Type
ft	deg TN	deg	mm	
40.2	198.2	41.2	0.0	Filled Joint / Fracture
41.6	58.9	35.8	0.0	Filled Joint / Fracture
43.0	60.4	46.8	0.0	Filled Joint / Fracture
45.8	92.5	42.7	0.0	Filled Joint / Fracture
46.6	159.5	64.0	0.0	Filled Joint / Fracture
48.2	172.3	46.5	0.0	Filled Joint / Fracture
49.0	214.7	46.8	0.0	Filled Joint / Fracture
50.4	243.6	64.5	0.0	Bedding / Banding / Foliation
52.5	72.3	32.4	0.0	Bedding / Banding / Foliation
52.9	289.4	52.8	0.0	Open Joint / Fracture
53.5	223.1	36.9	0.0	Bedding / Banding / Foliation
54.6	51.8	42.2	0.0	Open Joint / Fracture
56.1	271.4	69.4	0.0	Open Joint / Fracture
56.3	272.9	52.2	0.0	Open Joint / Fracture
56.9	272.9	22.0	0.0	Bedding / Banding / Foliation
57.2	231.2	50.3	0.0	Filled Joint / Fracture
58.2	32.9	47.8	0.0	Open Joint / Fracture
61.4	227.7	46.5	0.0	Filled Joint / Fracture
102.3	34.5	33.0	0.0	Bedding / Banding / Foliation
102.9	235.1	20.0	0.0	Bedding / Banding / Foliation
107.8	64.0	43.1	0.0	Filled Joint / Fracture
108.1	204.0	34.0	0.0	Filled Joint / Fracture

Table 13. Borehole RC-20-019 (B-50),
Suspension R1-R2 depths and P- and SH-wave velocities

**Summary of Compressional Wave Velocity, Shear Wave Velocity, and Poisson's Ratio
Based on Receiver-to-Receiver Travel Time Data - Borehole RC-20-019 (B-50)**

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	870	2080	0.39	4.0	270	640	0.39
14.8	960	2730	0.43	4.5	290	830	0.43
16.4	1000	2870	0.43	5.0	300	880	0.43
18.0	1110	2420	0.37	5.5	340	740	0.37
19.7	1010	2780	0.42	6.0	310	850	0.42
21.3	1020	3210	0.44	6.5	310	980	0.44
23.0	1310	2650	0.34	7.0	400	810	0.34
24.6	1160	2530	0.37	7.5	350	770	0.37
26.3	1090	3210	0.43	8.0	330	980	0.43
27.9	1120	3270	0.43	8.5	340	1000	0.43
29.5	1280	6670	0.48	9.0	390	2030	0.48
31.2	2360	7090	0.44	9.5	720	2160	0.44
32.8	2850	7580	0.42	10.0	870	2310	0.42
34.5	2470	7580	0.44	10.5	750	2310	0.44
36.1	2810	8130	0.43	11.0	860	2480	0.43
37.7	2470	7580	0.44	11.5	750	2310	0.44
39.4	2350	8770	0.46	12.0	720	2670	0.46
41.0	2350	7410	0.44	12.5	720	2260	0.44
42.7	2150	6410	0.44	13.0	660	1950	0.44
44.3	3660	8550	0.39	13.5	1120	2610	0.39
45.9	2540	6800	0.42	14.0	780	2070	0.42
47.6	3160	9010	0.43	14.5	960	2750	0.43
49.2	2530	9260	0.46	15.0	770	2820	0.46
50.9	2190	7580	0.45	15.5	670	2310	0.45
52.5	2490	11110	0.47	16.0	760	3390	0.47
54.1	3660	9260	0.41	16.5	1120	2820	0.41
55.8	3280	7090	0.36	17.0	1000	2160	0.36
57.4	3130	8330	0.42	17.5	950	2540	0.42
59.1	2860	9800	0.45	18.0	870	2990	0.45
60.7	2700	7940	0.43	18.5	820	2420	0.43
62.3	2480	6170	0.40	19.0	760	1880	0.40
64.0	2740	8770	0.45	19.5	840	2670	0.45
65.6	2940	9260	0.44	20.0	900	2820	0.44
67.3	3170	9520	0.44	20.5	970	2900	0.44
68.9	2940	9800	0.45	21.0	900	2990	0.45
70.5	3350	9010	0.42	21.5	1020	2750	0.42

**Summary of Compressional Wave Velocity, Shear Wave Velocity, and Poisson's Ratio
Based on Receiver-to-Receiver Travel Time Data - Borehole RC-20-019 (B-50)**

American Units			
Depth at Midpoint Between Receivers	Velocity		Poisson's Ratio
	V _s	V _p	
(ft)	(ft/s)	(ft/s)	
72.2	3400	8770	0.41
73.8	2570	9800	0.46
75.5	2200	8130	0.46

Metric Units			
Depth at Midpoint Between Receivers	Velocity		Poisson's Ratio
	V _s	V _p	
(m)	(m/s)	(m/s)	
22.0	1040	2670	0.41
22.5	780	2990	0.46
23.0	670	2480	0.46

Table 14. Borehole RC-20-019 (B-50),
Acoustic Televiewer Feature depth, dip azimuth, dip, aperture, and type

Depth	Azimuth	Dip	Aperture	Type
ft	deg TN	deg	mm	
11.1	318.3	52.0	0.0	Filled Joint / Fracture
16.1	274.5	48.2	0.0	Filled Joint / Fracture
22.2	282.0	34.0	0.0	Filled Joint / Fracture
24.1	281.8	33.0	0.0	Bedding / Banding / Foliation
25.3	87.4	45.4	0.0	Filled Joint / Fracture
26.5	337.1	54.0	0.0	Filled Joint / Fracture
27.5	331.4	56.6	0.0	Filled Joint / Fracture
32.2	29.1	51.8	0.0	Filled Joint / Fracture
33.7	350.8	47.1	0.0	Filled Joint / Fracture
36.8	223.1	41.7	0.0	Filled Joint / Fracture
37.5	241.4	49.5	0.0	Filled Joint / Fracture
37.9	188.1	44.0	0.0	Filled Joint / Fracture
38.7	200.7	49.1	0.0	Filled Joint / Fracture
39.4	168.4	45.3	0.0	Filled Joint / Fracture
39.8	181.5	58.3	0.0	Filled Joint / Fracture
40.8	27.3	44.4	0.0	Filled Joint / Fracture
41.7	11.4	21.8	0.0	Filled Joint / Fracture
42.2	63.6	36.2	0.0	Filled Joint / Fracture
43.4	50.1	27.3	0.0	Filled Joint / Fracture
44.3	20.5	60.5	0.0	Filled Joint / Fracture
45.1	284.1	34.3	0.0	Filled Joint / Fracture
46.0	303.6	61.1	0.0	Filled Joint / Fracture
46.8	294.2	72.6	0.0	Filled Joint / Fracture
49.8	334.2	57.0	0.0	Filled Joint / Fracture
50.9	18.0	41.6	0.0	Filled Joint / Fracture
51.3	13.1	40.5	0.0	Filled Joint / Fracture
51.8	346.7	41.6	0.0	Filled Joint / Fracture
52.3	176.3	45.9	0.0	Filled Joint / Fracture
52.3	52.2	37.2	0.0	Filled Joint / Fracture
52.8	37.3	41.0	0.0	Filled Joint / Fracture
53.1	276.9	57.5	0.0	Filled Joint / Fracture
53.6	83.2	4.8	0.0	Filled Joint / Fracture
53.8	55.3	37.5	0.0	Filled Joint / Fracture
54.4	45.8	59.9	0.0	Filled Joint / Fracture
54.6	340.0	13.3	0.0	Filled Joint / Fracture
54.8	57.0	53.4	0.0	Filled Joint / Fracture

