

**ATTACHMENT A4
RAAX REPORT**

PELLS SULLIVAN MEYNINK PTY LTD
Terrigal, NSW

HORNSBY QUARRY
BOREHOLE IMAGE PROCESSING SYSTEM (BIPS)
SURVEY REPORT
(BOREHOLE: HQ1)

Prepared by

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November, 2006

SUMMARY

Date of survey: 17 November, 2006

BIPS field system employed: Truck-mounted 500 m system

Borehole name: HQ1

Borehole diameter: 96 mm

Borehole azimuth and inclination: 127 degrees true North, -60 degrees from the horizontal.

Drilled total depth: 90 m

Casing depth: 3.64 m

Imaged interval: 3.40 to 89.609 m

Water table: 21.46 m

Results: Unstable hole with numerous joints and shears particularly in the upper section where volcanic rocks occupy. Difficulty in borehole cleaning due to no water-return during drilling. But the water was successfully cleaned by a special flocculant, Super Gaia W-1. The cable and probe locally affected by electro-magnetic interference obviously coming from the volcanic body. As a whole reasonable quality of image obtained. Upperside of the hole stained by oil above 17 m depth. Boundary of the volcanic and underlying sedimentary unit at 43.97 m. The Sydney sandstone unit dips northeastward at around 10 degrees. In the volcanic section both of the predominant joints and shear zones dip northward at 19 degrees and 49 degrees, respectively.

(Note: All orientations of discontinuities in this report are in reference to the true north)



Tab. Table of Discontinuity (1 / 4)

File name: hq1.STR

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No.	Depth (m)	Dir/Dip	Sort	Aperture (mm)	Form	Condition	Remark
1	3.751	008/36	Joint	0.3	Undulating	Rough	Open
2	3.837	167/07	Joint	0.3	Undulating	Rough	Open
3	4.059	326/71	Joint	0.3	Planar	Rough	Open
4	4.126	323/71	Joint	0.3	Planar	Weathered	Open
5	4.428	348/56	Joint	0.3	Planar	Weathered	Open
6	4.491	319/76	Joint	0.3	Planar	Weathered	Open
7	4.927	004/61	Shearzone	76.0	Planar	Brec/crus'd	Open/loose
8	5.286	012/60	Joint	0.3	Planar	Rough	Open
9	5.398	347/61	Shearzone	15.0	Planar	Brec/crus'd	Open/loose
10	5.548	090/00	Joint	0.3	Planar	Rough	Tight
11	5.682	004/43	Shearzone	23.0	Planar	Brec/crus'd	Open
12	5.802	349/26	Joint	0.3	Planar	Rough	Open
13	6.072	006/56	Shearzone	91.0	Planar	Brec/crus'd	Open/loose
14	6.216	007/49	Shearzone	15.0	Planar	Brec/crus'd	Open/loose
15	6.355	355/61	Shearzone	97.0	Planar	Brec/crus'd	Open/loose
16	6.541	003/54	Joint	0.3	Planar	Rough	Tight
17	6.988	255/75	Joint	0.3	Planar	Rough	Open
18	7.064	240/72	Joint	0.3	Planar	Rough	Open
19	7.174	038/41	Shearzone	70.0	Planar	Brec/crus'd	Open/loose
20	7.641	006/54	Shearzone	151.0	Planar	Brec/crus'd	Open/loose
21	8.393	302/56	Joint	0.3	Planar	Rough	Tight
22	8.791	012/50	Shearzone	135.0	Planar	Brec/crus'd	Open
23	9.061	009/44	Shearzone	124.0	Planar	Brec/crus'd	Open
24	9.554	137/13	Joint	0.3	Planar	Rough	Open
25	9.808	306/23	Joint	0.3	Planar	Rough	Open
26	9.917	076/28	Joint	0.3	Undulating	Rough	Open
27	10.713	014/46	Joint	34.0	Planar	Brec/crus'd	Open
28	12.670	021/64	Joint	0.3	Undulating	Rough	Tight
29	12.833	153/83	Joint	0.3	Planar	Smooth	Tight
30	13.208	208/65	Joint	0.3	Undulating	Rough	Tight
31	13.791	257/83	Joint	0.3	Planar	Rough	Tight
32	14.276	125/88	Joint	0.3	Planar	Rough	Tight
33	14.427	357/59	Shearzone	34.0	Planar	Brec/crus'd	Open
34	14.968	084/40	Joint	0.3	Planar	Rough	Tight
35	15.245	006/74	Joint	0.3	Planar	Rough	Tight
36	15.296	008/81	Joint	0.3	Undulating	Rough	Open
37	15.429	350/36	Joint	0.3	Undulating	Rough	Open
38	16.524	253/66	Joint	0.3	Planar	Rough	Tight
39	16.839	139/28	Joint	0.5	Planar	Rough	Open
40	17.056	001/35	Shearzone	157.0	Planar	Brec/crus'd	Open/loose
41	17.411	348/22	Joint	0.3	Undulating	Rough	Open
42	17.485	035/27	Joint	0.3	Irregular	Rough	Open
43	17.602	304/66	Joint	0.3	Planar	Rough	Tight
44	17.616	148/21	Joint	0.3	Undulating	Rough	Open
45	18.504	327/25	Joint	0.3	Planar	Rough	Tight
46	18.942	357/83	Joint	0.3	Planar	Rough	Tight
47	18.993	331/17	Joint	0.3	Planar	Rough	Open
48	19.118	009/48	Joint	0.3	Undulating	Rough	Tight
49	19.308	355/13	Joint	0.5	Planar	Rough	Open
50	19.396	320/09	Joint	0.5	Undulating	Rough	Open

Tab. Table of Discontinuity (2 / 4)

File name: hq1.STR

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No.	Depth (m)	Dir/Dip	Sort	Aperture (mm)	Form	Condition	Remark
51	19.420	330/29	Joint	0.3	Planar	Rough	Tight
52	19.538	338/23	Joint	0.3	Planar	Rough	Open
53	19.951	020/35	Joint	0.5	Undulating	Rough	Open
54	19.957	000/88	Joint	1.0	Planar	Rough	Open/loose
55	20.242	358/66	Joint	0.5	Undulating	Rough	Open/loose
56	20.372	029/53	Joint	0.5	Undulating	Rough	Open/loose
57	20.430	022/55	Joint	0.5	Undulating	Rough	Open
58	20.538	008/32	Joint	0.5	Undulating	Rough	Open
59	20.577	332/35	Joint	0.5	Planar	Rough	Open
60	20.716	031/64	Shearzone	58.0	Planar	Brec/crus'd	Open/loose
61	20.973	345/17	Joint	0.5	Planar	Rough	Open
62	21.028	013/55	Joint	2.0	Undulating	Rough	Open/loose
63	21.187	067/17	Joint	0.3	Planar	Rough	Open
64	21.320	129/22	Joint	0.3	Undulating	Rough	Tight
65	21.870	014/67	Joint	0.3	Undulating	Rough	Open
66	21.967	031/17	Joint	0.3	Planar	Rough	Open
67	22.675	027/57	Joint	0.5	Undulating	Rough	Open
68	22.991	022/58	Joint	1.0	Planar	Rough	Open/loose
69	23.695	304/12	Joint	0.5	Stepped	Rough	Open
70	23.845	354/42	Joint	0.5	Stepped	Rough	Open
71	24.081	333/26	Joint	0.5	Stepped	Rough	Open
72	24.635	006/39	Shearzone	120.0	Planar	Brec/crus'd	Open/loose
73	24.763	249/52	Joint	0.3	Planar	Rough	Open
74	25.058	023/21	Joint	0.3	Undulating	Rough	Open
75	25.748	353/24	Joint	0.5	Planar	Smooth	Open
76	26.733	105/89	Joint	0.5	Planar	Rough	Open
77	26.905	050/37	Joint	0.5	Planar	Rough	Open
78	27.595	326/44	Joint	0.5	Planar	Smooth	Open
79	27.868	050/19	Joint	3.0	Planar	Brec/crus'd	Open/loose
80	28.190	134/90	Joint	0.3	Undulating	Rough	Open
81	28.219	140/18	Joint	0.5	Undulating	Rough	Open
82	28.772	234/30	Joint	0.3	Undulating	Rough	Open
83	28.841	241/33	Shearzone	59.0	Planar	Brec/crus'd	Open/loose
84	29.212	345/18	Joint	1.0	Planar	Brec/crus'd	Open/loose
85	29.283	300/62	Joint	0.3	Undulating	Rough	Open
86	29.296	066/08	Joint	0.3	Planar	Rough	Open
87	29.519	128/09	Joint	0.3	Undulating	Rough	Open
88	29.852	341/06	Shearzone	35.0	Planar	Brec/crus'd	Open/loose
89	30.742	023/70	Joint	0.5	Undulating	Rough	Open
90	31.434	143/30	Joint	0.5	Undulating	Rough	Open
91	31.583	176/31	Joint	0.3	Undulating	Rough	Open
92	31.954	088/89	Shearzone	17.0	Planar	Brec/crus'd	Open/loose
93	32.329	008/63	Shearzone	7.0	Planar	Brec/crus'd	Open/loose
94	32.367	302/45	Joint	0.3	Planar	Rough	Open
95	32.434	352/13	Shearzone	31.0	Planar	Brec/crus'd	Open/loose
96	32.764	150/28	Joint	0.3	Planar	Rough	Tight
97	32.978	209/31	Joint	0.5	Undulating	Rough	Open
98	33.097	091/21	Shearzone	31.0	Planar	Brec/crus'd	Open/loose
99	33.456	001/24	Joint	0.3	Planar	Rough	Open
100	33.760	140/17	Joint	0.5	Undulating	Rough	Open/loose

Tab. Table of Discontinuity (3 / 4)

File name: hq1.STR

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No.	Depth (m)	Dir/Dip	Sort	Aperture (mm)	Form	Condition	Remark
101	34.074	278/19	Joint	0.3	Planar	Rough	Open
102	34.537	314/79	Shearzone	219.0	Planar	Brec/crus'd	Open/loose
103	34.846	058/38	Joint	0.5	Planar	Rough	Open/loose
104	35.080	331/21	Joint	0.3	Undulating	Rough	Open
105	35.126	327/54	Joint	0.5	Undulating	Rough	Open/loose
106	35.142	213/67	Joint	0.3	Undulating	Rough	Open/loose
107	35.504	353/48	Shearzone	109.0	Planar	Brec/crus'd	Open/loose
108	36.052	141/10	Joint	0.5	Undulating	Rough	Open
109	36.805	230/83	Joint	0.3	Undulating	Rough	Open
110	36.975	297/81	Joint	0.3	Planar	Rough	Open
111	37.855	343/12	Joint	0.3	Undulating	Rough	Open
112	38.814	336/24	Shearzone	10.0	Planar	Brec/crus'd	Open/loose
113	38.880	327/15	Joint	0.3	Planar	Rough	Tight
114	39.782	123/17	Joint	0.3	Undulating	Rough	Tight
115	40.150	149/21	Joint	0.3	Undulating	Rough	Tight
116	40.476	020/14	Shearzone	174.0	Planar	Brec/crus'd	Open/loose
117	41.208	152/22	Joint	0.3	Planar	Rough	Open
118	41.989	263/11	Joint	0.3	Undulating	Rough	Tight
119	42.097	218/06	Joint	0.3	Undulating	Rough	Open
120	42.176	057/24	Joint	0.3	Planar	Rough	Open
121	42.784	028/07	Joint	0.3	Undulating	Rough	Open
122	42.956	206/68	Joint	0.3	Planar	Rough	Open
123	43.148	187/11	Joint	0.5	Planar	Rough	Open
124	43.530	011/29	Shearzone	43.0	Planar	Brec/crus'd	Open/loose
125	43.972	040/04	Rkbnry	0.3	Planar	Weathered	Open
126	44.289	350/40	Joint	0.5	Undulating	Rough	Open/loose
127	45.458	094/19	Joint	0.3	Undulating	Rough	Tight
128	45.645	014/80	Joint	0.3	Undulating	Rough	Tight
129	46.012	303/90	Joint	0.3	Undulating	Rough	Open/loose
130	46.894	022/08	Joint	0.5	Undulating	Rough	Open
131	47.080	054/22	Joint	0.3	Planar	Rough	Tight
132	47.376	356/23	Joint	0.3	Planar	Rough	Open
133	47.740	035/17	Bed/lamina	0.0	Planar	Smooth	Tight
134	49.530	005/60	Joint	0.5	Planar	Rough	Open/loose
135	50.547	032/08	Bed/lamina	0.0	Planar	Rough	Tight
136	51.099	111/80	Joint	0.3	Planar	Rough	Open
137	52.930	052/17	Bed/lamina	0.0	Planar	Smooth	Tight
138	53.164	067/21	Parting	0.3	Planar	Rough	Open
139	57.906	020/18	Bed/lamina	0.0	Planar	Rough	Tight
140	58.783	000/14	Bed/lamina	0.0	Planar	Smooth	Tight
141	61.287	051/31	Bed/lamina	0.0	Planar	Smooth	Tight
142	61.800	116/20	Parting	0.5	Planar	Rough	Open
143	62.161	039/31	Bed/lamina	0.0	Planar	Smooth	Tight
144	62.427	243/80	Joint	0.3	Undulating	Rough	Tight
145	62.710	039/31	Bed/lamina	0.0	Planar	Smooth	Tight
146	64.296	253/82	Joint	0.3	Planar	Rough	Tight
147	64.514	243/75	Joint	0.3	Undulating	Rough	Tight
148	65.577	270/87	Joint	0.3	Undulating	Offset	Tight
149	65.667	273/85	Joint	0.3	Undulating	Rough	Open
150	67.111	026/15	Parting	0.3	Undulating	Rough	Open

Tab. Table of Discontinuity (4 / 4)

File name: hq1.STR

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No.	Depth (m)	Dir/Dip	Sort	Aperture (mm)	Form	Condition	Remark
151	67.740	333/01	Bed/lamina	0.0	Planar	Smooth	Tight
152	70.443	083/44	Joint	0.3	Planar	Rough	Tight
153	70.594	011/06	Bed/lamina	0.0	Planar	Smooth	Tight
154	71.531	042/07	Bed/lamina	0.0	Planar	Smooth	Tight
155	73.265	106/22	Bed/lamina	0.0	Planar	Smooth	Tight
156	73.757	108/13	Bed/lamina	0.0	Planar	Smooth	Tight
157	76.905	024/31	Parting	0.3	Planar	Rough	Open
158	77.705	000/23	Bed/lamina	0.0	Planar	Smooth	Tight
159	78.852	250/85	Joint	0.3	Planar	Offset	Open
160	78.937	235/73	Joint	0.3	Undulating	Offset	Tight
161	79.102	227/74	Joint	0.3	Planar	Offset	Tight
162	79.360	216/68	Joint	0.5	Undulating	Offset	Open
163	79.501	336/26	Bed/lamina	0.0	Planar	Smooth	Tight
164	79.738	246/79	Joint	0.3	Undulating	Offset	Tight
165	80.069	224/72	Joint	0.3	Undulating	Offset	Tight
166	80.650	223/06	Bed/lamina	0.0	Planar	Smooth	Tight
167	81.200	068/23	Bed/lamina	0.0	Planar	Smooth	Tight
168	81.447	026/18	Parting	0.3	Planar	Rough	Open
169	81.512	033/15	Joint	0.5	Planar	Rough	Open/loose
170	81.694	046/34	Bed/lamina	0.0	Planar	Smooth	Tight
171	84.507	263/87	Joint	0.3	Undulating	Offset	Tight
172	85.199	285/30	Joint	0.5	Planar	Rough	Open
173	85.377	062/22	Bed/lamina	0.0	Planar	Smooth	Tight
174	86.275	240/71	Joint	0.3	Planar	Rough	Tight
175	86.322	055/18	Parting	0.5	Planar	Rough	Open/loose
176	86.400	054/17	Parting	0.3	Planar	Rough	Open
177	86.484	262/06	Shearzone	7.0	Planar	Brec/crus'd	Open/loose
178	87.453	075/08	Parting	0.5	Planar	Rough	Open/loose
179	87.705	083/20	Bed/lamina	0.0	Planar	Smooth	Tight
180	88.244	100/21	Bed/lamina	0.0	Planar	Smooth	Tight

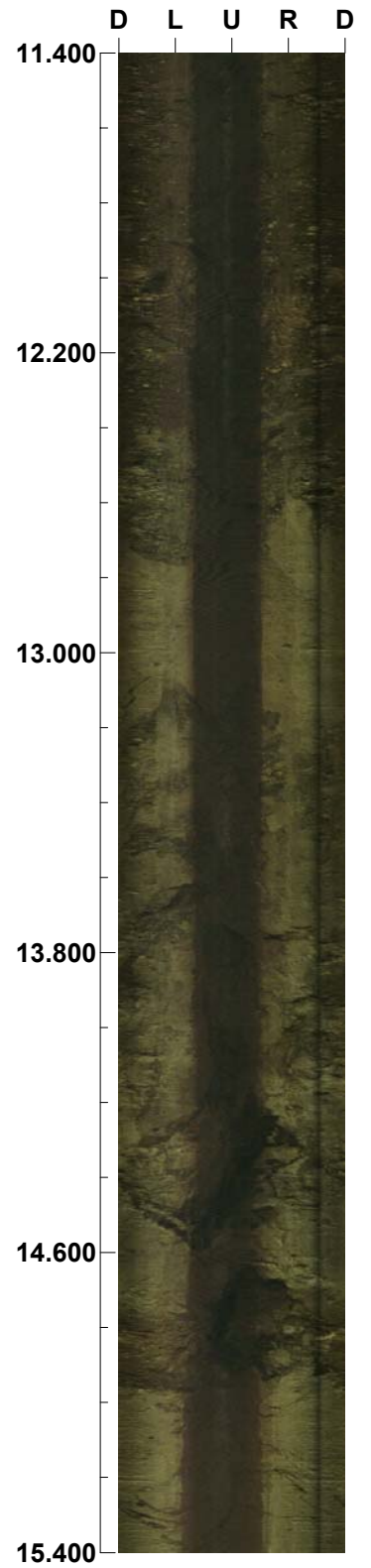
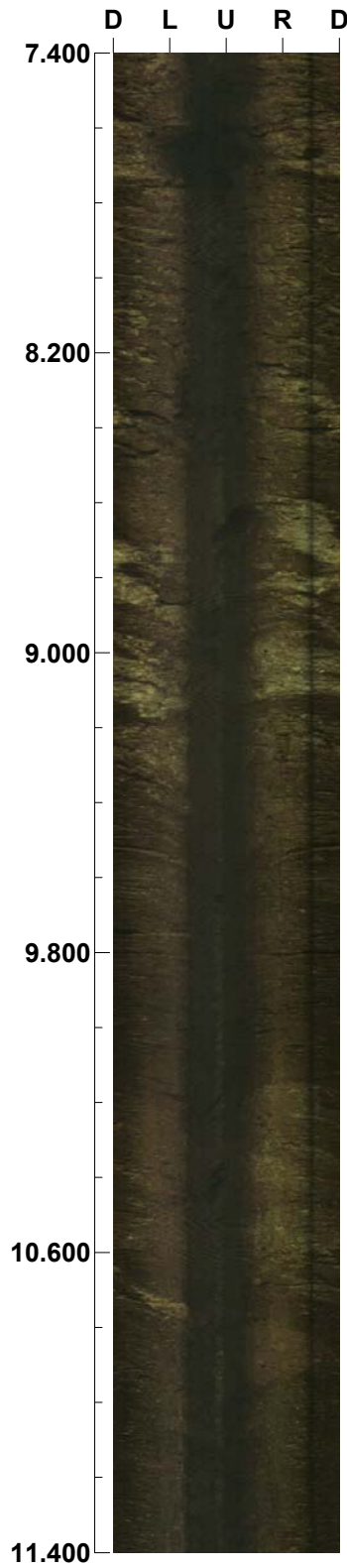
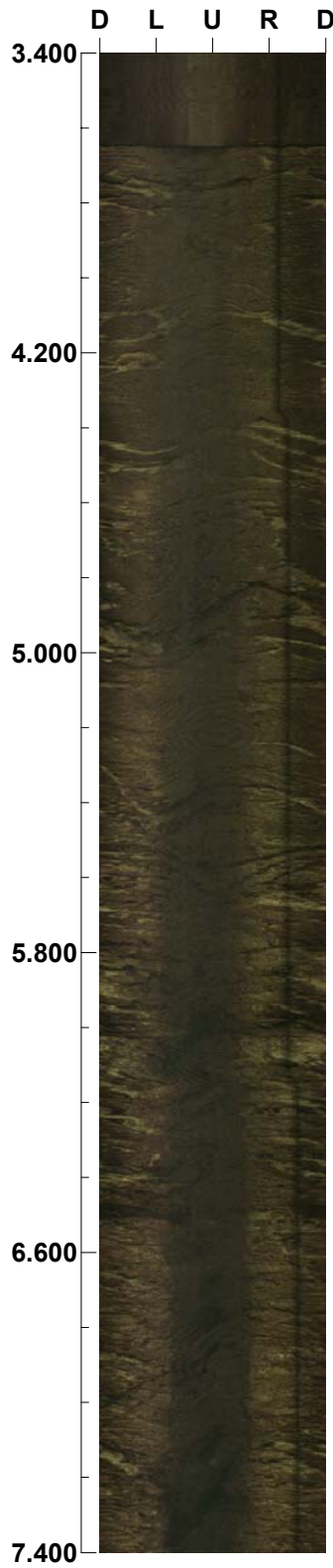
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Bore hole No.: HQ1