Depth	Azimuth	Dip	Aperture	Type
ft	deg TN	deg	mm	
55.2	38.1	4.2	0.0	Filled Joint / Fracture
56.1	63.3	69.5	0.0	Filled Joint / Fracture
56.4	181.5	61.7	0.0	Filled Joint / Fracture
56.8	48.1	43.9	0.0	Filled Joint / Fracture
57.1	15.0	50.7	0.0	Filled Joint / Fracture
57.6	37.2	43.1	0.0	Filled Joint / Fracture
57.7	32.9	30.7	0.0	Filled Joint / Fracture
57.8	46.1	43.8	0.0	Filled Joint / Fracture
60.7	192.6	30.0	0.0	Filled Joint / Fracture
62.1	270.8	34.7	0.0	Filled Joint / Fracture
63.5	5.2	28.2	0.0	Filled Joint / Fracture
63.7	243.4	38.3	0.0	Filled Joint / Fracture
64.1	142.6	57.4	0.0	Filled Joint / Fracture
64.3	341.7	32.1	0.0	Filled Joint / Fracture
66.4	1.6	34.1	0.0	Filled Joint / Fracture
66.6	331.6	11.4	0.0	Filled Joint / Fracture
67.2	36.0	45.5	0.0	Filled Joint / Fracture
67.5	312.1	12.4	0.0	Filled Joint / Fracture
67.6	22.7	17.6	0.0	Filled Joint / Fracture
67.6	30.1	32.2	0.0	Filled Joint / Fracture
68.3	123.1	18.9	0.0	Filled Joint / Fracture
68.4	134.0	68.5	0.0	Filled Joint / Fracture
68.5	32.7	39.1	0.0	Filled Joint / Fracture
69.4	325.4	64.8	0.0	Filled Joint / Fracture
69.9	9.5	42.1	0.0	Filled Joint / Fracture
70.1	334.3	41.3	0.0	Filled Joint / Fracture
70.4	48.8	32.5	0.0	Filled Joint / Fracture
70.6	201.6	17.4	0.0	Filled Joint / Fracture
71.0	165.7	48.3	0.0	Filled Joint / Fracture
71.1	170.0	50.2	0.0	Filled Joint / Fracture
71.3	315.4	68.2	0.0	Filled Joint / Fracture
71.4	181.3	51.9	0.0	Filled Joint / Fracture
71.5	182.5	51.3	0.0	Filled Joint / Fracture
71.6	166.5	29.2	0.0	Filled Joint / Fracture
72.0	26.4	55.5	0.0	Filled Joint / Fracture
73.1	22.8	30.3	0.0	Filled Joint / Fracture
74.6	309.1	8.0	0.0	Bedding / Banding / Foliation
74.9	315.0	13.2	0.0	Bedding / Banding / Foliation
80.9	51.4	32.2	0.0	Filled Joint / Fracture

Depth	Azimuth	Dip	Aperture	Type
ft	deg TN	deg	mm	
82.0	43.3	36.7	0.0	Filled Joint / Fracture
82.4	264.5	35.2	0.0	Filled Joint / Fracture
82.5	35.3	29.2	0.0	Filled Joint / Fracture
82.8	301.7	59.8	0.0	Filled Joint / Fracture
83.3	73.5	45.4	0.0	Filled Joint / Fracture
83.6	49.4	9.7	0.0	Bedding / Banding / Foliation
86.2	34.0	14.3	0.0	Bedding / Banding / Foliation
87.5	242.2	78.0	0.0	Filled Joint / Fracture
87.6	118.6	30.2	0.0	Filled Joint / Fracture
87.6	171.3	76.9	0.0	Filled Joint / Fracture
87.8	153.4	5.1	0.0	Filled Joint / Fracture
88.0	119.0	14.6	0.0	Filled Joint / Fracture
88.5	286.0	29.3	0.0	Filled Joint / Fracture
89.9	252.4	46.6	0.0	Filled Joint / Fracture
91.1	193.7	22.3	0.0	Bedding / Banding / Foliation
91.5	350.8	13.9	0.0	Bedding / Banding / Foliation
92.3	34.7	8.0	0.0	Bedding / Banding / Foliation
101.7	37.4	16.9	0.0	Bedding / Banding / Foliation
102.3	69.3	17.3	0.0	Bedding / Banding / Foliation
103.1	100.2	9.7	0.0	Bedding / Banding / Foliation
103.6	107.4	5.8	0.0	Bedding / Banding / Foliation
111.0	65.3	7.2	0.0	Bedding / Banding / Foliation
111.3	40.1	43.2	0.0	Filled Joint / Fracture
111.5	56.2	5.3	0.0	Bedding / Banding / Foliation
112.5	21.3	30.0	0.0	Filled Joint / Fracture
117.2	340.4	14.5	0.0	Bedding / Banding / Foliation
118.2	357.9	27.9	0.0	Bedding / Banding / Foliation
139.0	248.8	48.7	0.0	Filled Joint / Fracture
139.7	190.7	14.3	0.0	Bedding / Banding / Foliation

Table 15. Borehole RC-20-016 (WP-3),
Optical Televiewer Feature depth, dip azimuth, dip, aperture, and type

Depth	Azimuth	Dip	Aperture	Type
ft	deg TN	deg	mm	
125.4	321.3	48.8	0.0	Open Joint / Fracture
126.0	35.5	7.1	0.0	Open Joint / Fracture
126.4	58.2	13.7	0.0	Open Joint / Fracture
126.8	273.0	7.6	0.0	Bedding / Banding / Foliation
127.0	34.6	48.8	0.0	Filled Joint / Fracture
127.3	22.0	54.3	0.0	Filled Joint / Fracture
128.1	305.1	54.8	0.0	Filled Joint / Fracture
128.6	258.8	34.8	0.0	Filled Joint / Fracture
129.9	210.4	20.3	0.0	Bedding / Banding / Foliation
131.1	261.2	76.8	0.0	Filled Joint / Fracture
131.9	123.0	62.5	0.0	Filled Joint / Fracture
131.9	172.0	61.1	0.0	Open Joint / Fracture
133.5	338.7	31.9	0.0	Bedding / Banding / Foliation
141.9	85.8	11.6	0.0	Open Joint / Fracture
145.4	151.0	56.9	0.0	Filled Joint / Fracture
147.0	101.8	69.4	0.0	Filled Joint / Fracture
147.1	96.2	24.4	0.0	Filled Joint / Fracture
148.1	358.0	75.5	0.0	Filled Joint / Fracture
148.9	68.4	21.1	0.0	Bedding / Banding / Foliation
149.2	4.7	50.5	0.0	Open Joint / Fracture
151.1	123.4	58.7	0.0	Open Joint / Fracture
160.7	78.3	56.1	0.0	Open Joint / Fracture
160.8	213.3	15.0	0.0	Filled Joint / Fracture
161.2	283.3	12.7	0.0	Filled Joint / Fracture
162.3	264.9	29.7	0.0	Filled Joint / Fracture
162.4	278.9	52.5	0.0	Filled Joint / Fracture
165.7	268.5	72.7	0.0	Filled Joint / Fracture
166.0	14.5	61.1	0.0	Filled Joint / Fracture
166.7	83.6	44.5	0.0	Filled Joint / Fracture
167.8	247.7	66.1	0.0	Filled Joint / Fracture
168.3	307.2	58.4	0.0	Filled Joint / Fracture
168.5	191.3	14.6	0.0	Filled Joint / Fracture
168.9	173.4	27.5	0.0	Filled Joint / Fracture
171.1	102.9	50.4	0.0	Filled Joint / Fracture
171.9	150.2	59.6	0.0	Filled Joint / Fracture
171.9	356.8	31.0	0.0	Filled Joint / Fracture