Azimuth: 127

Inclination: -60

Depth range: 3.400 - 15.400 m



Scale: 1/20

Aspect ratio: 200 %

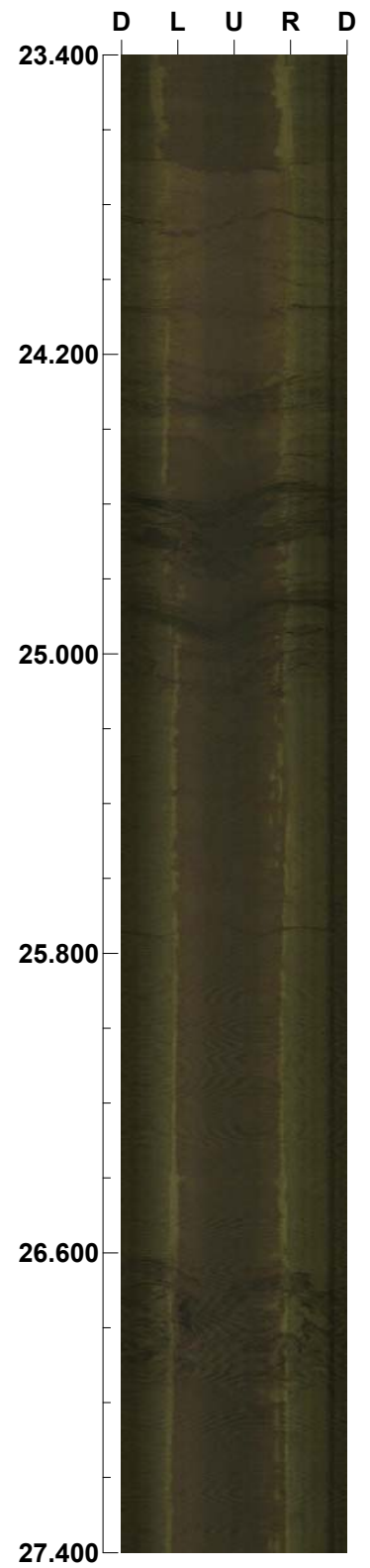
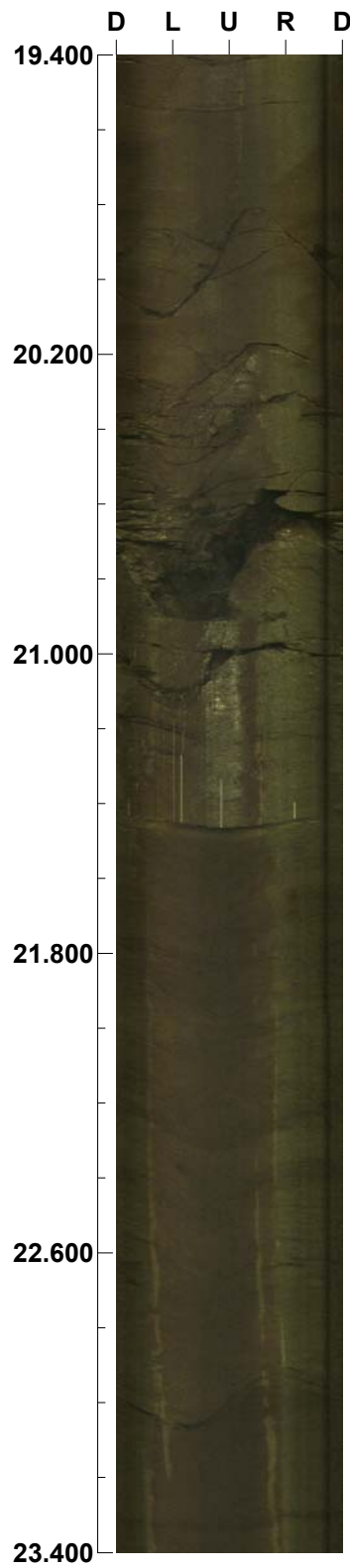
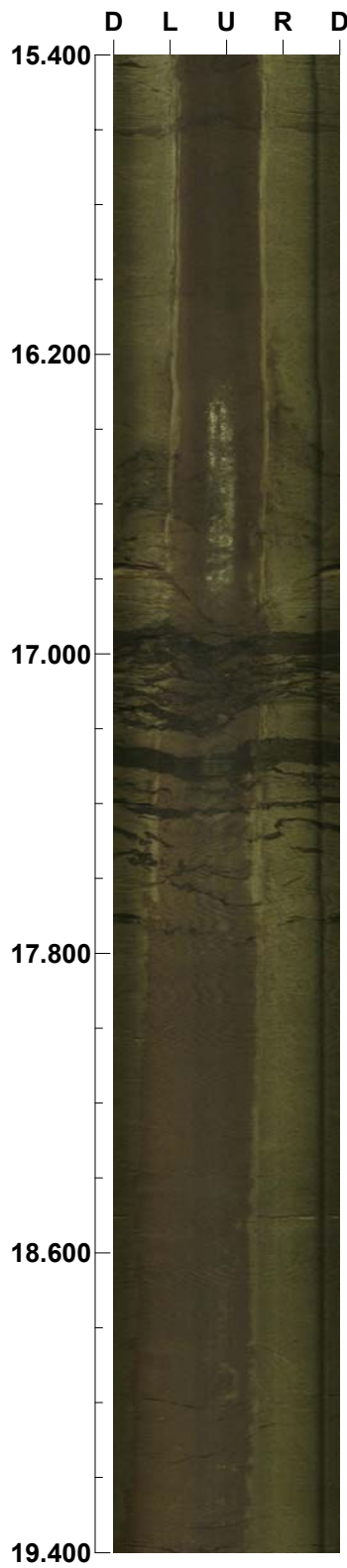
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Bore hole No.: HQ1

Azimuth: 127

Inclination: -60

Depth range: 15.400 - 27.400 m



Scale: 1/20

Aspect ratio: 200 %

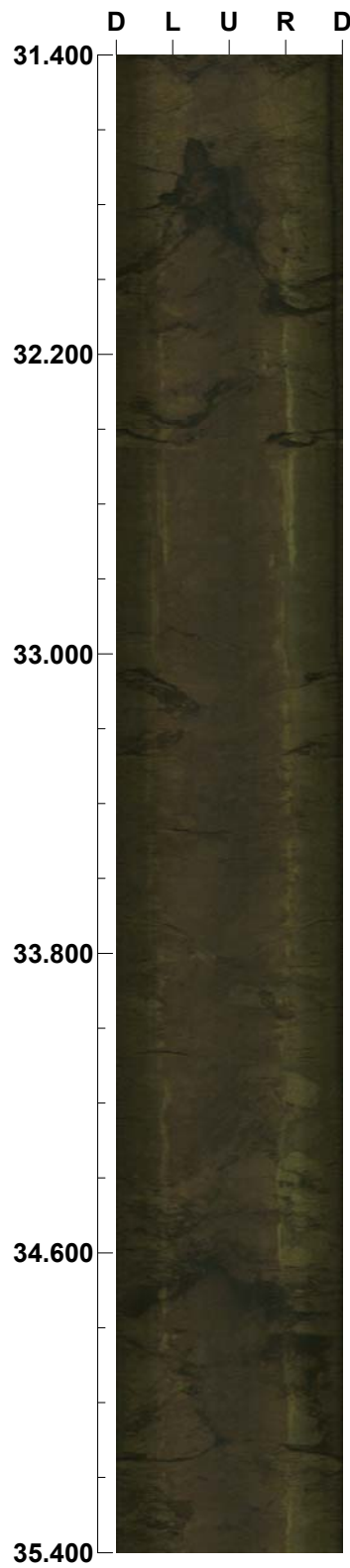
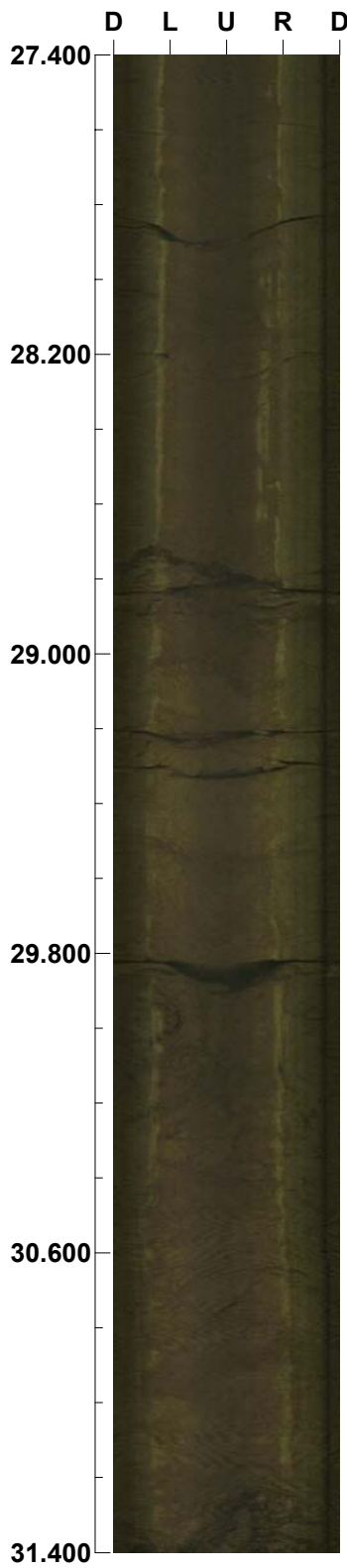
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Bore hole No.: HQ1

Azimuth: 127

Inclination: -60

Depth range: 27.400 - 39.400 m



Scale: 1/20

Aspect ratio: 200 %

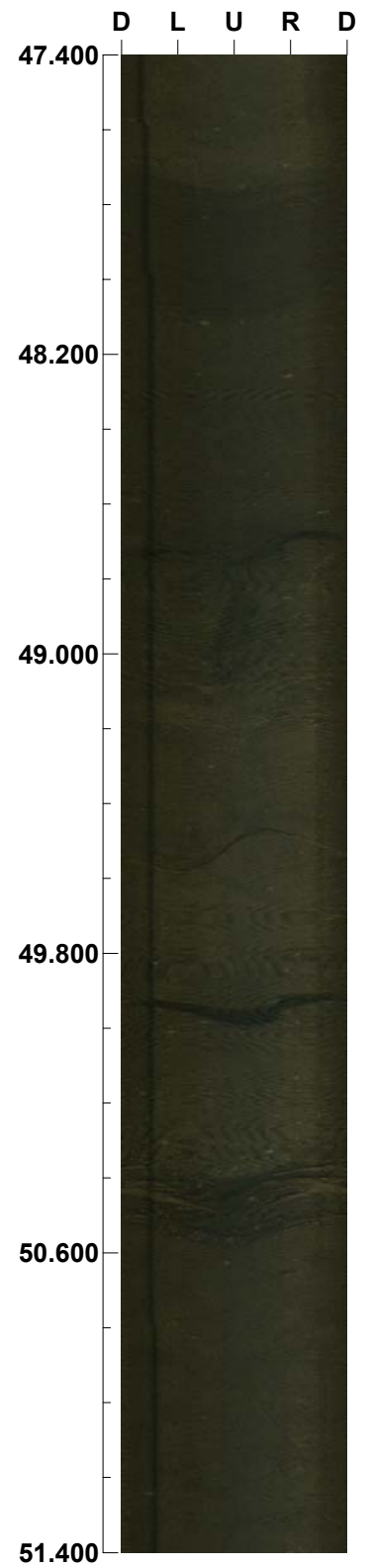
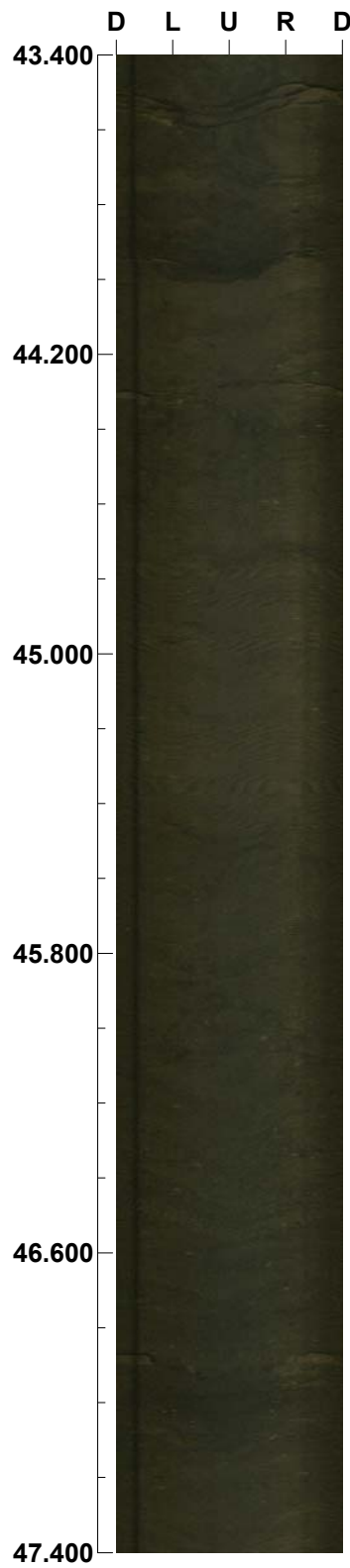
Project name: HORNSBY QUARRY

Bore hole No.: HQ1

Azimuth: 127

Inclination: -60

Depth range: 39.400 - 51.400 m



Scale: 1/20

Aspect ratio: 200 %

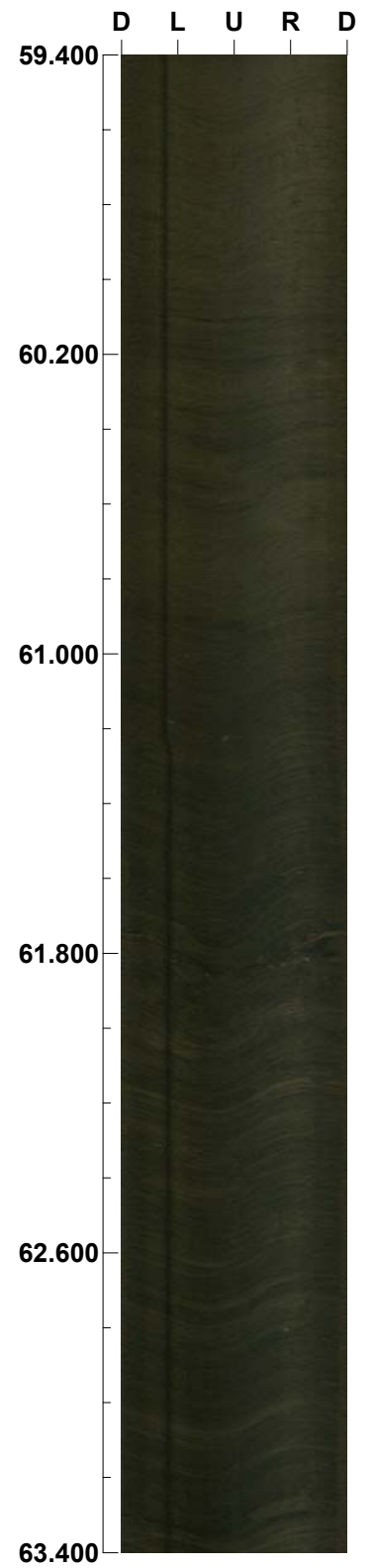
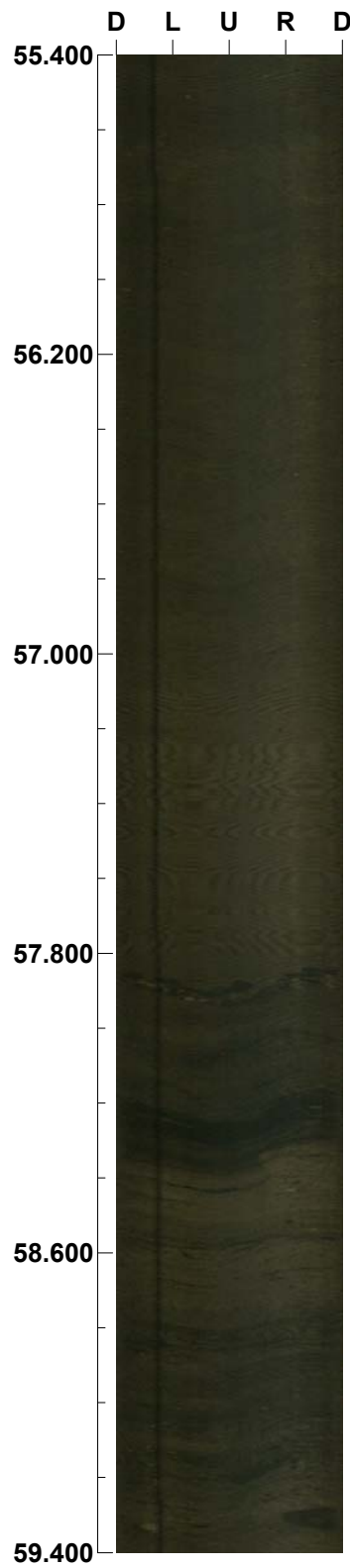
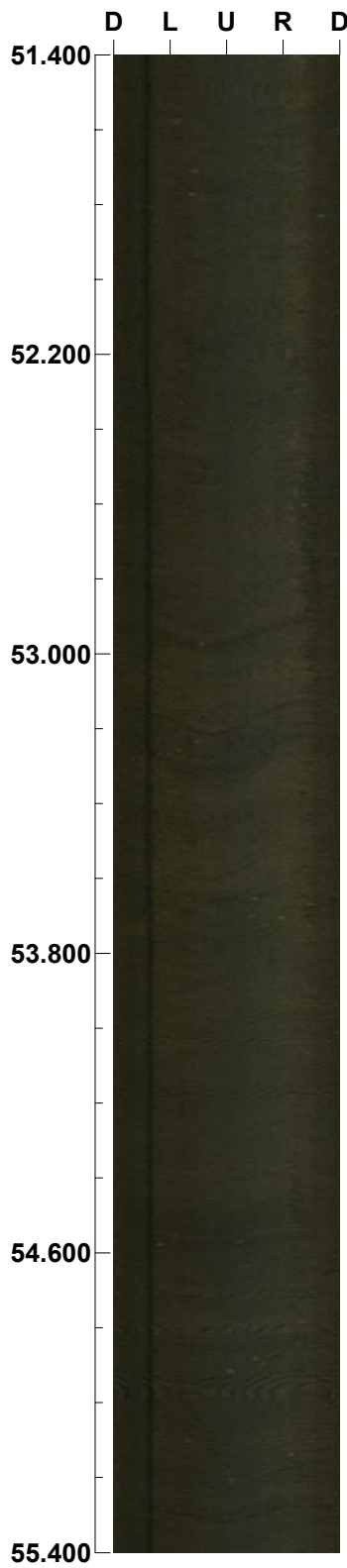
Project name: HORNSBY QUARRY