Depth	Azimuth	Dip	Aperture	Type
ft	deg TN	deg	mm	
172.1	112.9	12.5	0.0	Filled Joint / Fracture
172.3	315.7	38.3	0.0	Filled Joint / Fracture
173.0	322.2	53.8	0.0	Open Joint / Fracture
175.5	268.4	70.3	0.0	Open Joint / Fracture
177.0	254.4	31.3	0.0	Open Joint / Fracture
178.2	163.2	35.6	0.0	Filled Joint / Fracture
178.7	255.5	33.7	0.0	Filled Joint / Fracture
178.8	233.1	50.2	0.0	Open Joint / Fracture
180.5	128.8	79.3	0.0	Filled Joint / Fracture
180.8	337.7	38.1	0.0	Filled Joint / Fracture
181.5	160.7	13.8	0.0	Filled Joint / Fracture
184.1	240.1	25.0	0.0	Filled Joint / Fracture
184.9	261.4	34.9	0.0	Bedding / Banding / Foliation
185.1	268.5	35.0	0.0	Bedding / Banding / Foliation
186.3	32.1	0.2	0.0	Bedding / Banding / Foliation
187.2	208.2	42.1	0.0	Filled Joint / Fracture
187.9	126.4	27.5	0.0	Open Joint / Fracture
189.3	289.8	61.8	0.0	Filled Joint / Fracture
189.6	75.9	59.4	0.0	Filled Joint / Fracture
189.6	113.3	48.1	0.0	Filled Joint / Fracture
190.3	115.2	55.8	0.0	Filled Joint / Fracture
190.7	114.2	51.1	0.0	Filled Joint / Fracture
191.1	69.1	34.8	0.0	Filled Joint / Fracture
191.3	116.2	39.7	0.0	Filled Joint / Fracture
191.8	187.8	14.2	0.0	Filled Joint / Fracture
193.5	187.5	33.9	0.0	Filled Joint / Fracture
197.0	252.5	56.8	0.0	Open Joint / Fracture
202.0	319.6	67.6	0.0	Open Joint / Fracture
202.1	75.1	6.0	0.0	Filled Joint / Fracture
202.3	197.7	18.8	0.0	Bedding / Banding / Foliation
202.5	269.5	33.8	0.0	Filled Joint / Fracture
203.4	66.5	60.2	0.0	Filled Joint / Fracture
203.9	159.2	12.9	0.0	Filled Joint / Fracture
204.3	44.3	28.5	0.0	Filled Joint / Fracture
204.6	75.3	33.4	0.0	Filled Joint / Fracture
205.1	190.1	13.7	0.0	Filled Joint / Fracture
207.0	278.9	83.8	0.0	Open Joint / Fracture
208.1	12.9	67.5	0.0	Open Joint / Fracture
209.0	261.4	54.0	0.0	Open Joint / Fracture

Depth	Azimuth	Dip	Aperture	Type
ft	deg TN	deg	mm	
209.0	131.9	63.9	0.0	Open Joint / Fracture
209.6	130.3	57.2	0.0	Filled Joint / Fracture
209.8	168.1	36.8	0.0	Filled Joint / Fracture
210.5	213.0	19.1	0.0	Open Joint / Fracture
211.4	197.5	56.6	0.0	Filled Joint / Fracture
211.7	200.5	49.3	0.0	Filled Joint / Fracture
212.1	184.6	74.7	0.0	Open Joint / Fracture
213.4	312.3	74.1	0.0	Open Joint / Fracture
216.3	123.2	67.7	0.0	Filled Joint / Fracture
217.7	267.5	30.3	0.0	Bedding / Banding / Foliation
220.0	181.9	58.8	0.0	Open Joint / Fracture
222.9	91.1	68.8	0.0	Filled Joint / Fracture
225.1	203.8	57.9	0.0	Open Joint / Fracture
225.6	205.8	36.7	0.0	Open Joint / Fracture
227.1	148.5	75.6	0.0	Bedding / Banding / Foliation
228.9	99.0	45.4	0.0	Open Joint / Fracture
230.8	156.2	51.2	0.0	Open Joint / Fracture
233.4	285.1	50.8	0.0	Bedding / Banding / Foliation
237.7	340.2	38.9	0.0	Filled Joint / Fracture
240.5	269.8	10.3	0.0	Bedding / Banding / Foliation
241.5	210.9	74.8	0.0	Open Joint / Fracture
242.8	91.9	71.9	0.0	Filled Joint / Fracture
243.8	239.8	61.0	0.0	Filled Joint / Fracture
245.0	263.2	47.2	0.0	Filled Joint / Fracture
247.5	273.5	58.3	0.0	Filled Joint / Fracture
250.2	263.3	60.4	0.0	Filled Joint / Fracture
250.5	299.9	33.3	0.0	Filled Joint / Fracture
251.0	193.9	22.1	0.0	Bedding / Banding / Foliation
251.3	182.1	20.5	0.0	Bedding / Banding / Foliation
252.0	217.4	25.0	0.0	Bedding / Banding / Foliation
252.9	252.7	24.2	2.2	Bedding / Banding / Foliation
253.2	273.0	24.2	0.0	Bedding / Banding / Foliation
254.0	1.9	55.6	0.0	Open Joint / Fracture
254.6	30.7	39.5	0.0	Filled Joint / Fracture
254.9	270.0	61.5	0.0	Filled Joint / Fracture
255.2	82.7	55.3	0.0	Filled Joint / Fracture
256.9	158.2	77.0	0.0	Filled Joint / Fracture
257.4	64.2	48.3	0.0	Filled Joint / Fracture
258.0	252.8	80.7	0.0	Filled Joint / Fracture

Depth	Azimuth	Dip	Aperture	Type
ft	deg TN	deg	mm	
258.4	258.1	29.2	0.0	Filled Joint / Fracture
258.7	255.6	57.8	0.0	Filled Joint / Fracture
259.5	250.8	44.5	0.0	Open Joint / Fracture
259.7	265.0	52.8	0.0	Open Joint / Fracture
259.8	256.1	68.3	0.0	Filled Joint / Fracture
260.0	63.7	42.0	0.0	Filled Joint / Fracture
261.2	269.4	52.8	0.0	Open Joint / Fracture
262.3	223.8	35.6	0.0	Filled Joint / Fracture
263.3	235.9	48.9	0.0	Open Joint / Fracture
263.4	139.3	60.8	0.0	Open Joint / Fracture
264.5	255.4	66.4	0.0	Open Joint / Fracture
265.1	257.3	66.6	0.0	Open Joint / Fracture
265.5	121.6	78.6	0.0	Open Joint / Fracture
266.0	153.2	58.7	0.0	Filled Joint / Fracture
266.3	220.5	63.8	0.0	Filled Joint / Fracture
267.2	3.6	61.7	0.0	Filled Joint / Fracture
267.9	25.7	41.4	0.0	Filled Joint / Fracture
268.2	53.8	33.4	0.0	Bedding / Banding / Foliation
269.7	2.7	40.1	0.0	Filled Joint / Fracture
271.2	37.5	35.1	0.0	Filled Joint / Fracture

Table 16. Summary of PS Suspension Data Quality Evaluation Using Five Criteria

	Criteria	RC-20-014 (B-29)	RC-20-011 (B-32)	RC-20-019 (B-50)
1	Consistent data between receiver to receiver (R1 – R2) and source to receiver (S – R1) data.	Yes.	Yes.	Yes.
2	Consistency between data from adjacent depth intervals.	Yes	Yes	Yes
3	Consistent relationship between P-wave and S _H -wave (excluding transition to saturated soils)	Yes	Yes	Yes Saturation at 30 ft.
4	Clarity of P-wave and S _H -wave onset, as well as damping of later oscillations.	This is good data. P-wave was difficult to pick at times due to the fractured rock	This is good data. P-wave was difficult to pick at times due to the fractured rock	This is good data. P-wave was difficult to pick due to the fractured rock
5	Consistency of profile between adjacent borings, if available.	Upper part is similar to the RC-20-011 (B-32) log, with a depth offset	Similar to the upper part of the RC-20-014 (B-29) log, albeit at shallower depth	This is the only soil borehole logged during this program. Transition to rock at about 31 ft.