Bore hole No.: HQ1

Azimuth: 127

Inclination: -60

Depth range: 51.400 - 63.400 m



Scale: 1/20

Aspect ratio: 200 %

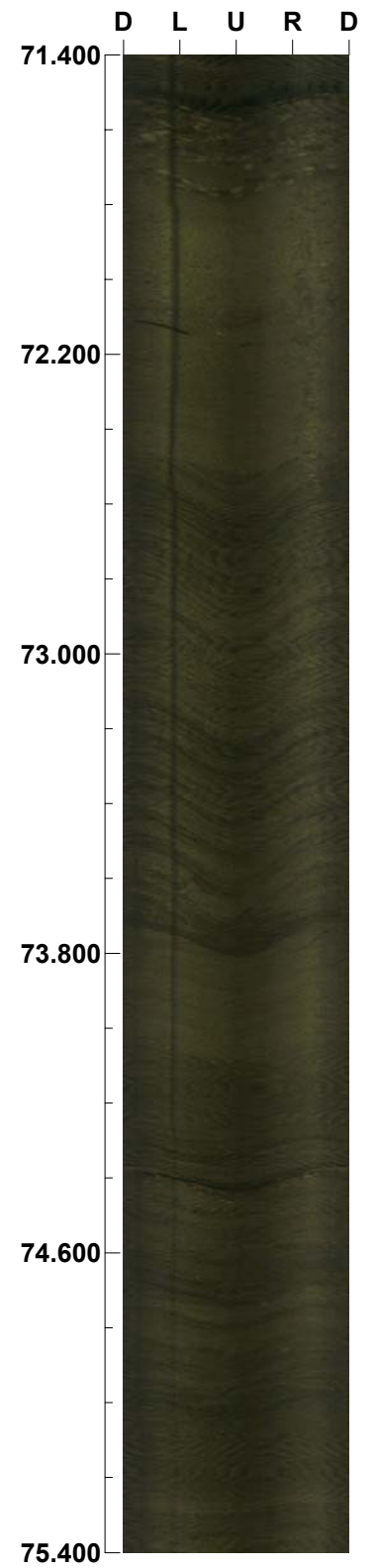
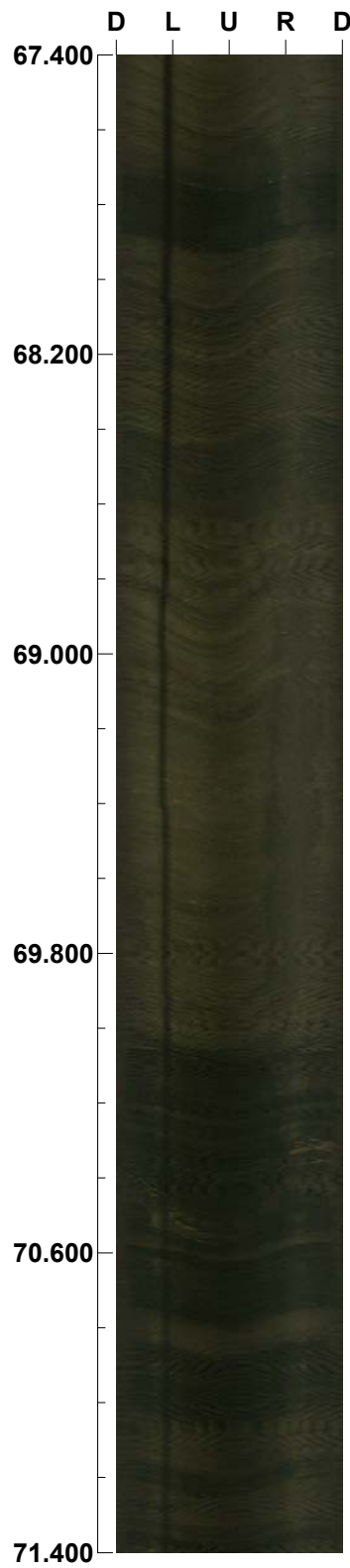
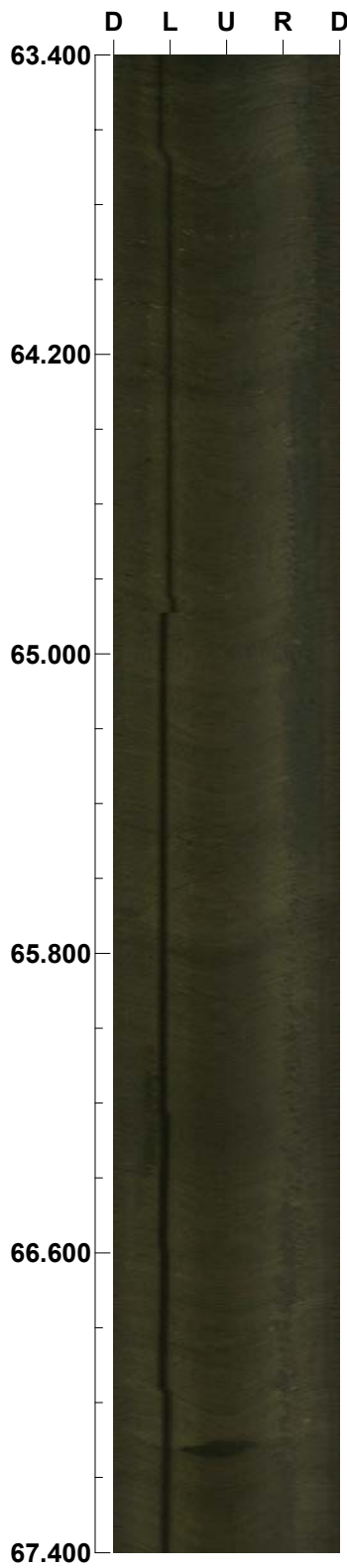
Project name: HORNSBY QUARRY

Bore hole No.: HQ1

Azimuth: 127

Inclination: -60

Depth range: 63.400 - 75.400 m



Scale: 1/20

Aspect ratio: 200 %

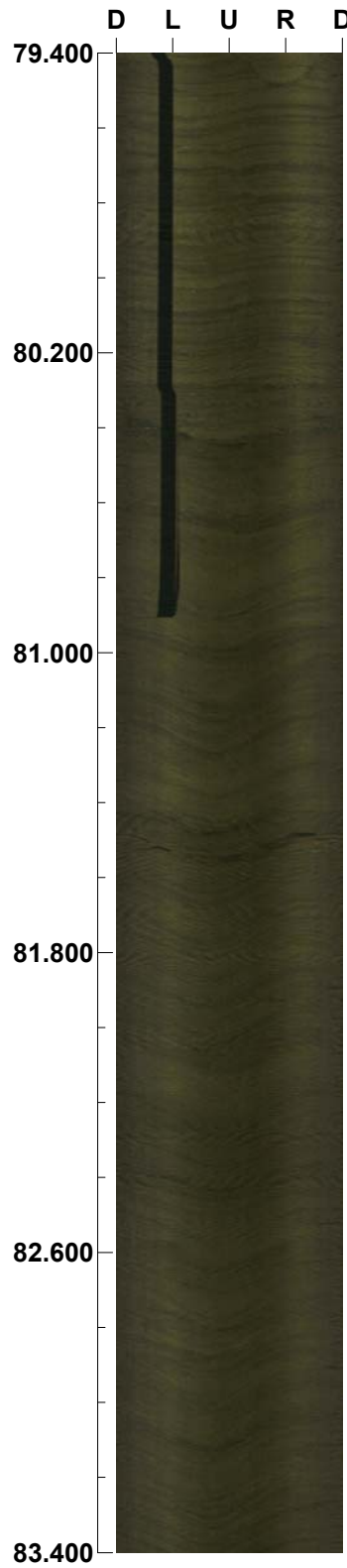
Project name: HORNSBY QUARRY

Bore hole No.: HQ1

Azimuth: 127

Inclination: -60

Depth range: 75.400 - 87.400 m



Scale: 1/20

Aspect ratio: 200 %

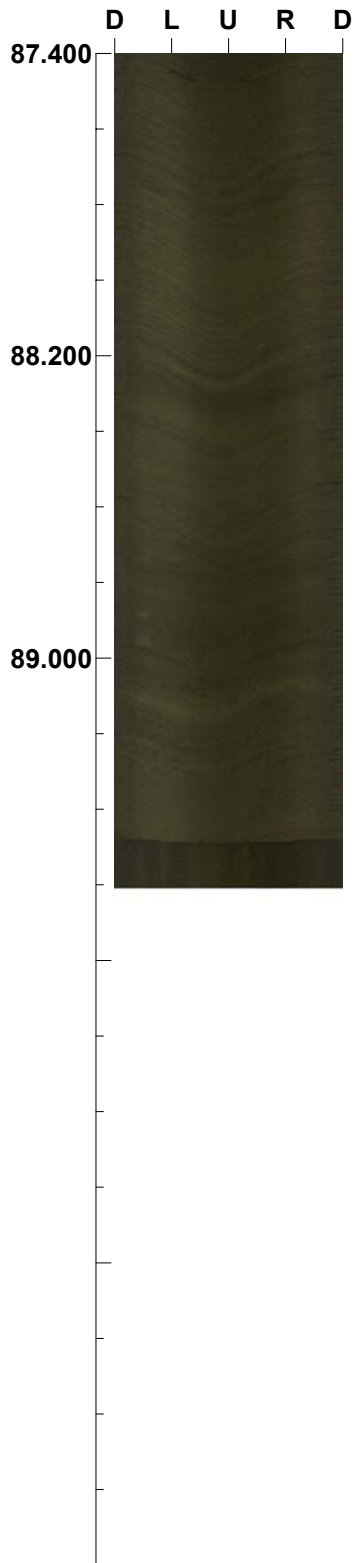
Project name: HORNSBY QUARRY

Bore hole No.: HQ1

Azimuth: 127

Inclination: -60

Depth range: 87.400 - 89.609 m



Scale: 1/20

Aspect ratio: 200 %

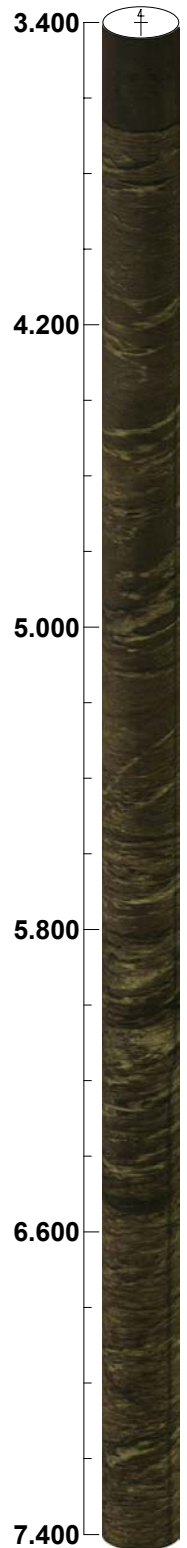
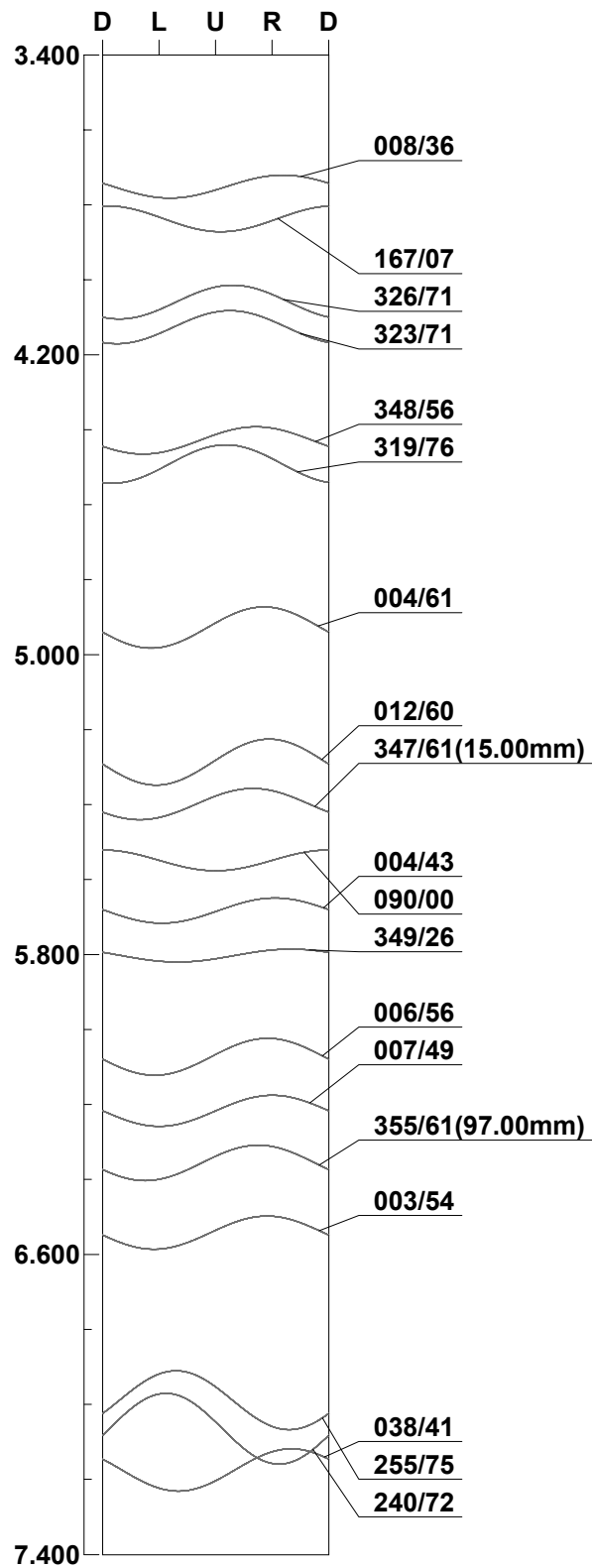
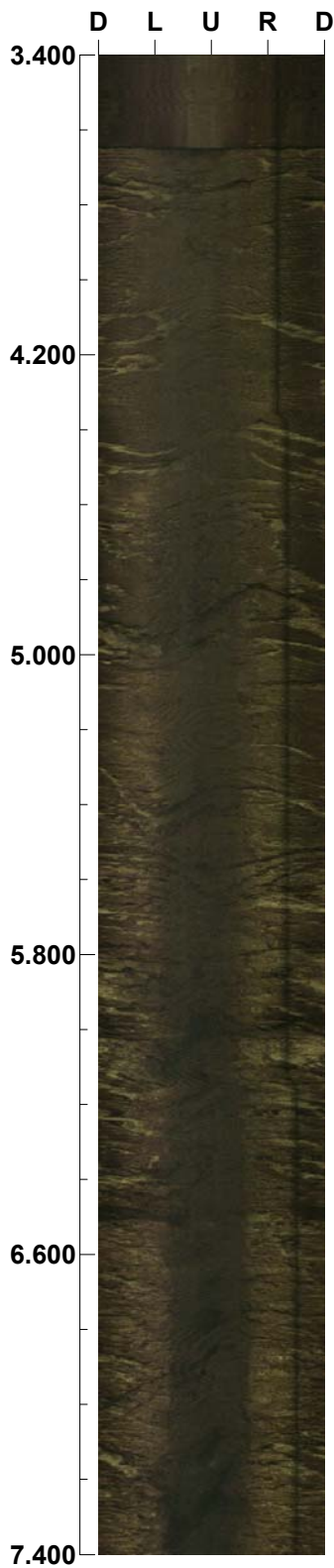
Project name: HORNSBY QUARRY

Bore hole No.: HQ1

Azimuth: 127

Inclination: -60

Depth range: 3.400 - 7.400 m



Scale: 1/20

Aspect ratio: 200 %

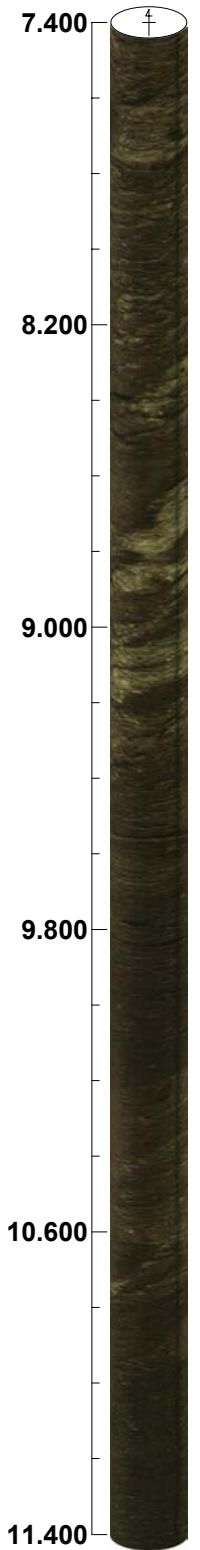
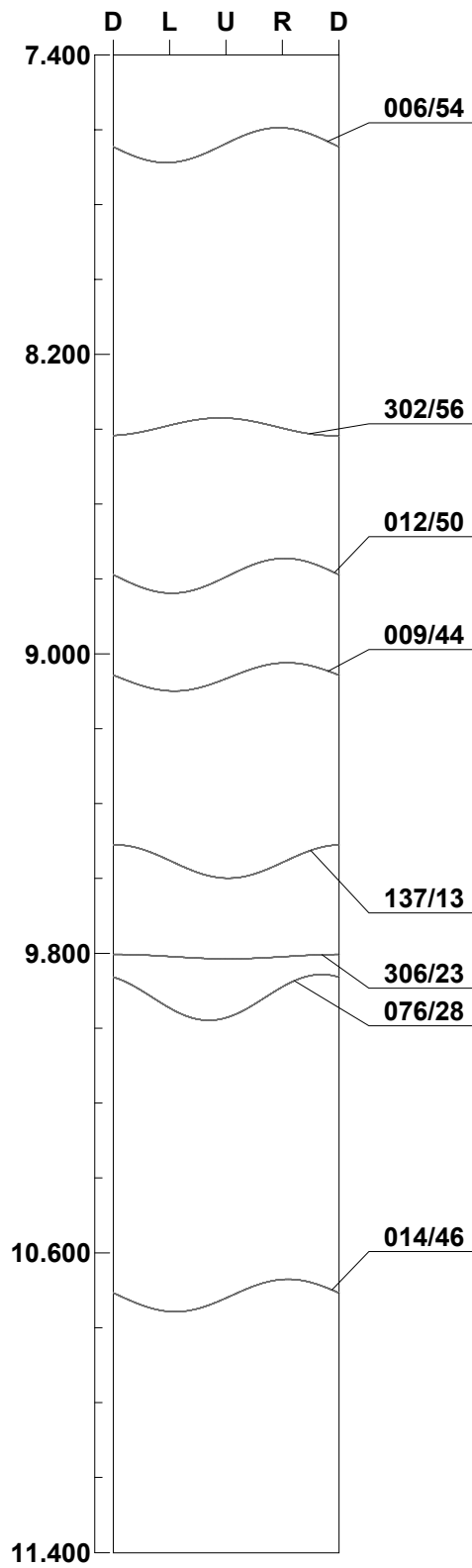
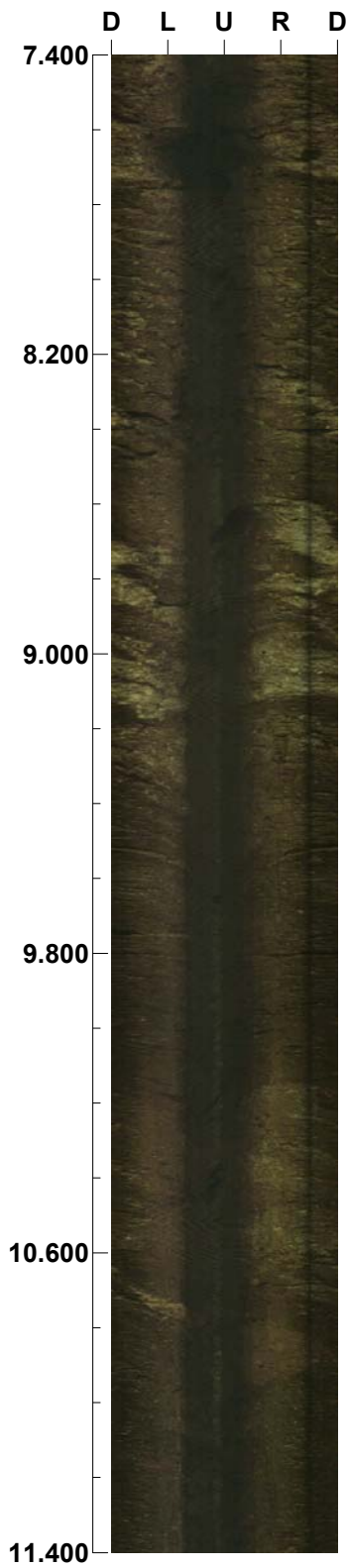
Project name: HORNSBY QUARRY