APPENDIX A

SUSPENSION VELOCITY MEASUREMENT SOURCE TO RECEIVER ANALYSIS RESULTS

LAST CHANCE GRADE BOREHOLE B-29 **Source to Receiver and Receiver to Receiver Analysis**

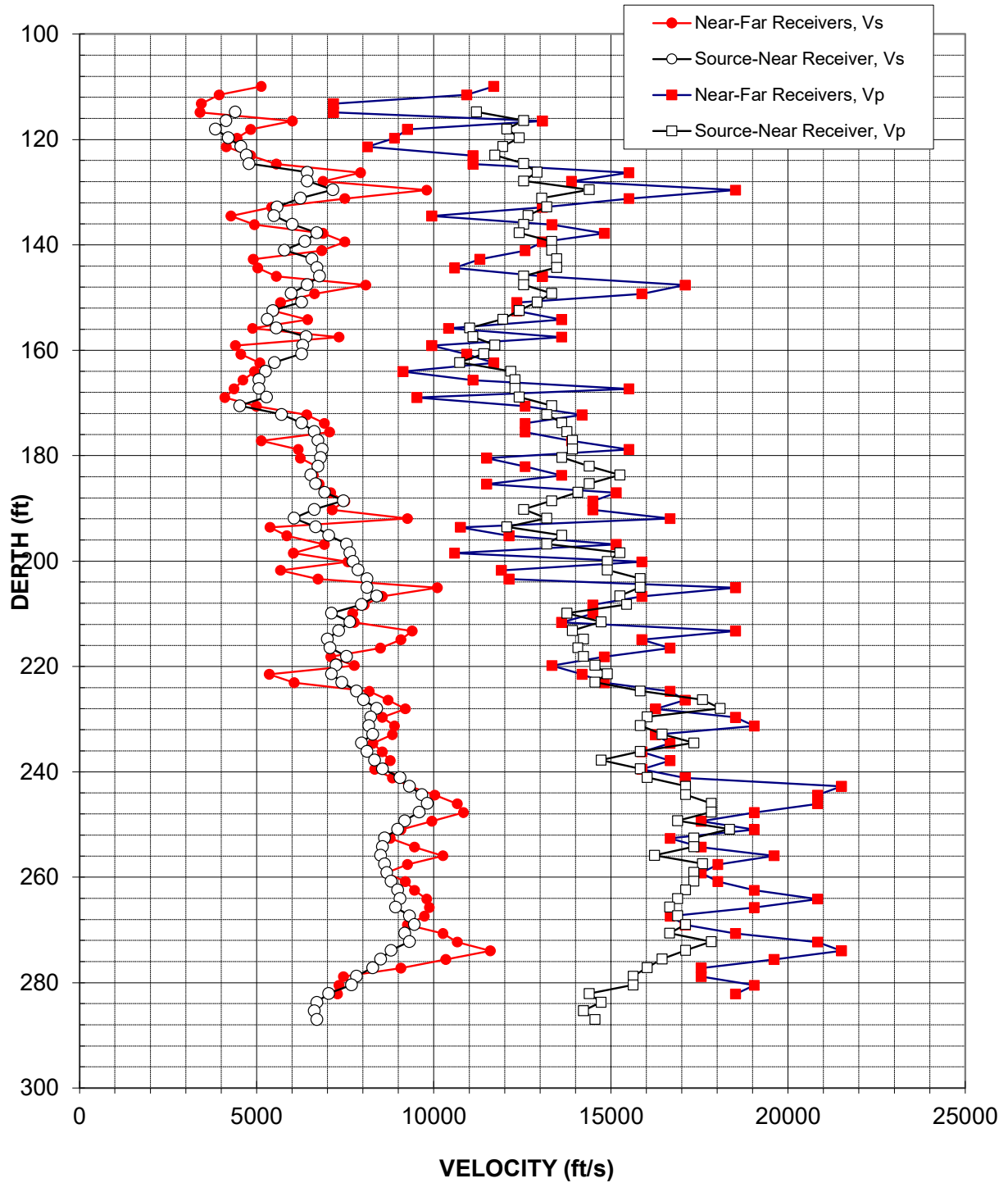


Figure A-1: Borehole RC-20-014 (B-29), Suspension S-R1 P- and S_H -wave velocities

Table A-1. Borehole RC-20-014 (B-29), S-R1 analysis P- and S_H-wave data

**Summary of Compressional Wave Velocity, Shear Wave Velocity, and Poisson's Ratio
Based on Source-to-Receiver Travel Time Data - Borehole RC-20-014 (B-29)**

American Units			
Depth at Midpoint Between Source and Near Receiver	Velocity		Poisson's Ratio
	V _s	V _p	
(ft)	(ft/s)	(ft/s)	
114.7	4400	11200	0.41
116.4	4140	12530	0.44
118.0	3840	12060	0.44
119.7	4190	12410	0.44
121.3	4550	11940	0.41
122.9	4710	11720	0.40
124.6	4780	12530	0.42
126.2	6430	12920	0.34
127.9	6430	12530	0.32
129.5	7150	14390	0.34
131.1	6240	13050	0.35
132.8	5580	13190	0.39
134.4	5480	12660	0.38
136.1	6000	12530	0.35
137.7	6700	12410	0.29
139.3	6360	13330	0.35
141.0	5780	13330	0.38
142.6	6560	13470	0.34
144.3	6700	13470	0.34
145.9	6770	12530	0.29
147.6	6430	12530	0.32
149.2	5970	13330	0.37
150.8	6270	12920	0.35
152.5	5460	12410	0.38
154.1	5300	11940	0.38
155.8	5550	11010	0.33
157.4	6390	11110	0.25
159.0	6300	11720	0.30
160.7	6270	11410	0.28
162.3	5500	10730	0.32
164.0	5250	12170	0.39
165.6	5060	12290	0.40
167.2	5060	12290	0.40
168.9	5280	12410	0.39
170.5	4520	13330	0.43
172.2	5700	13190	0.38
173.8	6270	13610	0.37

Metric Units			
Depth at Midpoint Between Source and Near Receiver	Velocity		Poisson's Ratio
	V _s	V _p	
(m)	(m/s)	(m/s)	
35.0	1340	3410	0.41
35.5	1260	3820	0.44
36.0	1170	3680	0.44
36.5	1280	3780	0.44
37.0	1390	3640	0.41
37.5	1430	3570	0.40
38.0	1460	3820	0.42
38.5	1960	3940	0.34
39.0	1960	3820	0.32
39.5	2180	4380	0.34
40.0	1900	3980	0.35
40.5	1700	4020	0.39
41.0	1670	3860	0.38
41.5	1830	3820	0.35
42.0	2040	3780	0.29
42.5	1940	4060	0.35
43.0	1760	4060	0.38
43.5	2000	4110	0.34
44.0	2040	4110	0.34
44.5	2060	3820	0.29
45.0	1960	3820	0.32
45.5	1820	4060	0.37
46.0	1910	3940	0.35
46.5	1660	3780	0.38
47.0	1610	3640	0.38
47.5	1690	3360	0.33
48.0	1950	3380	0.25
48.5	1920	3570	0.30
49.0	1910	3480	0.28
49.5	1680	3270	0.32
50.0	1600	3710	0.39
50.5	1540	3750	0.40
51.0	1540	3750	0.40
51.5	1610	3780	0.39
52.0	1380	4060	0.43
52.5	1740	4020	0.38
53.0	1910	4150	0.37

**Summary of Compressional Wave Velocity, Shear Wave Velocity, and Poisson's Ratio
Based on Source-to-Receiver Travel Time Data - Borehole RC-20-014 (B-29)**

American Units			
Depth at Midpoint Between Source and Near Receiver	Velocity		Poisson' s Ratio
	V _s	V _p	
(ft)	(ft/s)	(ft/s)	
175.4	6630	13760	0.35
177.1	6730	13910	0.35
178.7	6840	13910	0.34
180.4	6810	13610	0.33
182.0	6730	14390	0.36
183.6	6530	15250	0.39
185.3	6660	14390	0.36
186.9	6920	14070	0.34
188.6	7450	13330	0.27
190.2	6630	12530	0.31
191.8	6060	13190	0.37
193.5	6660	12060	0.28
195.1	7030	13610	0.32
196.8	7540	13190	0.26
198.4	7630	15250	0.33
200.0	7720	14890	0.32
201.7	7860	14890	0.31
203.3	8120	15830	0.32
205.0	8120	15830	0.32
206.6	8380	15250	0.28
208.2	7960	15440	0.32
209.9	7110	13760	0.32
211.5	7630	14720	0.32
213.2	7320	13910	0.31
214.8	6990	14220	0.34
216.4	7070	14070	0.33
218.1	7540	14220	0.30
219.7	7230	14550	0.34
221.4	7110	14890	0.35
223.0	7400	14550	0.33
224.7	7810	15830	0.34
226.3	8010	17580	0.37
227.9	8380	18090	0.36
229.6	8220	16030	0.32
231.2	8170	15830	0.32
232.9	8270	16440	0.33
234.5	7960	17340	0.37
236.1	8120	15830	0.32
237.8	8330	14720	0.26
239.4	8550	15830	0.29

Metric Units			
Depth at Midpoint Between Source and Near Receiver	Velocity		Poisson' s Ratio
	V _s	V _p	
(m)	(m/s)	(m/s)	
53.5	2020	4190	0.35
54.0	2050	4240	0.35
54.5	2090	4240	0.34
55.0	2070	4150	0.33
55.5	2050	4380	0.36
56.0	1990	4650	0.39
56.5	2030	4380	0.36
57.0	2110	4290	0.34
57.5	2270	4060	0.27
58.0	2020	3820	0.31
58.5	1850	4020	0.37
59.0	2030	3680	0.28
59.5	2140	4150	0.32
60.0	2300	4020	0.26
60.5	2320	4650	0.33
61.0	2350	4540	0.32
61.5	2400	4540	0.31
62.0	2470	4820	0.32
62.5	2470	4820	0.32
63.0	2560	4650	0.28
63.5	2430	4710	0.32
64.0	2170	4190	0.32
64.5	2320	4490	0.32
65.0	2230	4240	0.31
65.5	2130	4340	0.34
66.0	2160	4290	0.33
66.5	2300	4340	0.30
67.0	2210	4440	0.34
67.5	2170	4540	0.35
68.0	2260	4440	0.33
68.5	2380	4820	0.34
69.0	2440	5360	0.37
69.5	2560	5510	0.36
70.0	2510	4880	0.32
70.5	2490	4820	0.32
71.0	2520	5010	0.33
71.5	2430	5290	0.37
72.0	2470	4820	0.32
72.5	2540	4490	0.26
73.0	2610	4820	0.29

**Summary of Compressional Wave Velocity, Shear Wave Velocity, and Poisson's Ratio
Based on Source-to-Receiver Travel Time Data - Borehole RC-20-014 (B-29)**

American Units			
Depth at Midpoint Between Source and Near Receiver	Velocity		Poisson' s Ratio
	V _s	V _p	
(ft)	(ft/s)	(ft/s)	
241.1	9040	16030	0.27
242.7	9310	17110	0.29
244.3	9660	17110	0.27
246.0	9810	17830	0.28
247.6	9590	17830	0.30
249.3	9170	16880	0.29
250.9	8980	18350	0.34
252.5	8610	17340	0.34
254.2	8550	17340	0.34
255.8	8500	16230	0.31
257.5	8610	17580	0.34
259.1	8670	17340	0.33
260.7	8790	17340	0.33
262.4	8980	17110	0.31
264.0	9040	16880	0.30
265.7	8920	16660	0.30
267.3	9310	16880	0.28
268.9	9450	17110	0.28
270.6	9170	16660	0.28
272.2	9310	17830	0.31
273.9	8790	17110	0.32
275.5	8500	16440	0.32
277.1	8270	16030	0.32
278.8	7810	15630	0.33
280.4	7670	15630	0.34
282.1	7030	14390	0.34
283.7	6700	14720	0.37
285.3	6630	14220	0.36
287.0	6700	14550	0.37

Metric Units			
Depth at Midpoint Between Source and Near Receiver	Velocity		Poisson' s Ratio
	V _s	V _p	
(m)	(m/s)	(m/s)	
73.5	2760	4880	0.27
74.0	2840	5210	0.29
74.5	2950	5210	0.27
75.0	2990	5430	0.28
75.5	2920	5430	0.30
76.0	2800	5150	0.29
76.5	2740	5590	0.34
77.0	2630	5290	0.34
77.5	2610	5290	0.34
78.0	2590	4950	0.31
78.5	2630	5360	0.34
79.0	2640	5290	0.33
79.5	2680	5290	0.33
80.0	2740	5210	0.31
80.5	2760	5150	0.30
81.0	2720	5080	0.30
81.5	2840	5150	0.28
82.0	2880	5210	0.28
82.5	2800	5080	0.28
83.0	2840	5430	0.31
83.5	2680	5210	0.32
84.0	2590	5010	0.32
84.5	2520	4880	0.32
85.0	2380	4760	0.33
85.5	2340	4760	0.34
86.0	2140	4380	0.34
86.5	2040	4490	0.37
87.0	2020	4340	0.36
87.5	2040	4440	0.37

LAST CHANCE GRADE BOREHOLE B-32
Source to Receiver and Receiver to Receiver Analysis