Bore hole No.: HQ1

Azimuth: 127

Inclination: -60

Depth range: 7.400 - 11.400 m



Scale: 1/20

Aspect ratio: 200 %

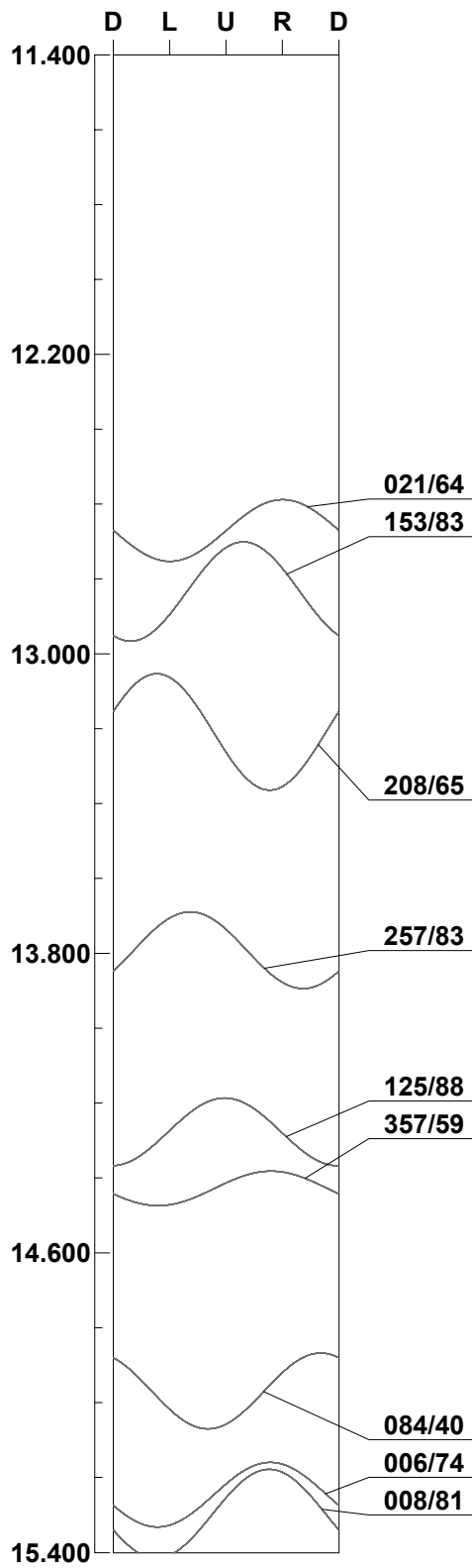
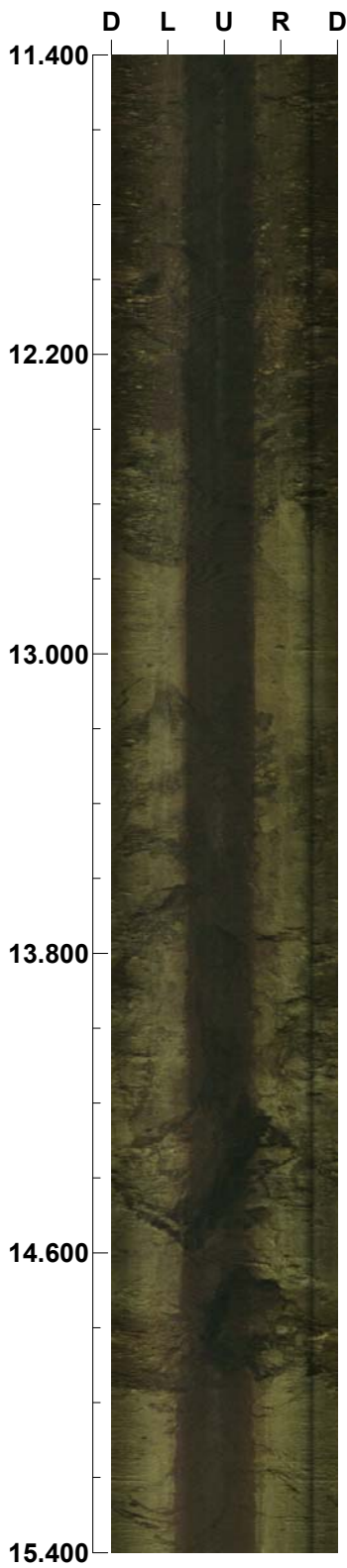
Project name: HORNSBY QUARRY

Bore hole No.: HQ1

Azimuth: 127

Inclination: -60

Depth range: 11.400 - 15.400 m



Scale: 1/20

Aspect ratio: 200 %

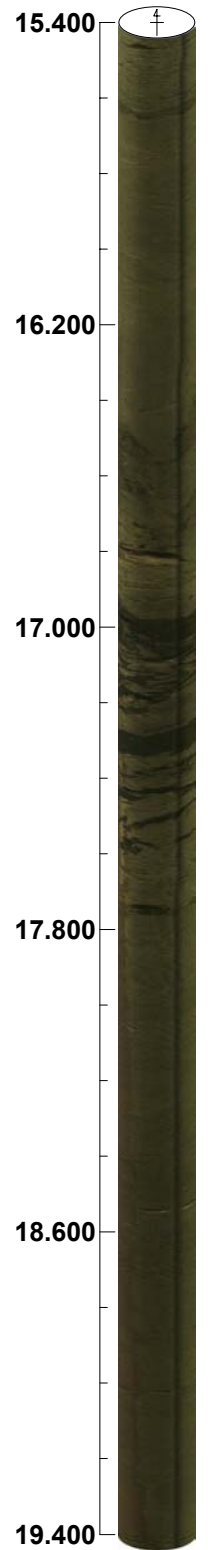
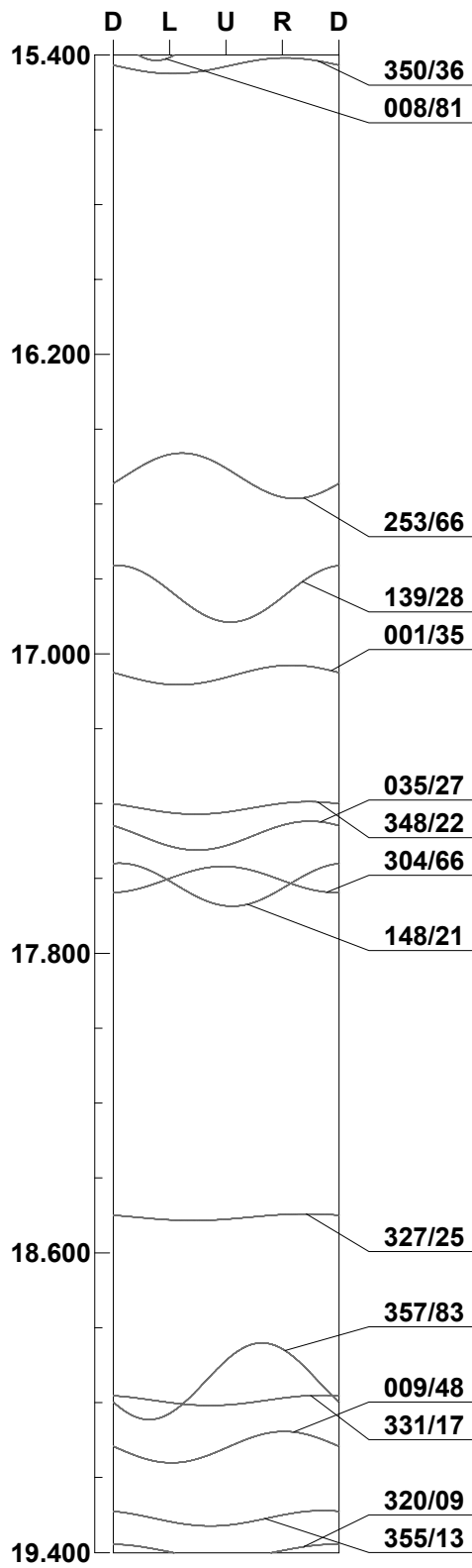
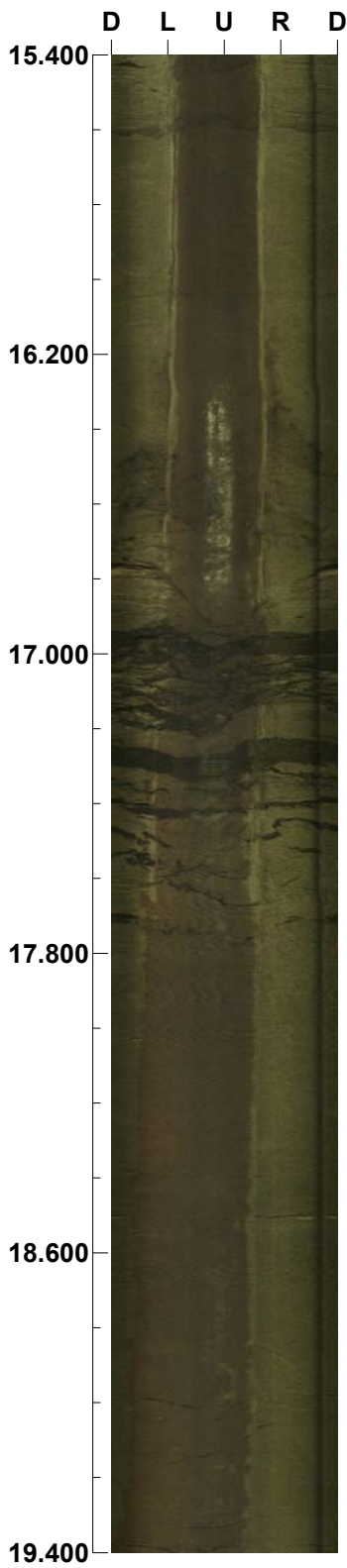
Project name: HORNSBY QUARRY

Bore hole No.: HQ1

Azimuth: 127

Inclination: -60

Depth range: 15.400 - 19.400 m



Scale: 1/20

Aspect ratio: 200 %

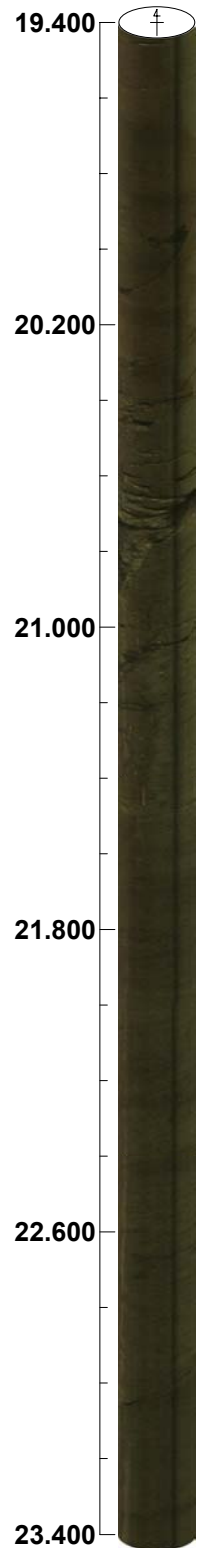
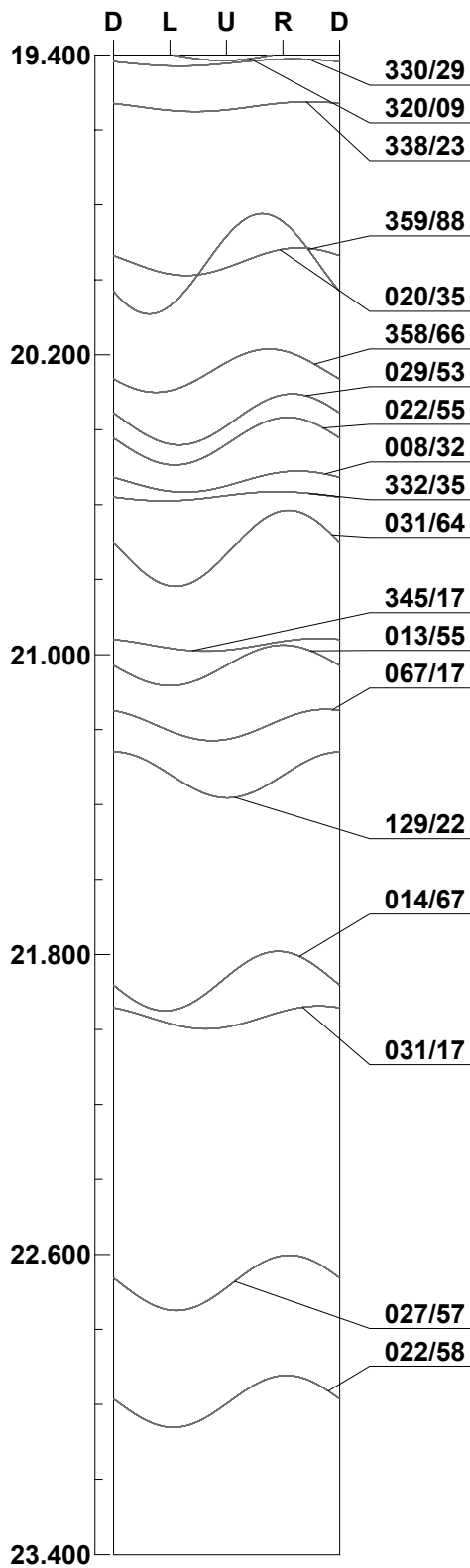
Project name: HORNSBY QUARRY

Bore hole No.: HQ1

Azimuth: 127

Inclination: -60

Depth range: 19.400 - 23.400 m



Scale: 1/20

Aspect ratio: 200 %

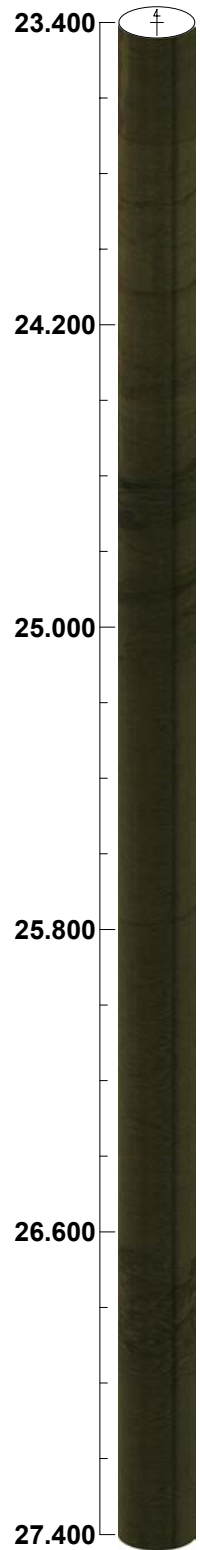
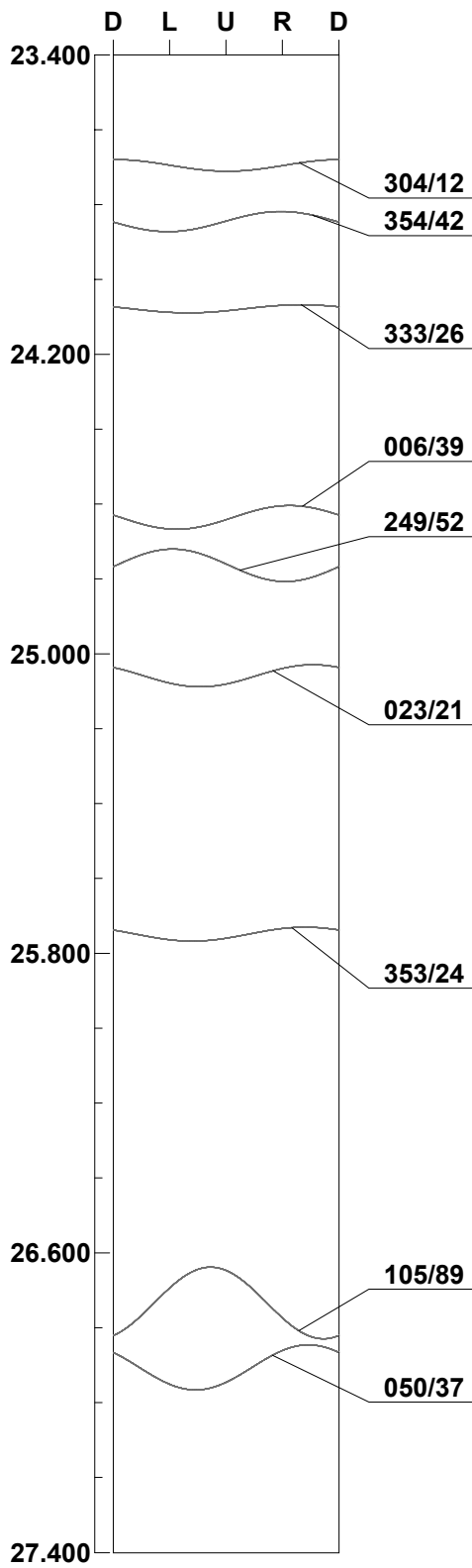
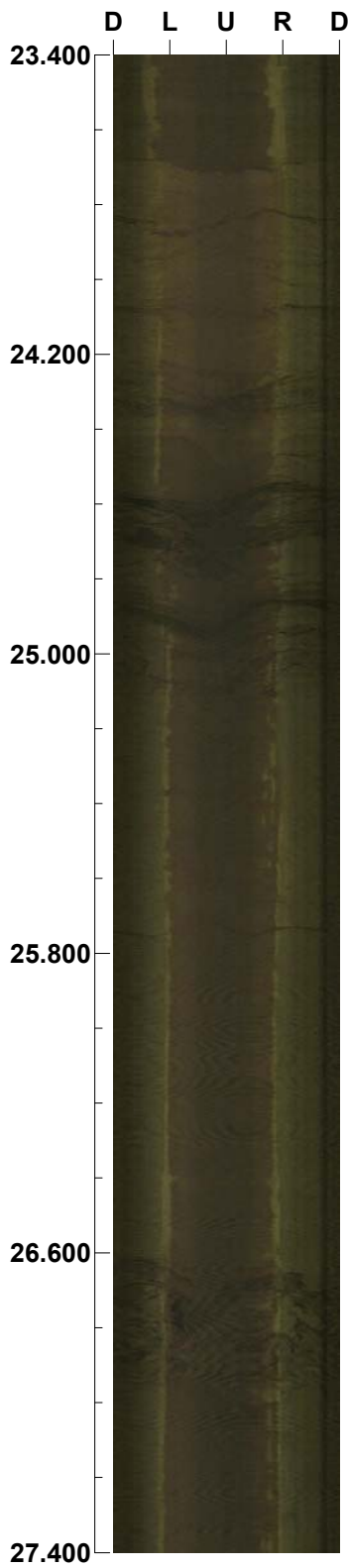
Project name: HORNSBY QUARRY

Bore hole No.: HQ1

Azimuth: 127

Inclination: -60

Depth range: 23.400 - 27.400 m



Scale: 1/20

Aspect ratio: 200 %

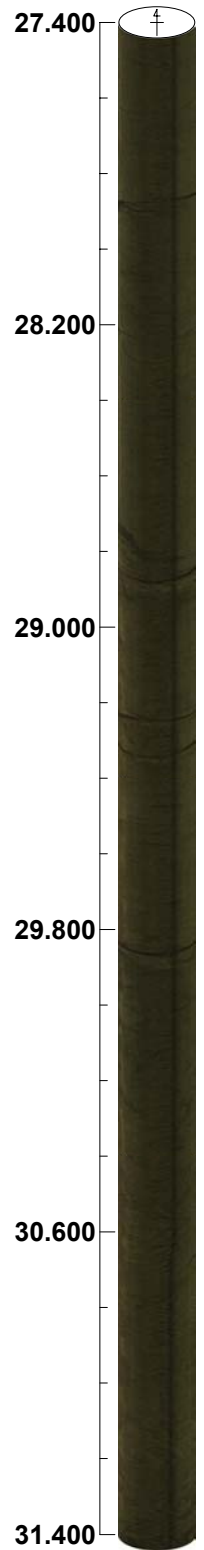
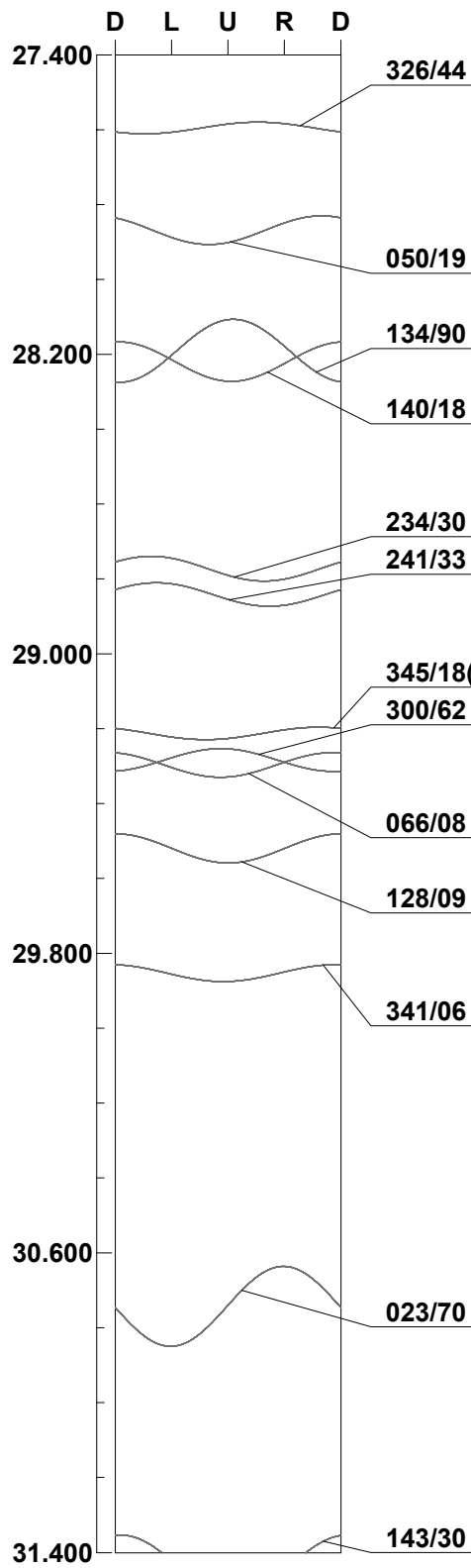
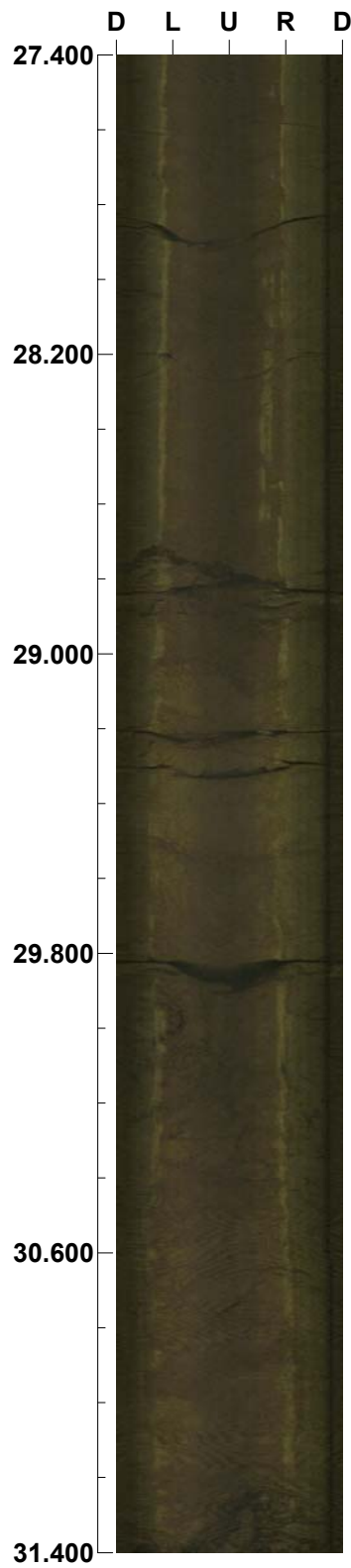
Project name: HORNSBY QUARRY