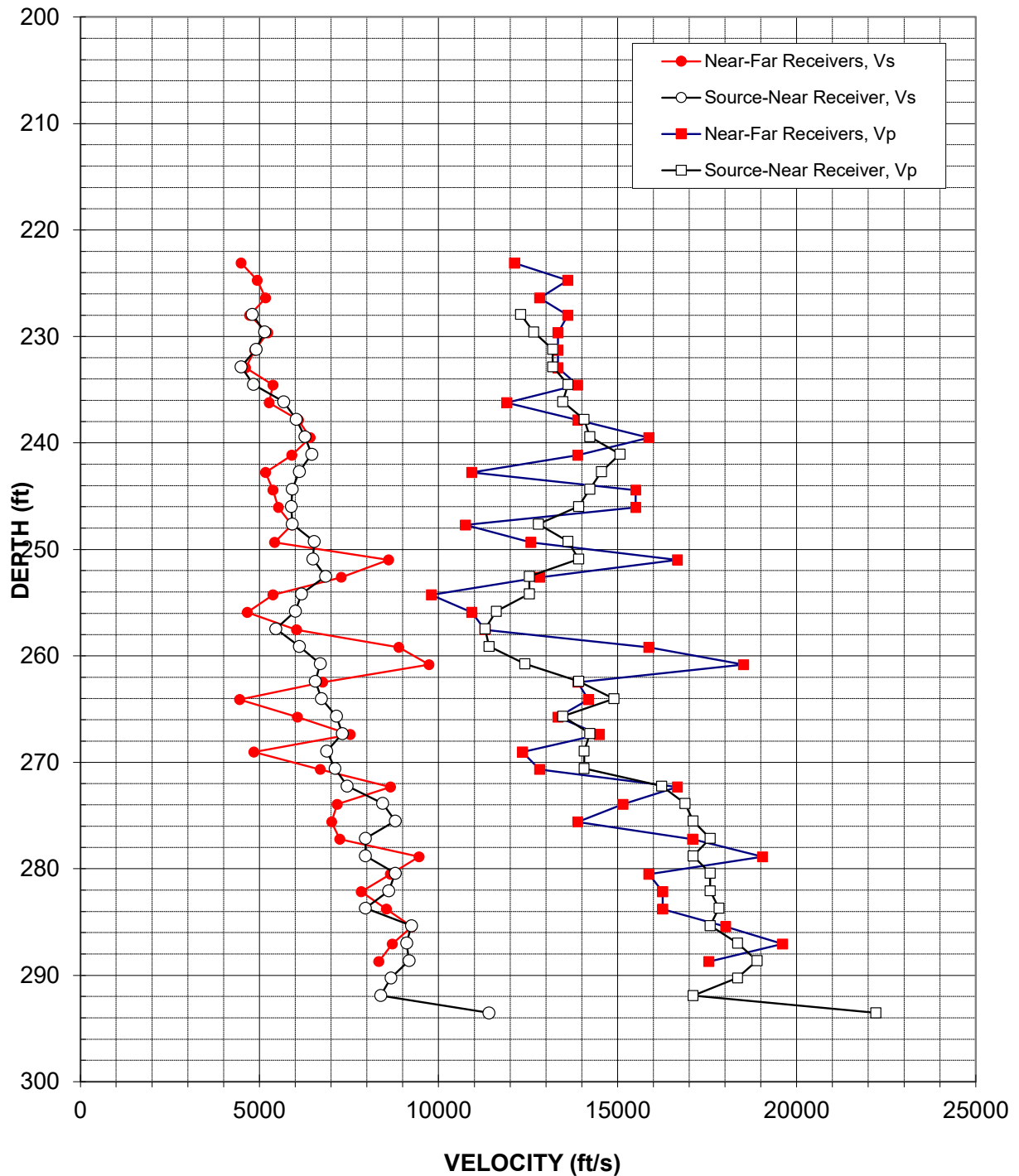


Figure A-2: Borehole RC-20-011 (B-32), Suspension S-R1 P- and S_H -wave velocities

Table A-2. Borehole RC-20-011 (B-32), S-R1 analysis P- and SH-wave data

**Summary of Compressional Wave Velocity, Shear Wave Velocity, and Poisson's Ratio
Based on Source-to-Receiver Travel Time Data - Borehole RC-20-011 (B-32)**

American Units			
Depth at Midpoint Between Source and Near Receiver	Velocity		Poisson' s Ratio
	V _s	V _p	
(ft)	(ft/s)	(ft/s)	
227.9	4800	12290	0.41
229.6	5150	12660	0.40
231.2	4910	13190	0.42
232.9	4490	13190	0.43
234.5	4830	13610	0.43
236.1	5680	13470	0.39
237.8	6030	14070	0.39
239.4	6270	14220	0.38
241.1	6460	15070	0.39
242.7	6120	14550	0.39
244.3	5920	14220	0.40
246.0	5890	13910	0.39
247.6	5920	12790	0.36
249.3	6530	13610	0.35
250.9	6490	13910	0.36
252.5	6840	12530	0.29
254.2	6180	12530	0.34
255.8	6000	11610	0.32
257.5	5460	11300	0.35
259.1	6120	11410	0.30
260.7	6700	12410	0.29
262.4	6560	13910	0.36
264.0	6730	14890	0.37
265.7	7150	13470	0.30
267.3	7320	14220	0.32
268.9	6880	14070	0.34
270.6	7110	14070	0.33
272.2	7450	16230	0.37
273.9	8440	16880	0.33
275.5	8790	17110	0.32
277.1	7960	17580	0.37
278.8	7960	17110	0.36
280.4	8790	17580	0.33
282.1	8610	17580	0.34
283.7	7960	17830	0.38
285.3	9240	17580	0.31

Metric Units			
Depth at Midpoint Between Source and Near Receiver	Velocity		Poisson' s Ratio
	V _s	V _p	
(m)	(m/s)	(m/s)	
69.5	1460	3750	0.41
70.0	1570	3860	0.40
70.5	1500	4020	0.42
71.0	1370	4020	0.43
71.5	1470	4150	0.43
72.0	1730	4110	0.39
72.5	1840	4290	0.39
73.0	1910	4340	0.38
73.5	1970	4590	0.39
74.0	1860	4440	0.39
74.5	1800	4340	0.40
75.0	1790	4240	0.39
75.5	1800	3900	0.36
76.0	1990	4150	0.35
76.5	1980	4240	0.36
77.0	2090	3820	0.29
77.5	1880	3820	0.34
78.0	1830	3540	0.32
78.5	1660	3450	0.35
79.0	1860	3480	0.30
79.5	2040	3780	0.29
80.0	2000	4240	0.36
80.5	2050	4540	0.37
81.0	2180	4110	0.30
81.5	2230	4340	0.32
82.0	2100	4290	0.34
82.5	2170	4290	0.33
83.0	2270	4950	0.37
83.5	2570	5150	0.33
84.0	2680	5210	0.32
84.5	2430	5360	0.37
85.0	2430	5210	0.36
85.5	2680	5360	0.33
86.0	2630	5360	0.34
86.5	2430	5430	0.38
87.0	2820	5360	0.31

**Summary of Compressional Wave Velocity, Shear Wave Velocity, and Poisson's Ratio
Based on Source-to-Receiver Travel Time Data - Borehole RC-20-011 (B-32)**

American Units			
Depth at Midpoint Between Source and Near Receiver	Velocity		Poisson' s Ratio
	V _s	V _p	
(ft)	(ft/s)	(ft/s)	
287.0	9110	18350	0.34
288.6	9170	18900	0.35
290.3	8670	18350	0.36
291.9	8380	17110	0.34
293.5	11410	22210	0.32

Metric Units			
Depth at Midpoint Between Source and Near Receiver	Velocity		Poisson' s Ratio
	V _s	V _p	
(m)	(m/s)	(m/s)	
87.5	2780	5590	0.34
88.0	2800	5760	0.35
88.5	2640	5590	0.36
89.0	2560	5210	0.34
89.5	3480	6770	0.32

LAST CHANCE GRADE BOREHOLE B-50 **Source to Receiver and Receiver to Receiver Analysis**