Bore hole No.: HQ1

Azimuth: 127

Inclination: -60

Depth range: 27.400 - 31.400 m



Scale: 1/20

Aspect ratio: 200 %

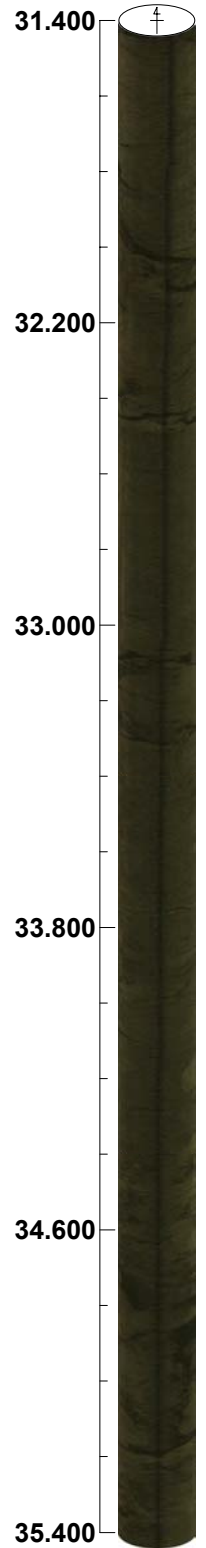
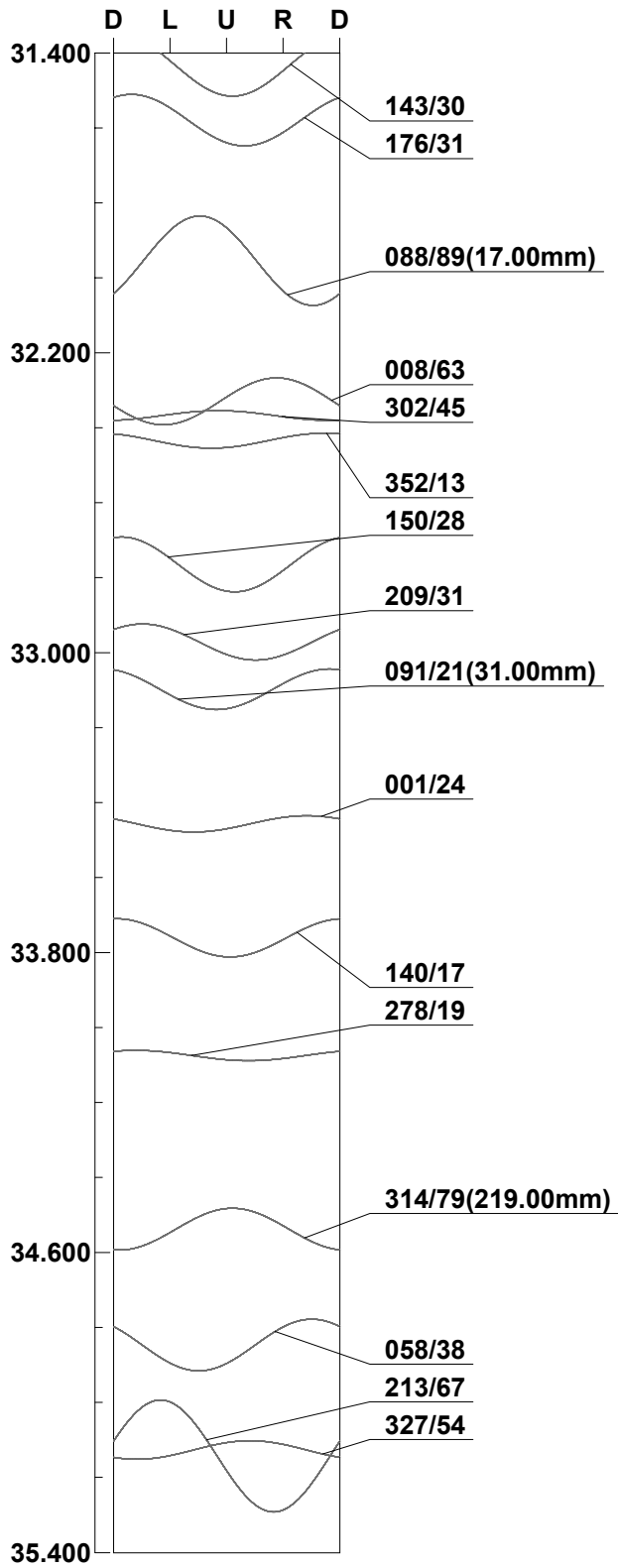
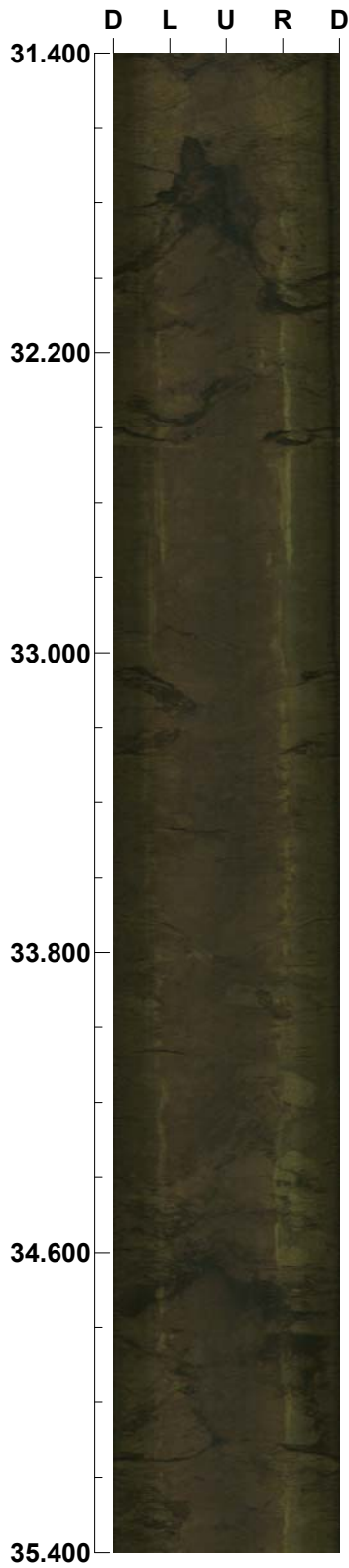
Project name: HORNSBY QUARRY

Bore hole No.: HQ1

Azimuth: 127

Inclination: -60

Depth range: 31.400 - 35.400 m



Scale: 1/20

Aspect ratio: 200 %

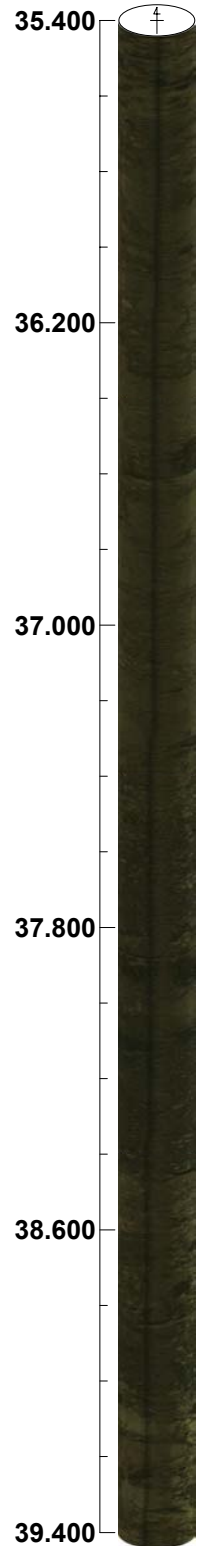
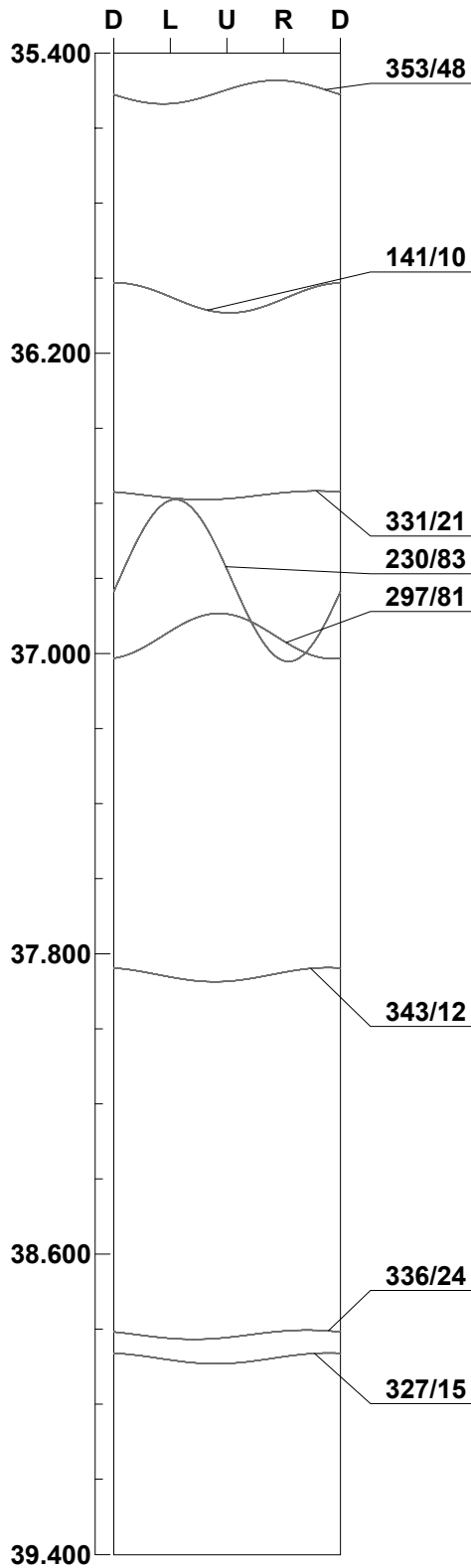
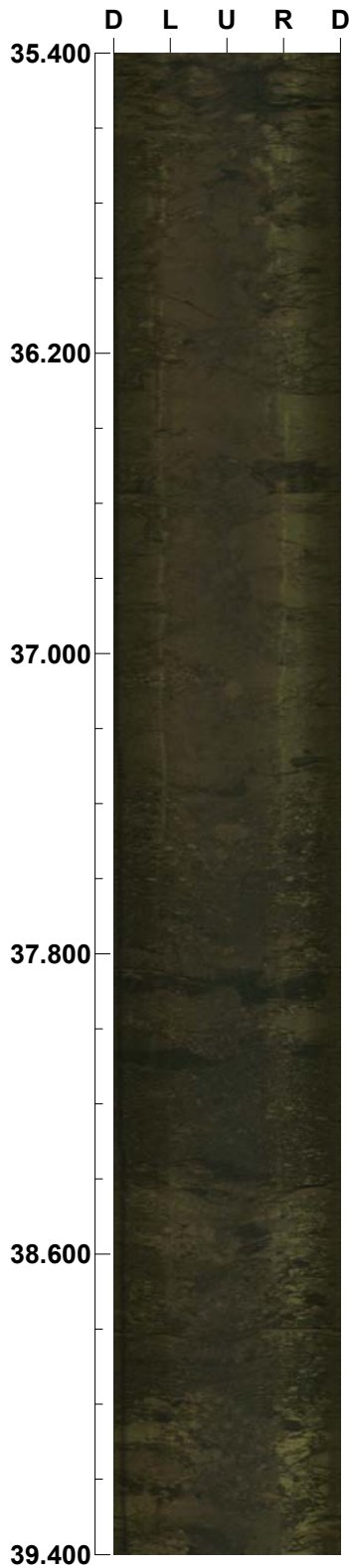
Project name: HORNSBY QUARRY

Bore hole No.: HQ1

Azimuth: 127

Inclination: -60

Depth range: 35.400 - 39.400 m



Scale: 1/20

Aspect ratio: 200 %

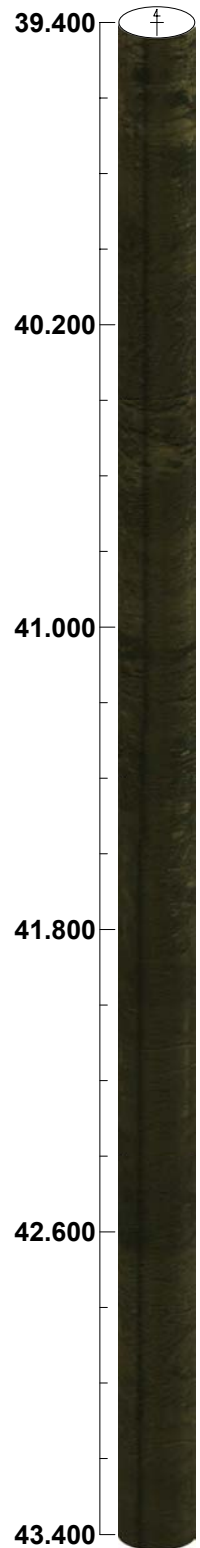
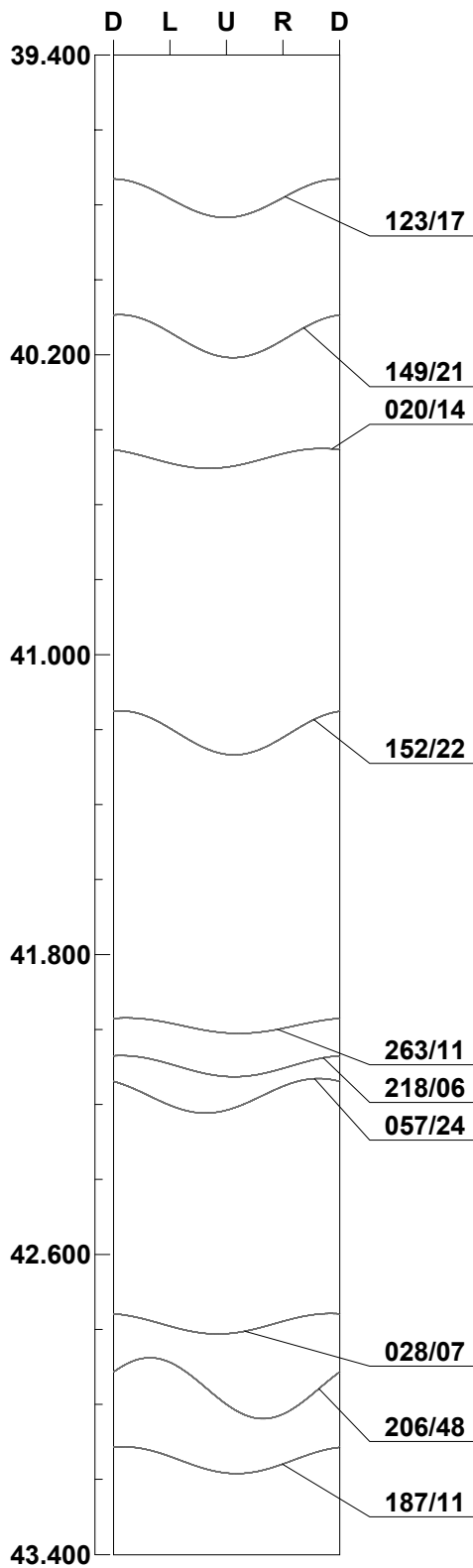
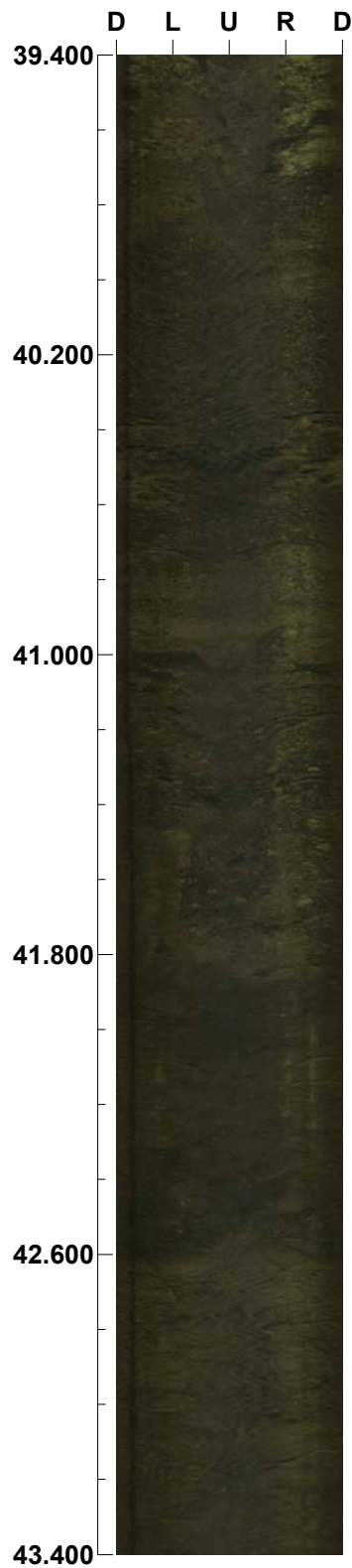
Project name: HORNSBY QUARRY

Bore hole No.: HQ1

Azimuth: 127

Inclination: -60

Depth range: 39.400 - 43.400 m



Scale: 1/20

Aspect ratio: 200 %

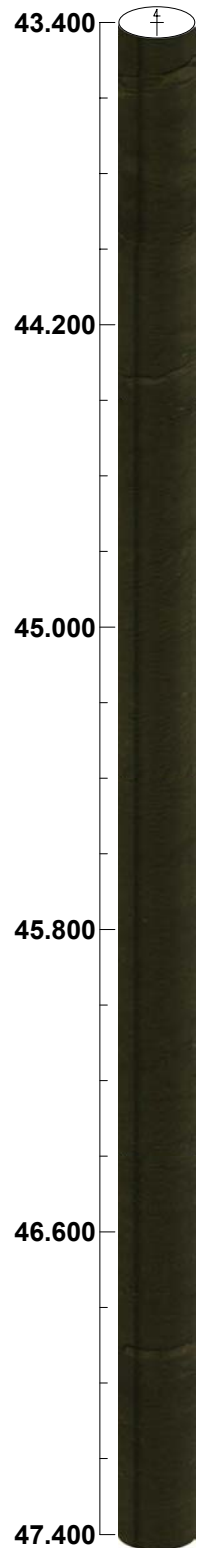
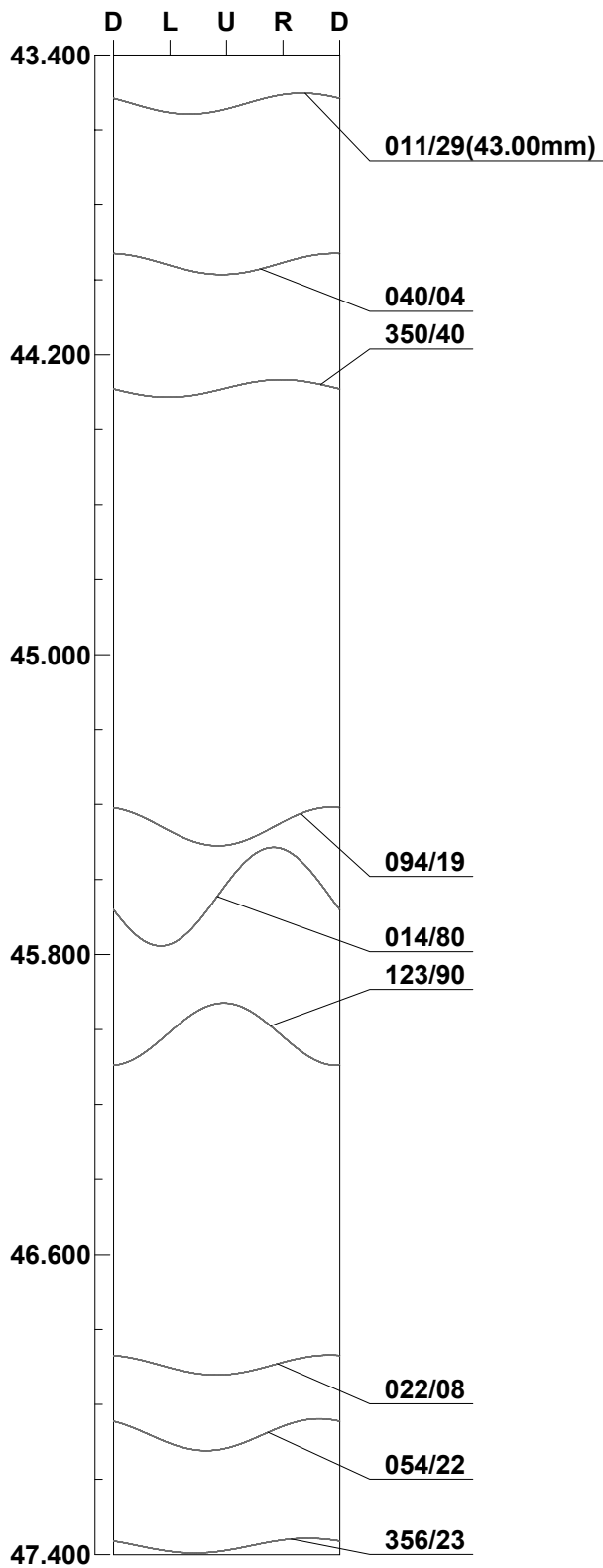
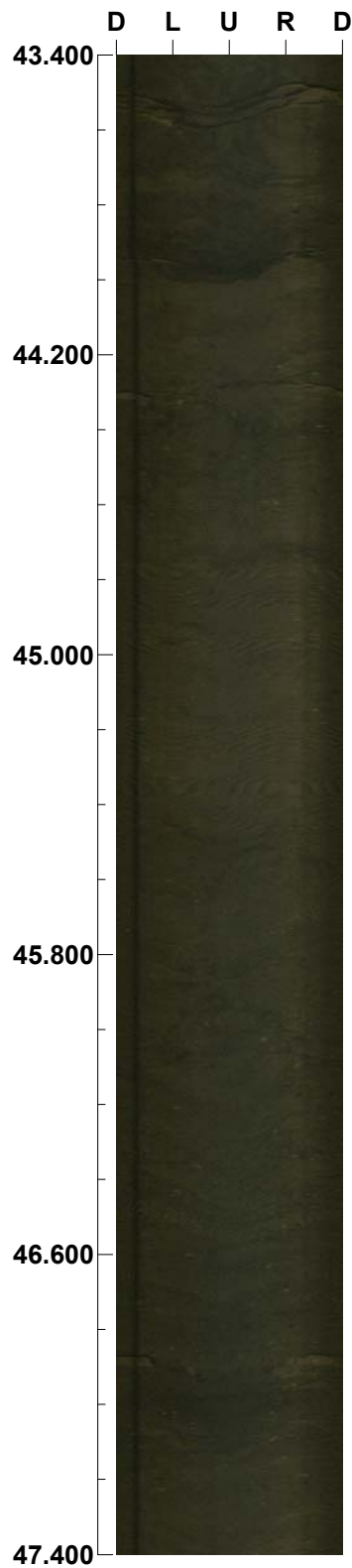
Project name: HORNSBY QUARRY

Bore hole No.: HQ1

Azimuth: 127

Inclination: -60

Depth range: 43.400 - 47.400 m



Scale: 1/20

Aspect ratio: 200 %

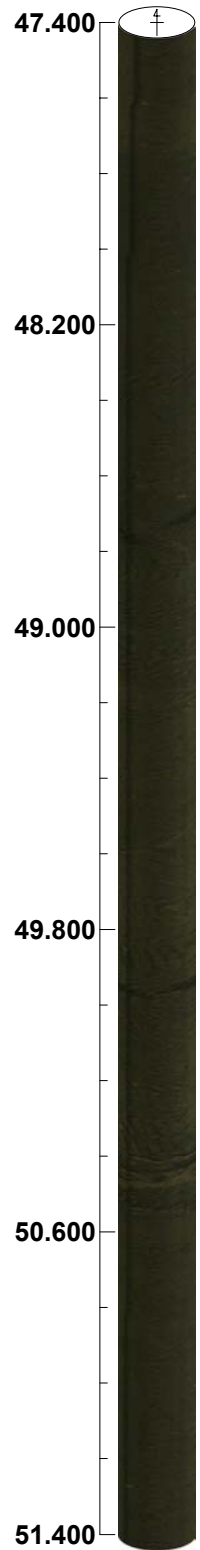
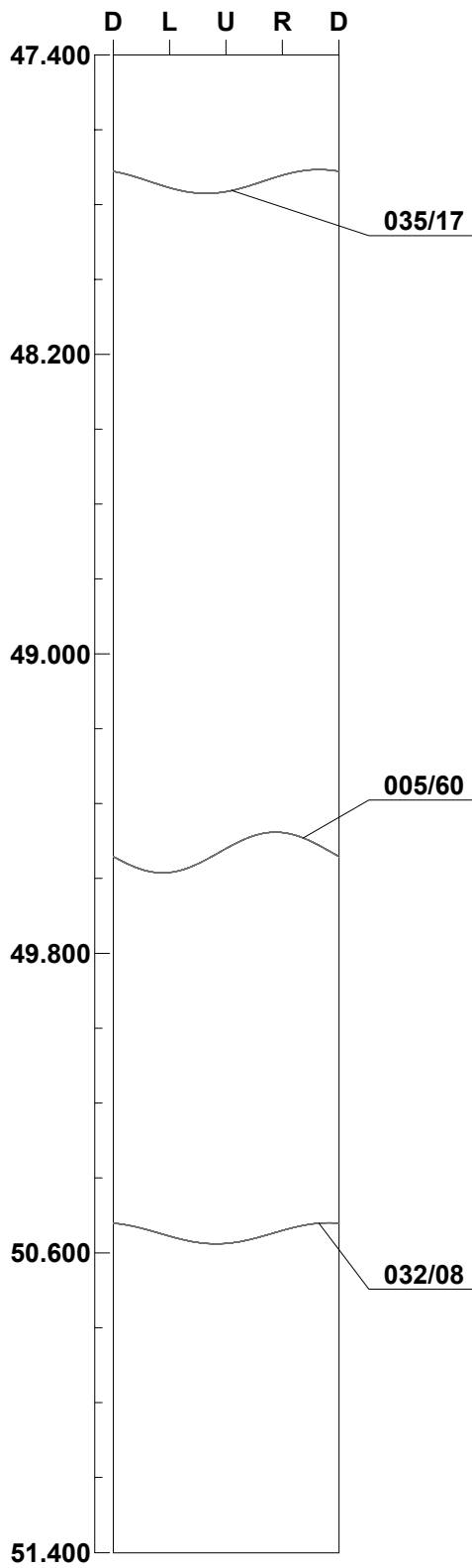
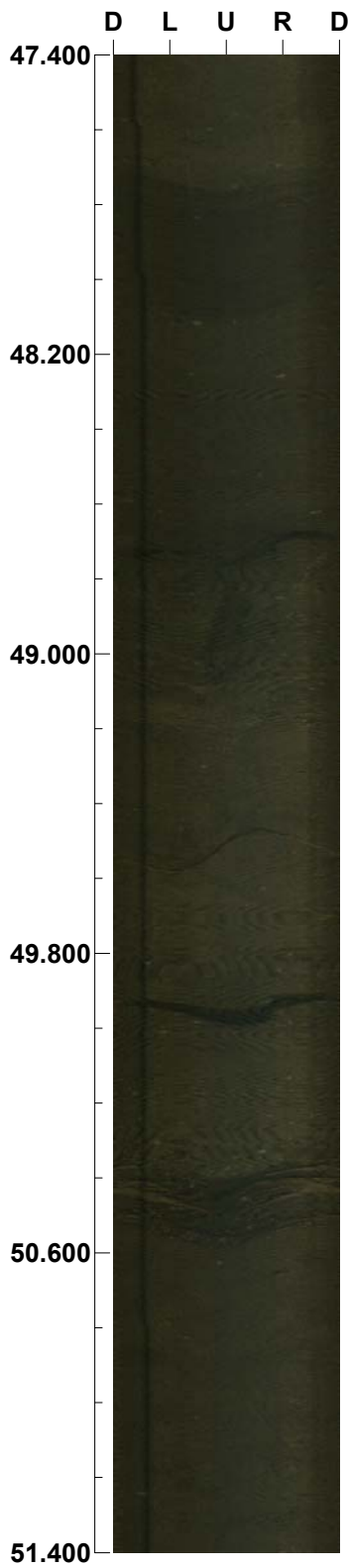
Project name: HORNSBY QUARRY

Bore hole No.: HQ1

Azimuth: 127

Inclination: -60

Depth range: 47.400 - 51.400 m



Scale: 1/20

Aspect ratio: 200 %

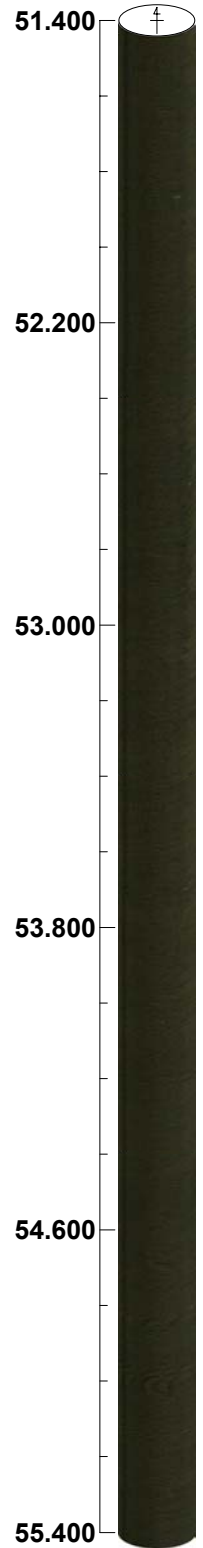
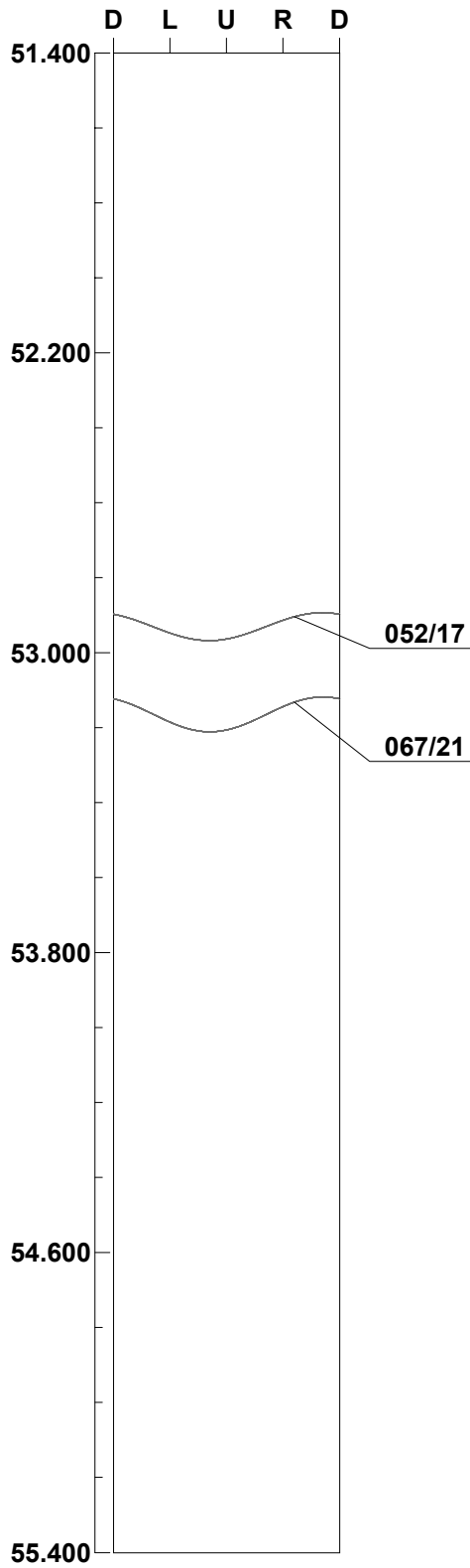
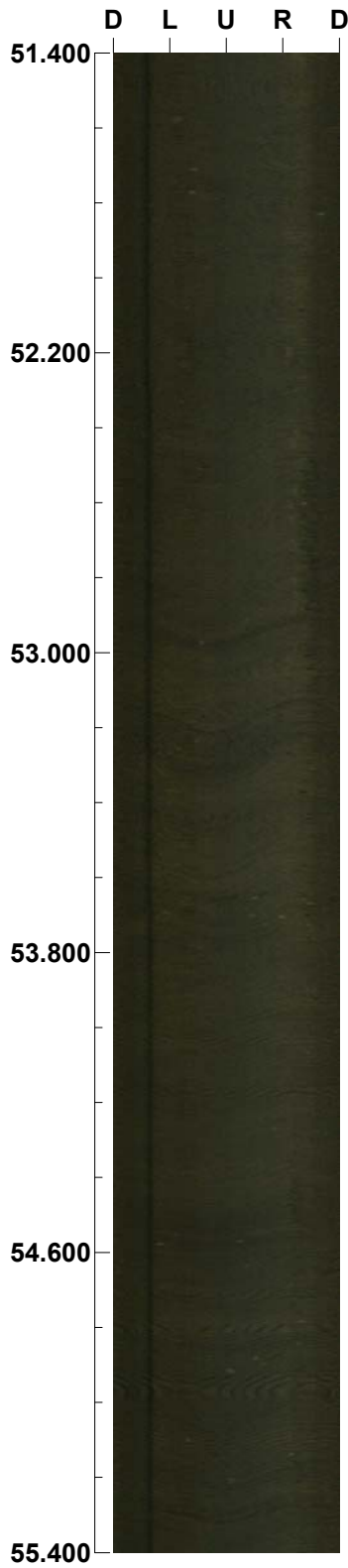
Project name: HORNSBY QUARRY

Bore hole No.: HQ1

Azimuth: 127

Inclination: -60

Depth range: 51.400 - 55.400 m



Scale: 1/20

Aspect ratio: 200 %

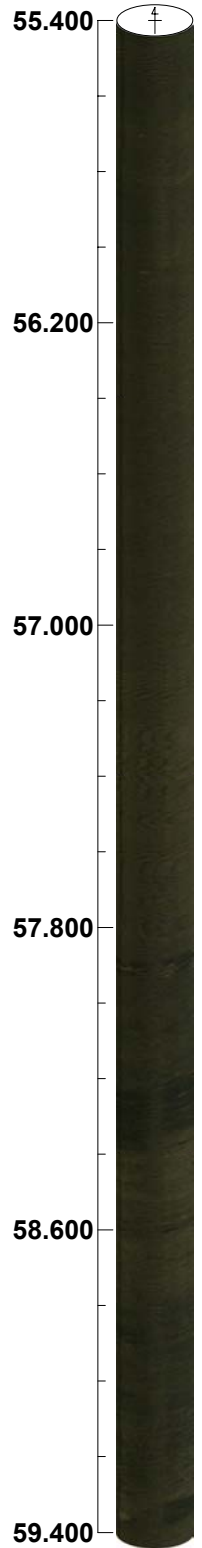
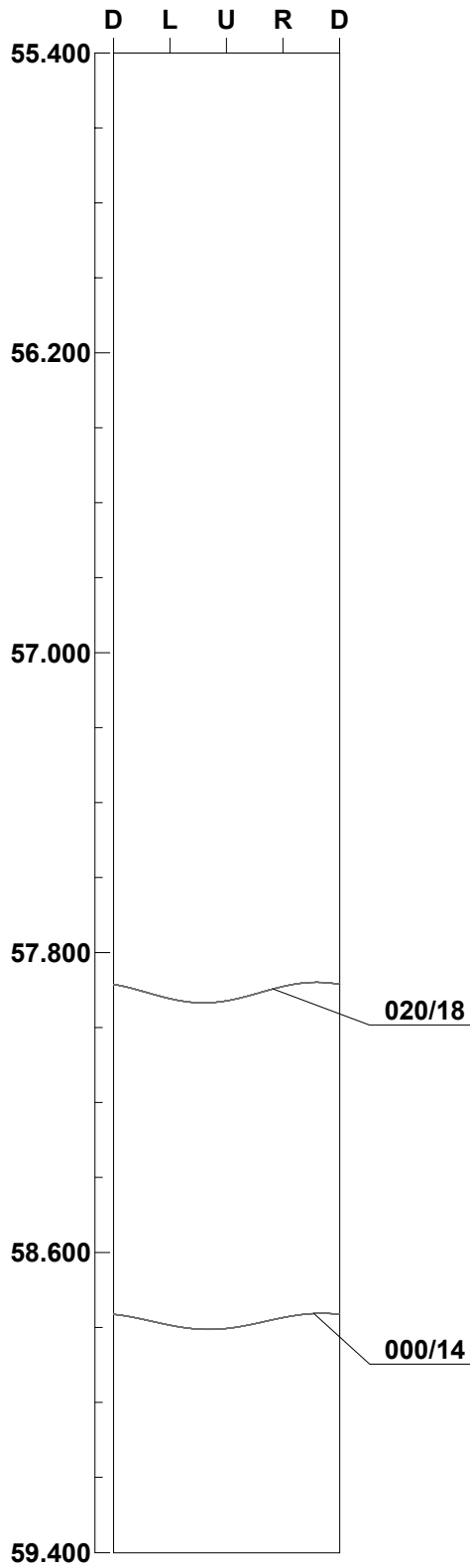
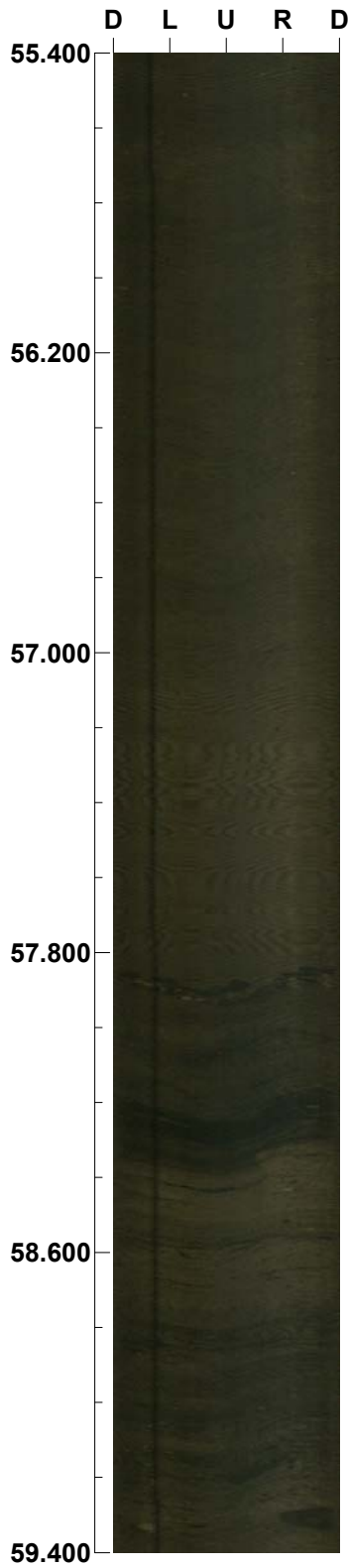
Project name: HORNSBY QUARRY