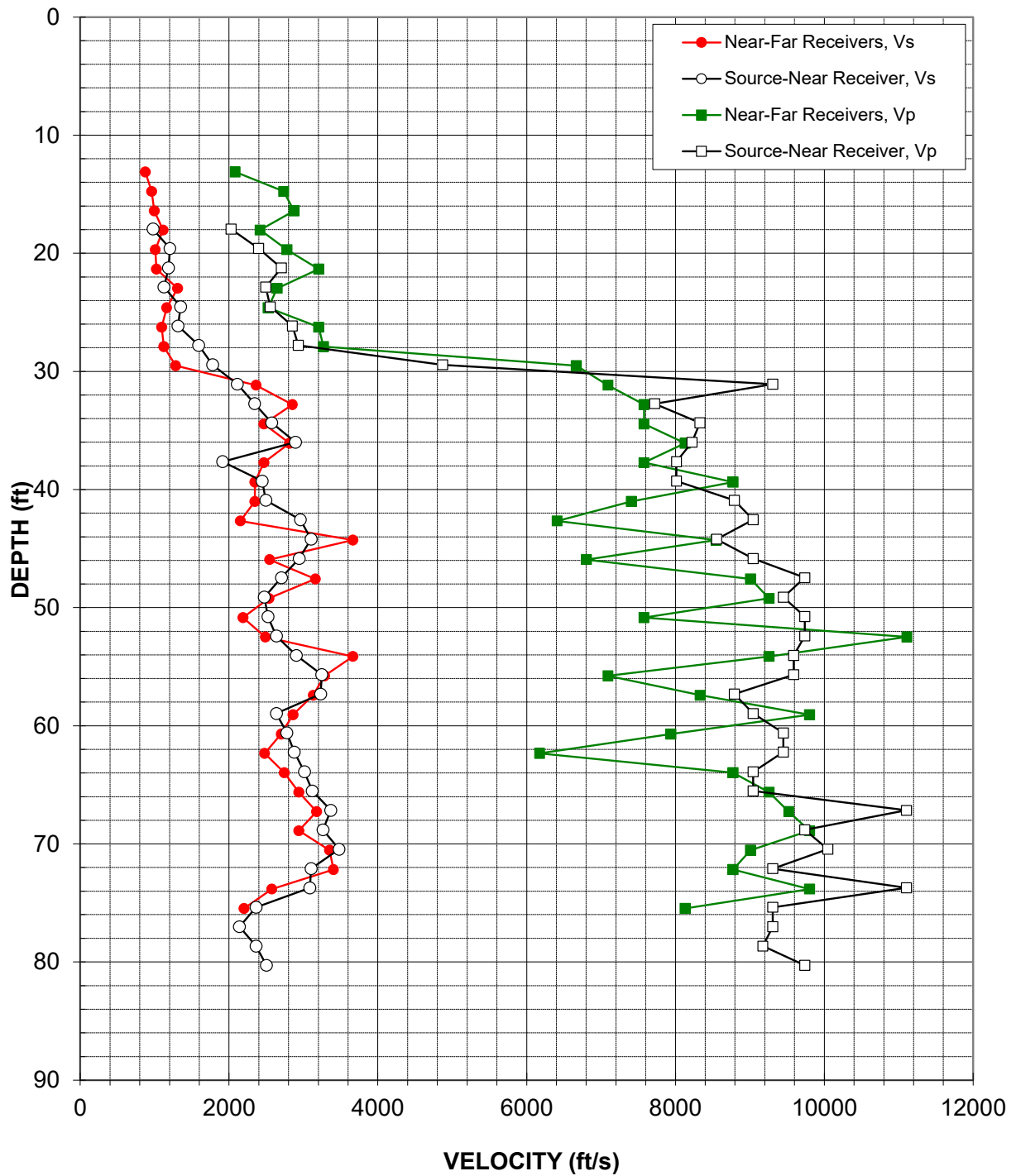


Figure A-3: Borehole RC-20-019 (B-50), Suspension S-R1 P- and S_H-wave velocities

Table A-3. Borehole RC-20-019 (B-50), S-R1 analysis P- and S_H-wave data

**Summary of Compressional Wave Velocity, Shear Wave Velocity, and Poisson's Ratio
Based on Source-to-Receiver Travel Time Data - Borehole RC-20-019 (B-50)**

American Units			
Depth at Midpoint Between Source and Near Receiver	Velocity		Poisson's Ratio
	V _s	V _p	
(ft)	(ft/s)	(ft/s)	
18.0	980	2030	0.35
19.6	1200	2400	0.33
21.2	1190	2710	0.38
22.9	1130	2490	0.37
24.5	1350	2550	0.31
26.2	1310	2850	0.37
27.8	1590	2930	0.29
29.4	1780	4870	0.42
31.1	2110	9310	0.47
32.7	2340	7720	0.45
34.4	2570	8330	0.45
36.0	2890	8220	0.43
37.6	1910	8010	0.47
39.3	2440	8010	0.45
40.9	2490	8790	0.46
42.6	2960	9040	0.44
44.2	3100	8550	0.42
45.8	2940	9040	0.44
47.5	2710	9740	0.46
49.1	2470	9450	0.46
50.8	2520	9740	0.46
52.4	2640	9740	0.46
54.0	2900	9590	0.45
55.7	3250	9590	0.44
57.3	3230	8790	0.42
59.0	2640	9040	0.45
60.6	2780	9450	0.45
62.2	2880	9450	0.45
63.9	3010	9040	0.44
65.5	3120	9040	0.43
67.2	3370	11110	0.45
68.8	3260	9740	0.44
70.5	3480	10050	0.43
72.1	3100	9310	0.44
73.7	3090	11110	0.46
75.4	2360	9310	0.47
77.0	2140	9310	0.47

Metric Units			
Depth at Midpoint Between Source and Near Receiver	Velocity		Poisson's Ratio
	V _s	V _p	
(m)	(m/s)	(m/s)	
5.5	300	620	0.35
6.0	370	730	0.33
6.5	360	820	0.38
7.0	340	760	0.37
7.5	410	780	0.31
8.0	400	870	0.37
8.5	480	890	0.29
9.0	540	1480	0.42
9.5	640	2840	0.47
10.0	710	2350	0.45
10.5	780	2540	0.45
11.0	880	2510	0.43
11.5	580	2440	0.47
12.0	740	2440	0.45
12.5	760	2680	0.46
13.0	900	2760	0.44
13.5	950	2610	0.42
14.0	900	2760	0.44
14.5	820	2970	0.46
15.0	750	2880	0.46
15.5	770	2970	0.46
16.0	800	2970	0.46
16.5	890	2920	0.45
17.0	990	2920	0.44
17.5	980	2680	0.42
18.0	800	2760	0.45
18.5	850	2880	0.45
19.0	880	2880	0.45
19.5	920	2760	0.44
20.0	950	2760	0.43
20.5	1030	3380	0.45
21.0	990	2970	0.44
21.5	1060	3060	0.43
22.0	950	2840	0.44
22.5	940	3380	0.46
23.0	720	2840	0.47
23.5	650	2840	0.47

**Summary of Compressional Wave Velocity, Shear Wave Velocity, and Poisson's Ratio
Based on Source-to-Receiver Travel Time Data - Borehole RC-20-019 (B-50)**

American Units			
Depth at Midpoint Between Source and Near Receiver	Velocity		Poisson' s Ratio
	V _s	V _p	
(ft)	(ft/s)	(ft/s)	
78.7	2360	9170	0.46
80.3	2500	9740	0.46

Metric Units			
Depth at Midpoint Between Source and Near Receiver	Velocity		Poisson' s Ratio
	V _s	V _p	
(m)	(m/s)	(m/s)	
24.0	720	2800	0.46
24.5	760	2970	0.46

APPENDIX B

**PROCESSED TELEVIEWER IMAGES
WITH TADPOLES**

GEOVision Televiewer Feature Notes and Picking Criteria:

All televiewer feature classifications are done as a best estimate, using information from the televiewer images, complemented by other geophysical logs, if available. Information from core logs may be used to inform the feature classifications as well, if they are available.

Generally, feature classifications from core data are more conclusive than classifications derived from televiewer images, though this may not be true in cases of friable or fractured rock that does not produce an intact core. Fractured rock may produce larger apertures in the boring wall than would be found in an undisturbed environment, so a group of adjacent hairline fractures may coalesce into what appears to be an open fracture in the televiewer image. Spalling or plucking of the borehole wall adjacent to a single hairline fracture may also produce a feature that appears to be a larger open fracture.