Bore hole No.: HQ1

Azimuth: 127

Inclination: -60

Depth range: 55.400 - 59.400 m



Scale: 1/20

Aspect ratio: 200 %

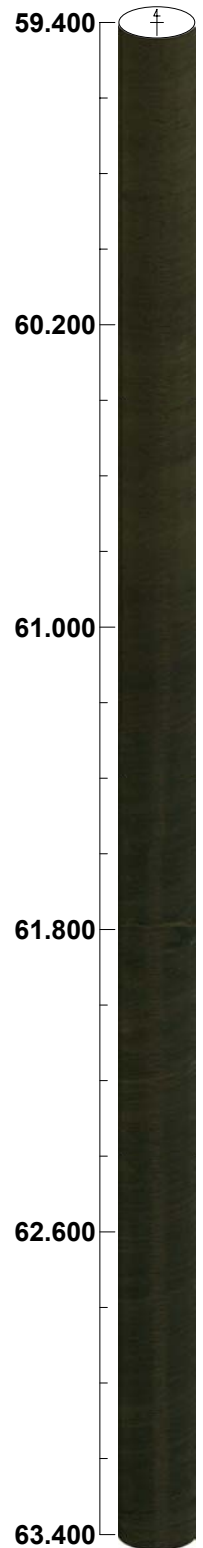
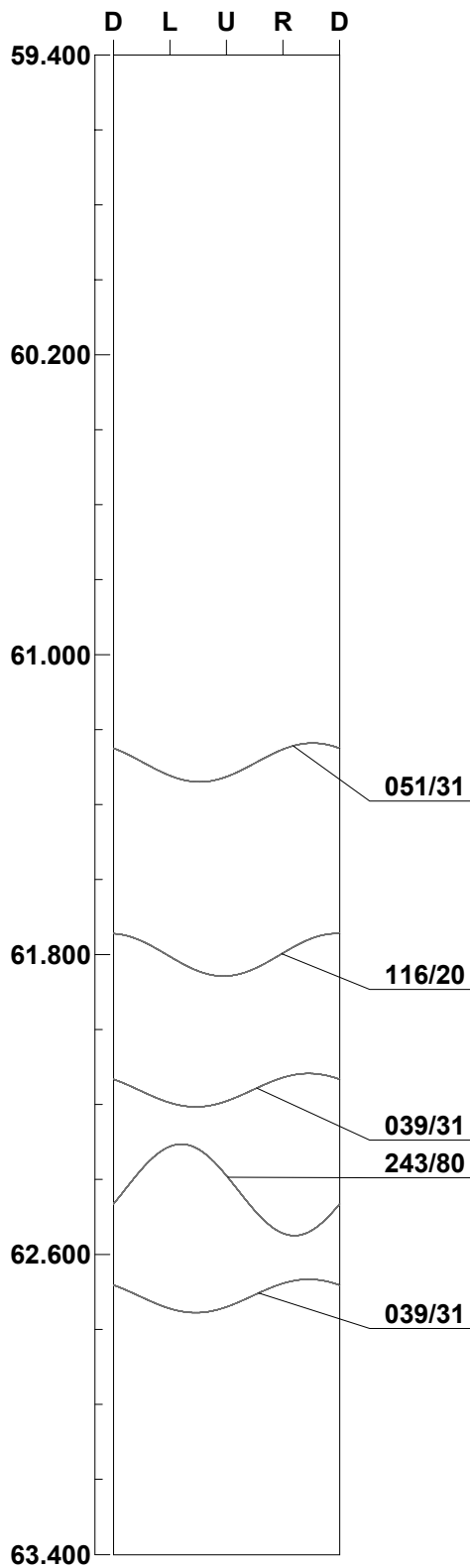
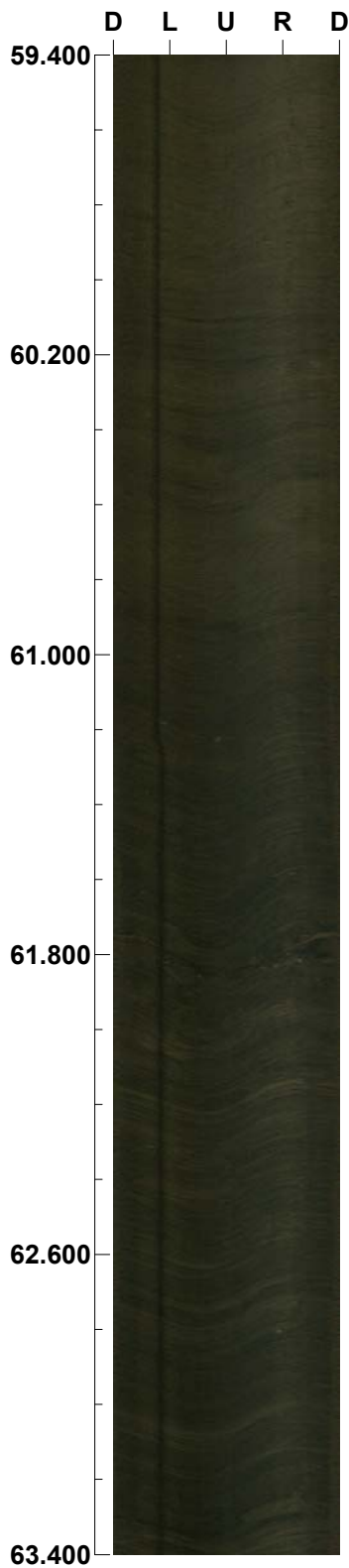
Project name: HORNSBY QUARRY

Bore hole No.: HQ1

Azimuth: 127

Inclination: -60

Depth range: 59.400 - 63.400 m



Scale: 1/20

Aspect ratio: 200 %

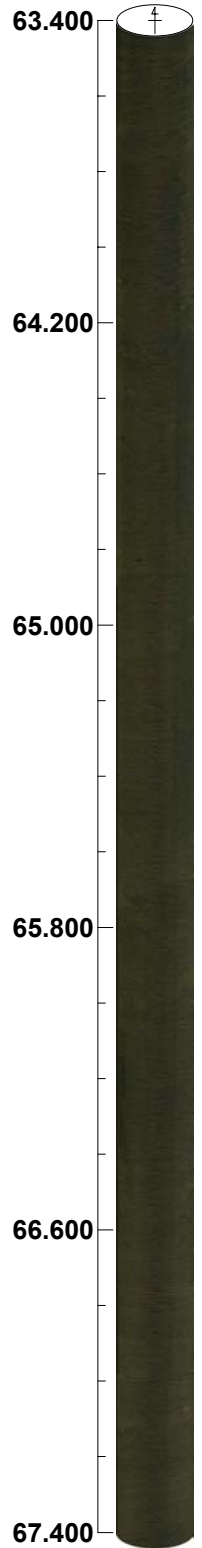
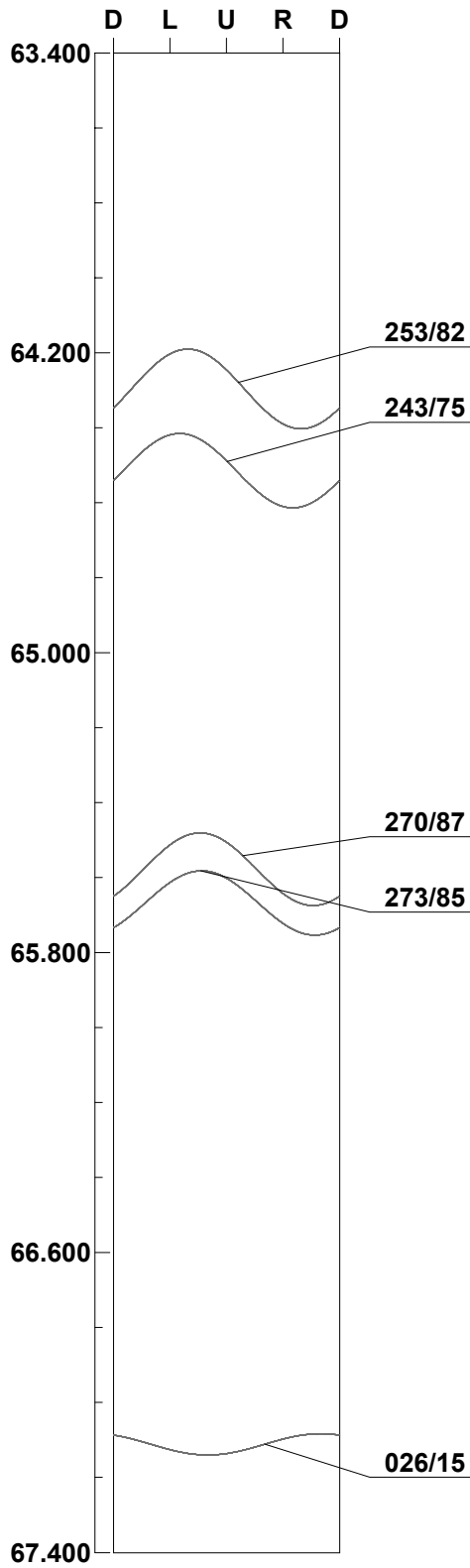
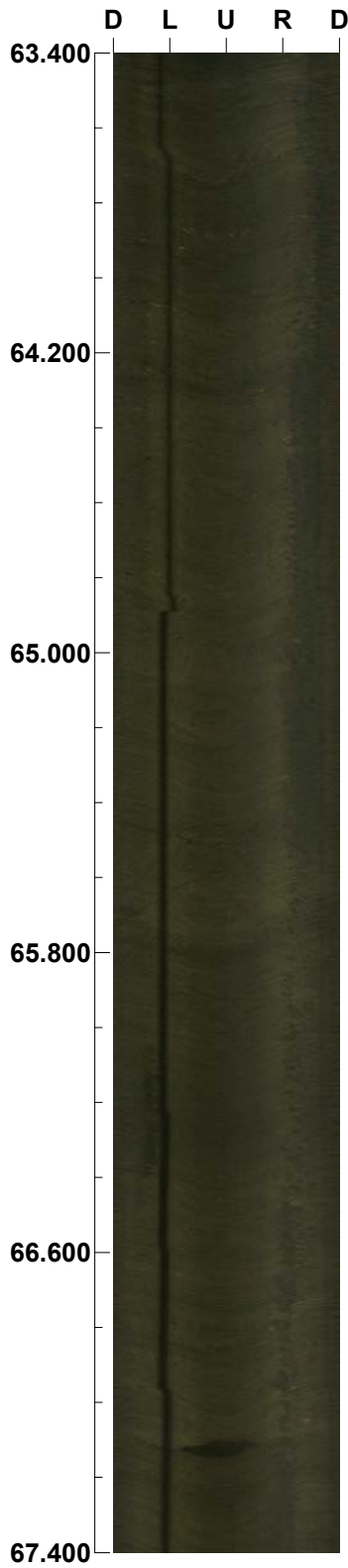
Project name: HORNSBY QUARRY

Bore hole No.: HQ1

Azimuth: 127

Inclination: -60

Depth range: 63.400 - 67.400 m



Scale: 1/20

Aspect ratio: 200 %

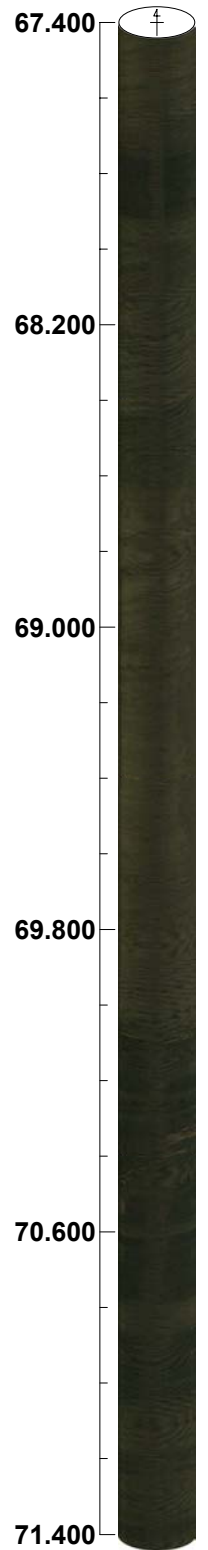
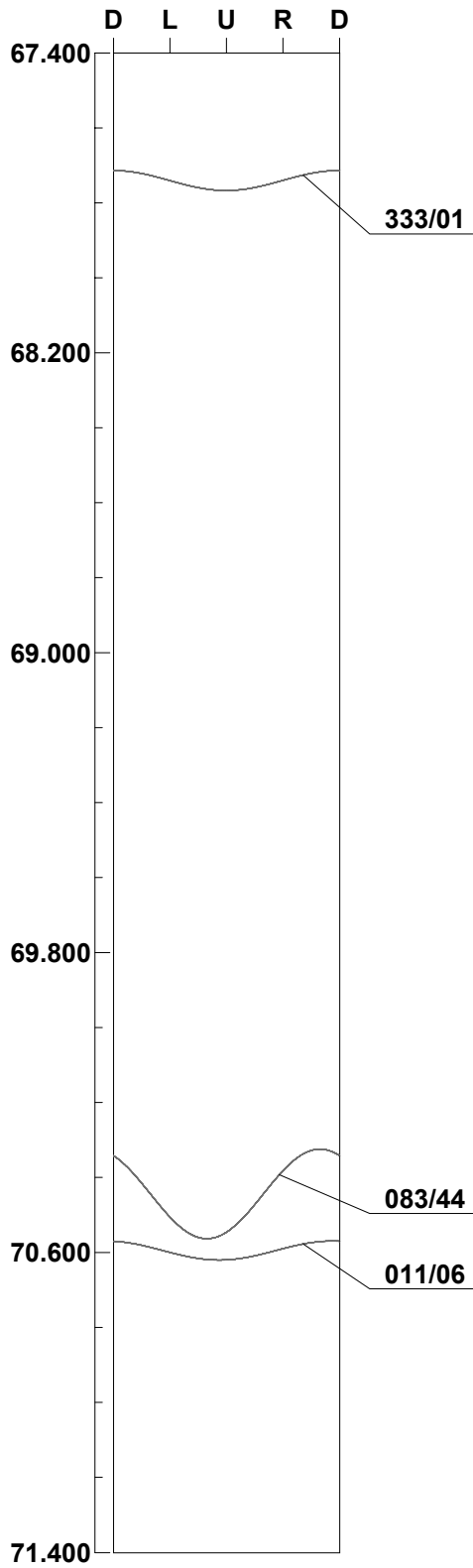
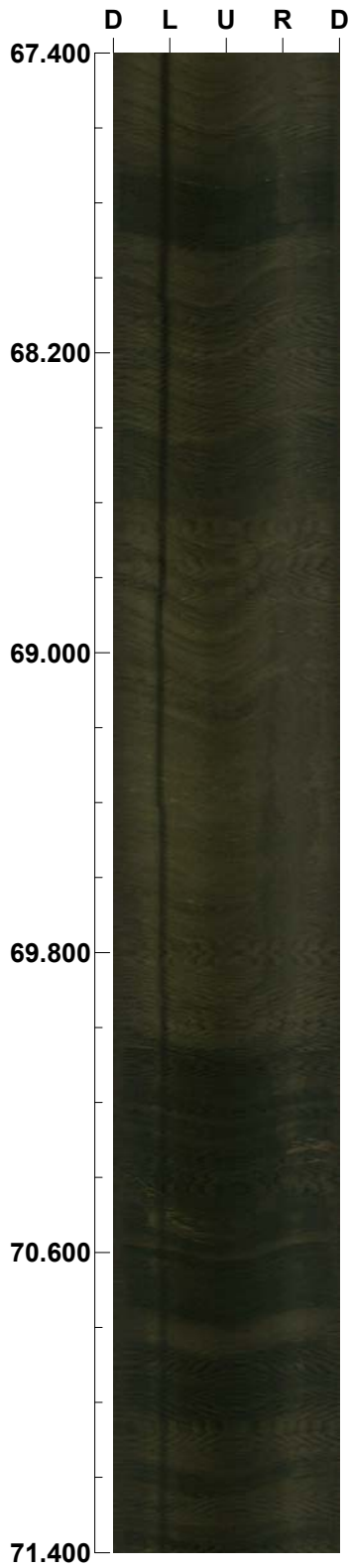
Project name: HORNSBY QUARRY

Bore hole No.: HQ1

Azimuth: 127

Inclination: -60

Depth range: 67.400 - 71.400 m



Scale: 1/20

Aspect ratio: 200 %

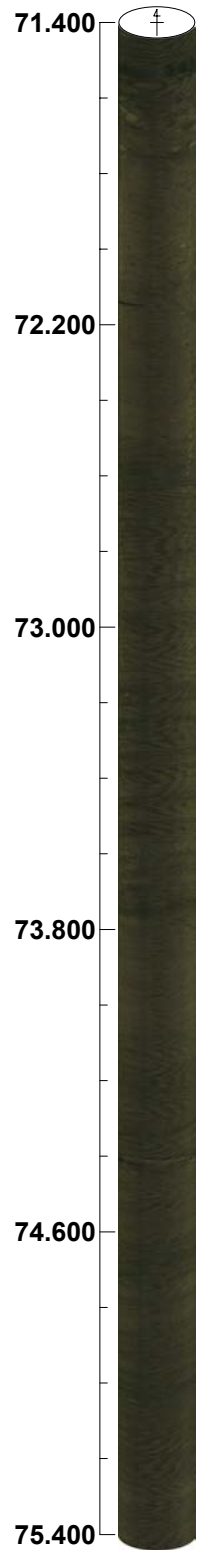
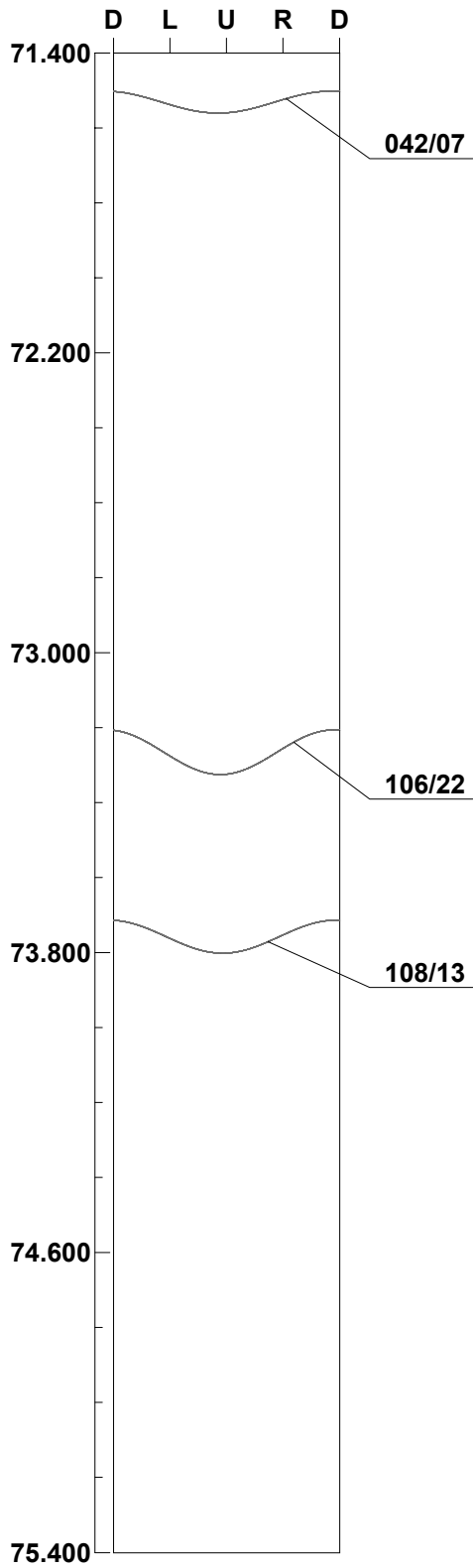
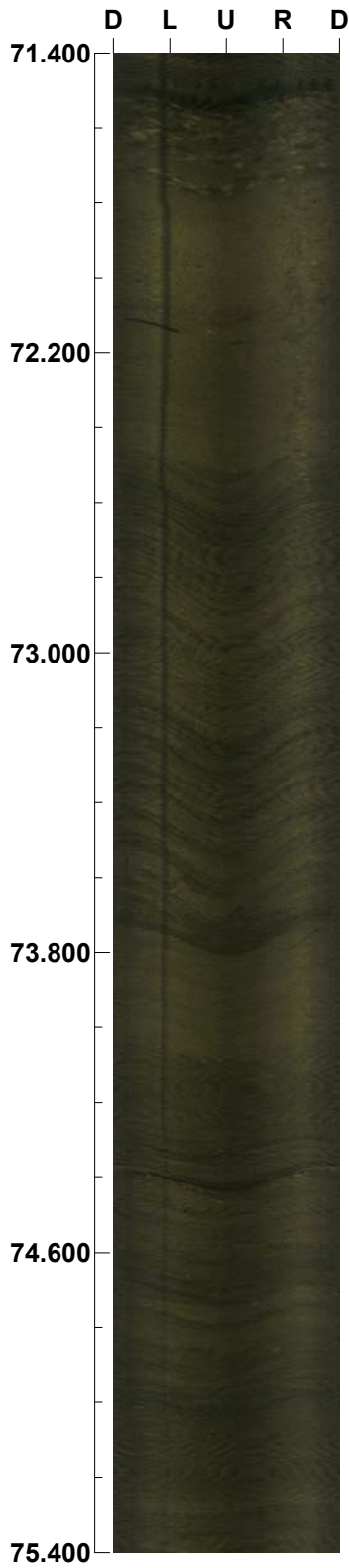
Project name: HORNSBY QUARRY