Most televiewer features fall into these classifications:

Bedding features:

- Exhibits a change in material or texture across the feature
- Conforms to the dip magnitude and azimuth of other bedding features in the borehole (or zone of the borehole)

Hairline fractures:

- Does not exhibit an open aperture for the full circumference of the borehole
- May not be visible for the full circumference of the borehole, but visible portion matches feature sinusoid well
- May have open segments, or be open for the full circumference of the borehole due to spalling, plucking or other drilling induced damage of the borehole wall. Review of the feature structure at a larger radius, when visible, is used to support this classification

Open fractures:

- Exhibits an open aperture for the full circumference of the borehole
- Has open aperture at the maximum radius of televiewer imaging
- Aperture may not be obvious for the full circumference of the borehole due to borehole damage or intersecting features, but shape of visible portion matches feature sinusoid well
- Often is present at the intersection of multiple hairline fractures

Voids:

- Features with vertical and radial extent of several inches or more, so no televiewer image is present to define the radial extent of the feature.
- Often the lower limit of the televiewer log, due to concerns over probe loss

Aquisition Information:

Project: Last Chance Grade
Location: Crescent City, CA
Client: Kleinfelder
Service Company: Crux Subsurface Inc.
Borehole ID: RC-20-017 (B-18)
Date: 12-06-2020
Diameter: HQ
Start Depth: 51.64
End Depth: 296.89
Tool Type(s): ABE40 Acoustic Televiever

Processing Information:

Processing Company: GEOVision Inc.
Reviewed: A McNab
Depth Unit: Feet Log Scale: 1in/2ft Log Version: Final

Log Nomenclature:

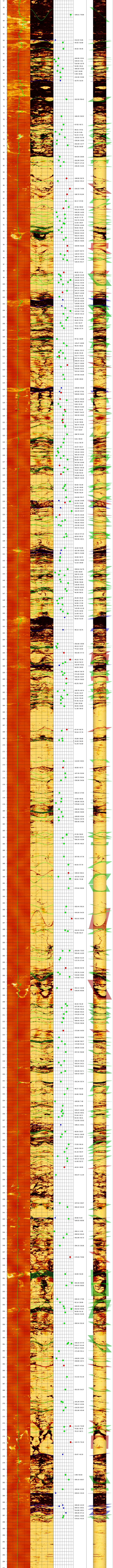
Amplitude-NM = Acoustic amplitude (magnetic north)
BH Diameter from TT = Borehole diameter estimated from acoustic travel time (magnetic north and centralized)
Structures = Apparent Structures oriented to hole
Corrected Tadpoles and Azimuth / Dip = Structures Oriented to true north
3D Core = 3D representation of acoustic log

Structural Legend:

- Open Joint / Fracture ● Filled Joint / Fracture
● Bedding / Banding / Foliation

Comments:

1. Feature dip calculated using average borehole radius from travel time.



Aquisition Information:

Project: Last Chance Grade
Location: Crescent City, CA
Client: Kleinfelder
Service Company: Crux Subsurface Inc.
Borehole ID: RC-20-005 (B-28)
Date: 10-19-2021
Diameter: HQ
Start Depth: 0.17
End Depth: 236.14
Tool Type(s): OBI40 Optical Televiever

Structural Legend:

● Open Joint / Fracture ● Filled Joint / Fracture
● Bedding / Banding / Foliation

Processing Information:

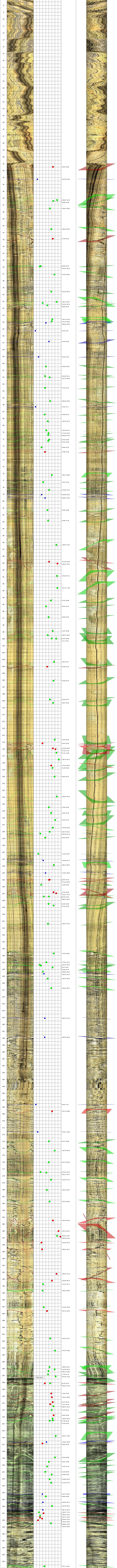
Processing Company: GEOVision Inc.
Processed: A McNab 03/04/2021
Reviewed: VMG 03/11/2021
Depth Unit: Feet Log Scale: 1in:2ft Log Version: Final

Log Nomenclature:

Image NM = Optical image oriented to magnetic north
Structures = Apparent Structures oriented to hole
Corrected Tadpoles and Azimuth / Dip = Structures Oriented to true north
3D Core = 3D representation of optical log

Comments:

1. Assumed borehole diameter for 3.779 inches used for feature dip calculation.



Aquisition Information:

Project: Last Chance Grade
Location: Crescent City, CA
Client: Kleinfelder
Service Company: Crux Subsurface Inc.
Borehole ID: RC-20-014 (B-29)
Date: 11-06-2020
Diameter: HQ
Start Depth: 52.5
End Depth: 293.85
Tool Type(s): ABI40 Acoustic Televiewer

Processing Information:

Processing Company: GEOVision Inc.
Processed: A McNab 03/04/2021
Reviewed: VMG 03/10/2021
Depth Unit: Feet Log Scale: 1in:2ft Log Version: Final
Log Nomenclature:

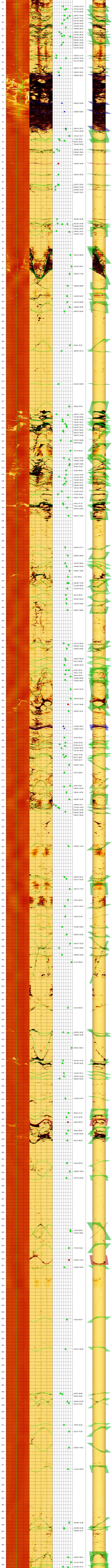
Amplitude-NM = Acoustic amplitude (magnetic north)
BH Diameter from TT = Borehole diameter estimated from acoustic travel time (magnetic north and centralized)
Structures = Adjacent Structures oriented to hole
Corrected Tadpoles and Azimuth / Dip = Structures Oriented to true north
3D Core = 3D representation of acoustic log

Structural Legend:

- Open Joint / Fracture ● Filled Joint / Fracture
● Bedding / Banding / Foliation

Comments:

1. Feature dip calculated using average borehole radius from travel time.



Aquisition Information:

Project: Last Chance Grade
Location: Crescent City, CA
Client: Kleinfelder
Service Company: Crux Subsurface Inc.
Borehole ID: RC-20-011 (B-32)
Date: 11-07-2020
Diameter: HQ
Start Depth: 212.16
End Depth: 298.58
Tool Type(s): ABI40 Acoustic Televiewer

Processing Information:

Processing Company: GEOVision Inc.
Processed: A McNab 03/04/2021
Reviewed: VMG 03/10/2021
Depth Unit: Feet Log Scale: 1in:2ft Log Version: Final

Log Nomenclature:

Amplitude-NM = Acoustic amplitude (magnetic north)
BH Diameter from TT = Borehole diameter estimated from acoustic travel time (magnetic north and centralized)
Structures = Apparent Structures oriented to hole
Corrected Tdpoles and Azimuth / Dip = Structures Oriented to true north
3D Core = 3D representation of acoustic log

Structural Legend:

Broken Zone / Undifferentiated Open Joint / Fracture
Filled Joint / Fracture Bedding / Banding / Foliation

Comments:

1. 219.0 to 212.16 feet borehole azimuth estimated due to magnetic effects of casing.
2. Feature dip calculated using average borehole radius from travel time.