Bore hole No.: HQ1

Azimuth: 127

Inclination: -60

Depth range: 71.400 - 75.400 m



Scale: 1/20

Aspect ratio: 200 %

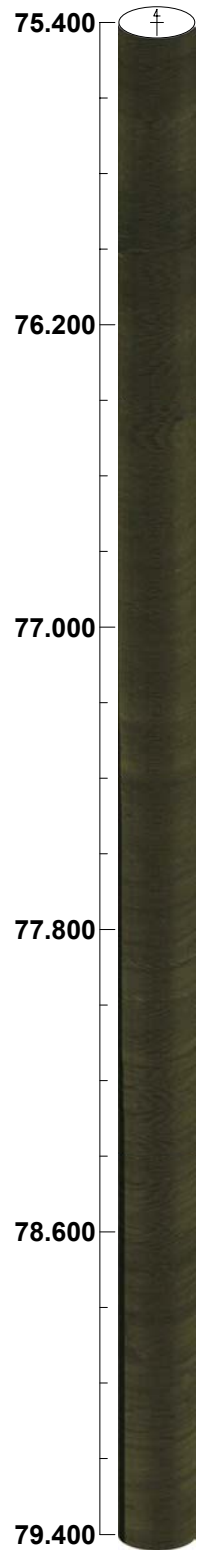
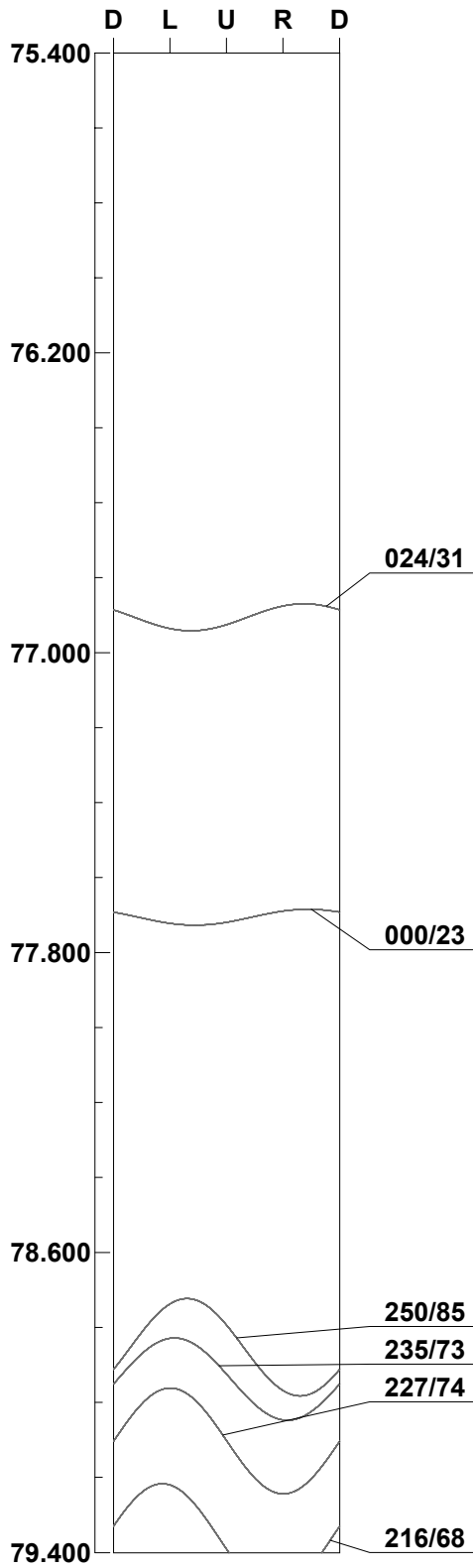
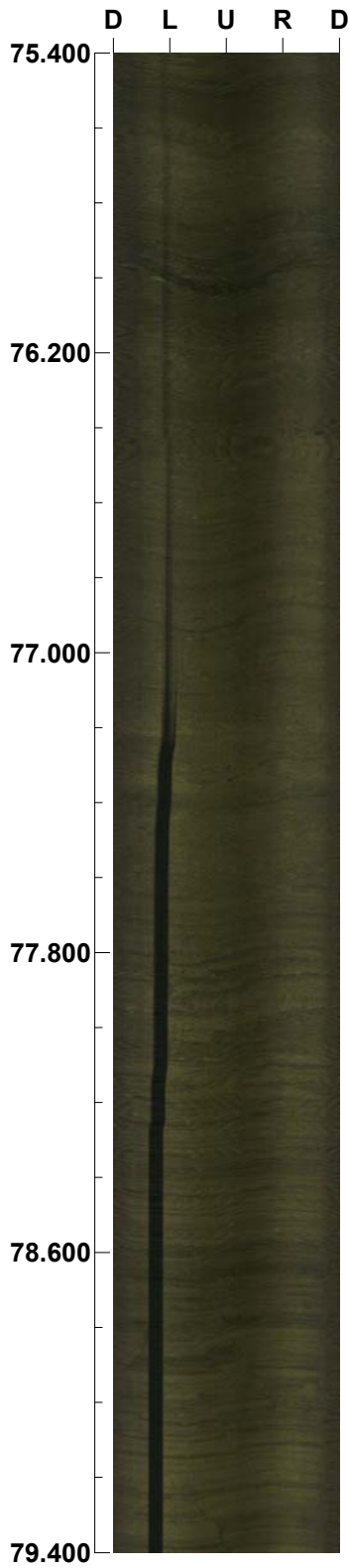
Project name: HORNSBY QUARRY

Bore hole No.: HQ1

Azimuth: 127

Inclination: -60

Depth range: 75.400 - 79.400 m



Scale: 1/20

Aspect ratio: 200 %

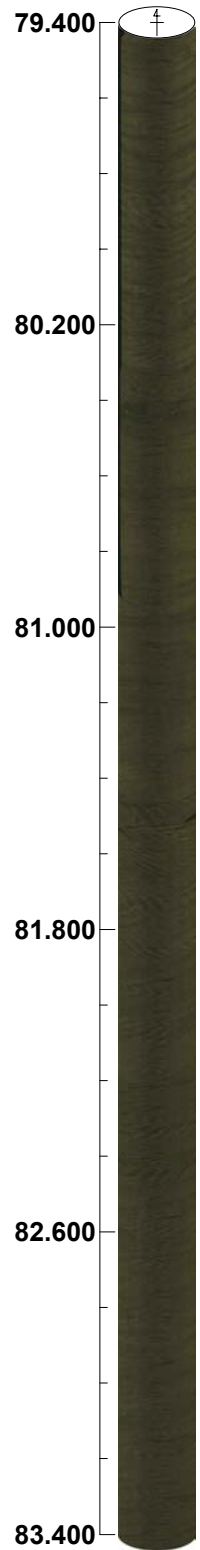
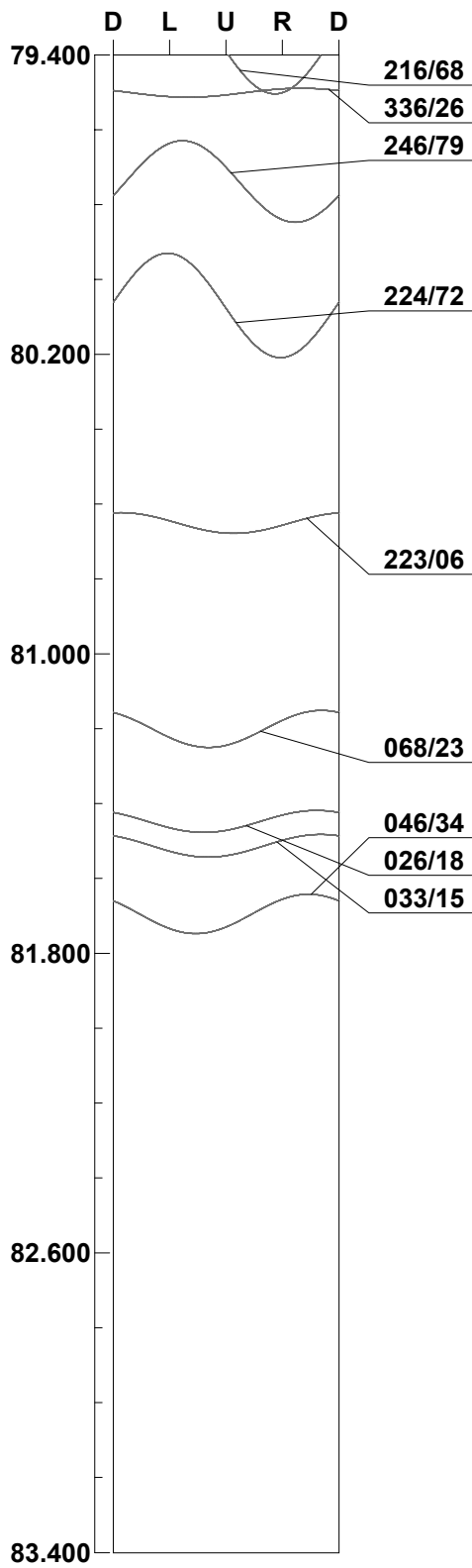
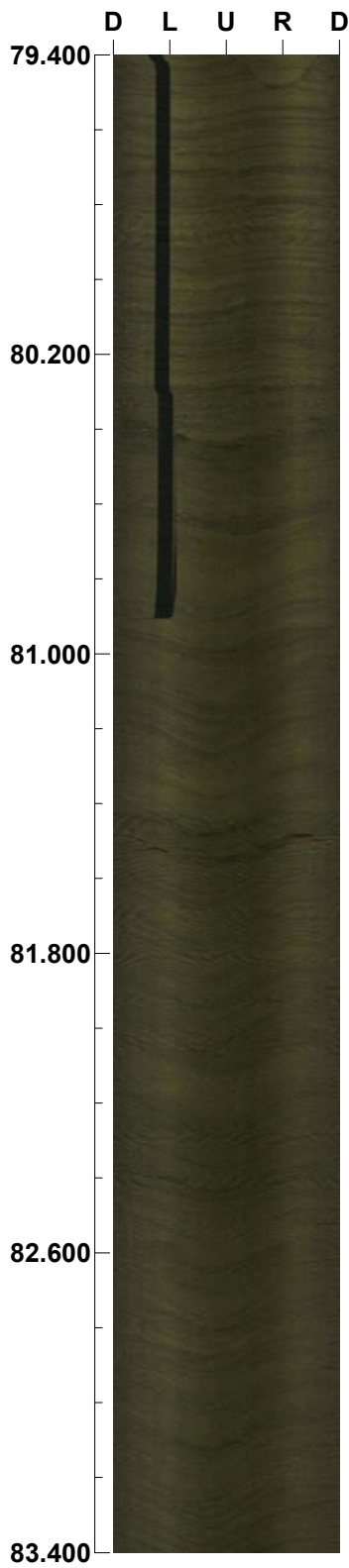
Project name: HORNSBY QUARRY

Bore hole No.: HQ1

Azimuth: 127

Inclination: -60

Depth range: 79.400 - 83.400 m



Scale: 1/20

Aspect ratio: 200 %

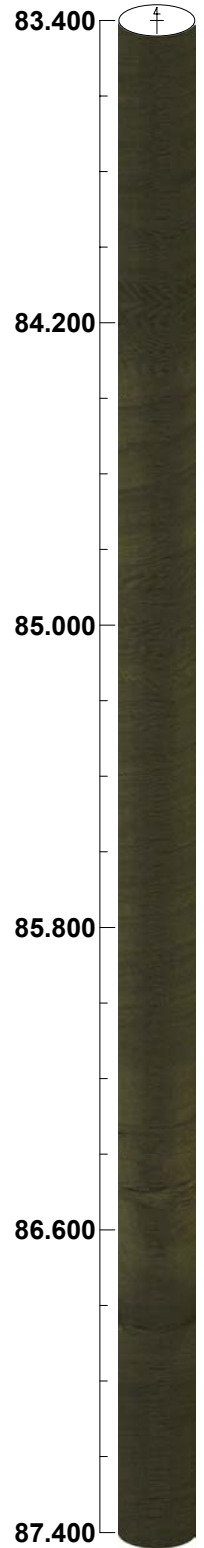
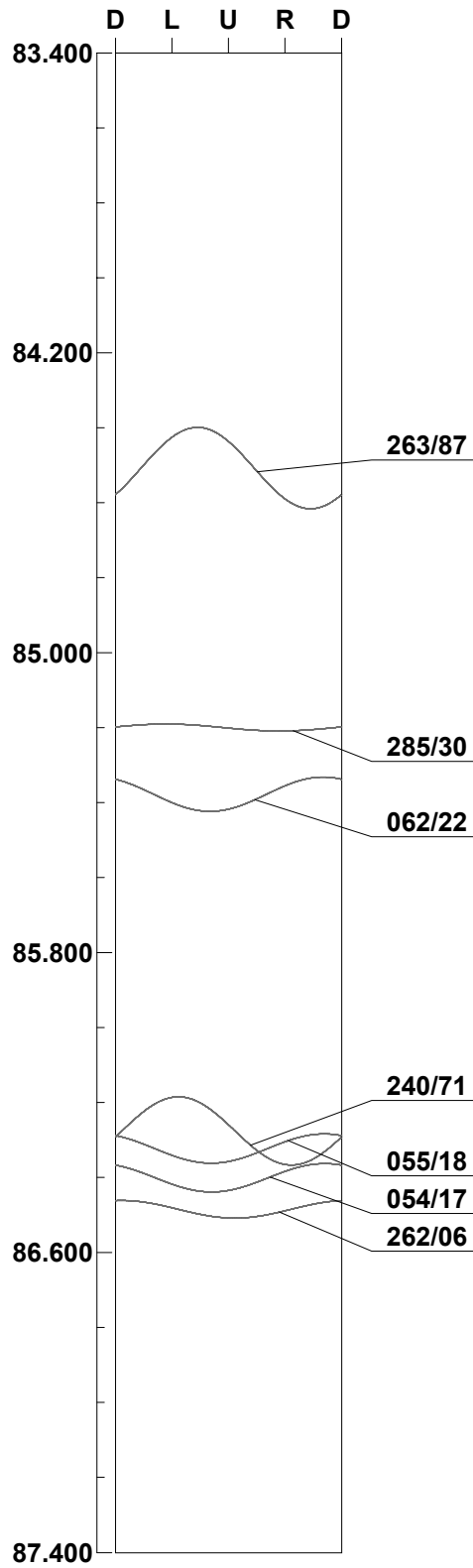
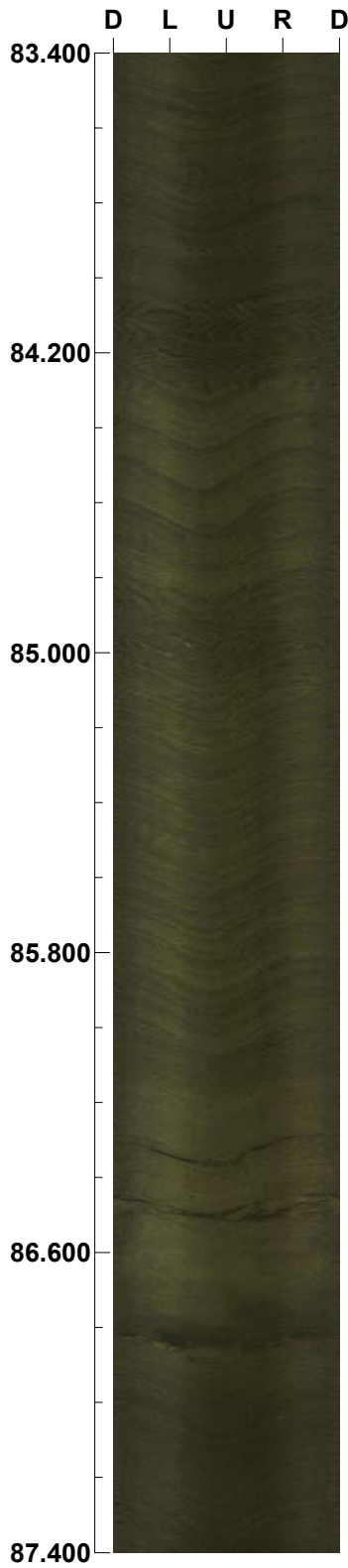
Project name: HORNSBY QUARRY

Bore hole No.: HQ1

Azimuth: 127

Inclination: -60

Depth range: 83.400 - 87.400 m



Scale: 1/20

Aspect ratio: 200 %

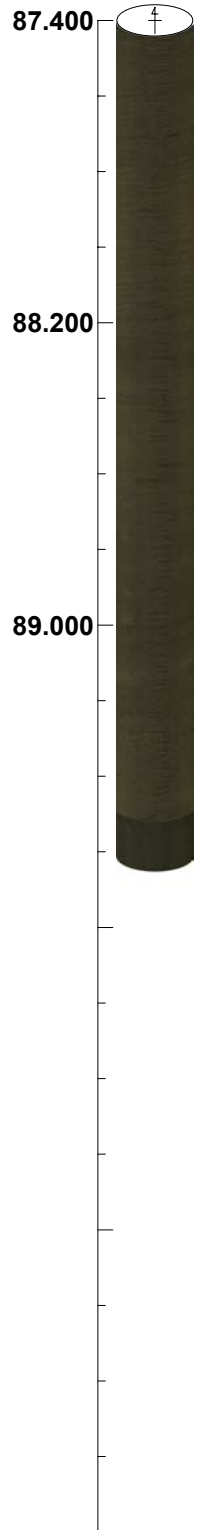
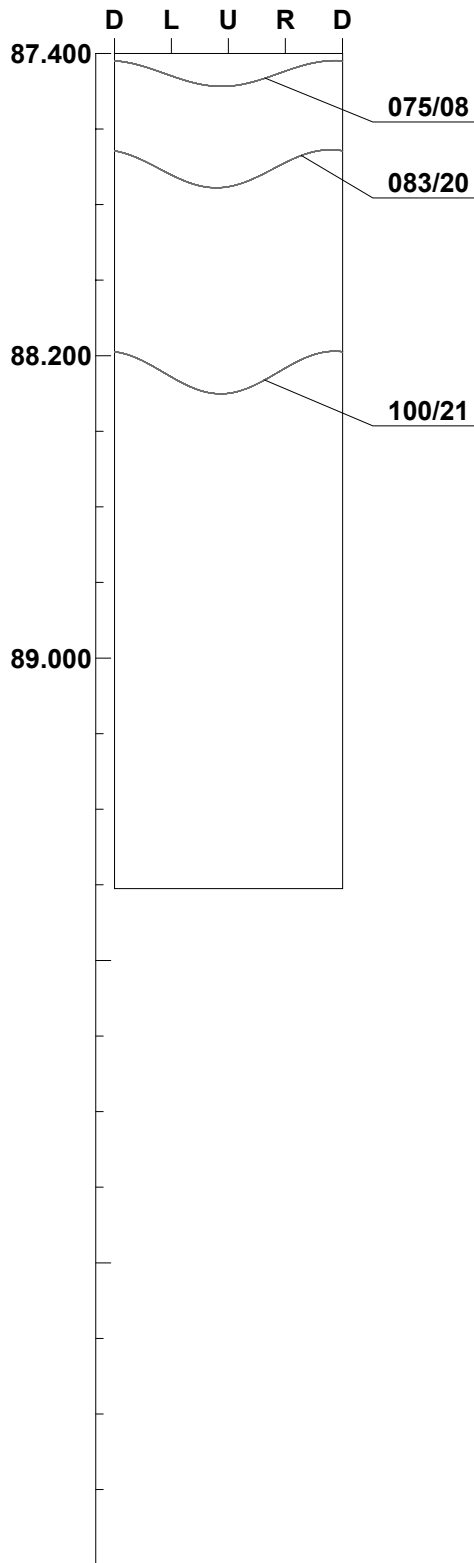
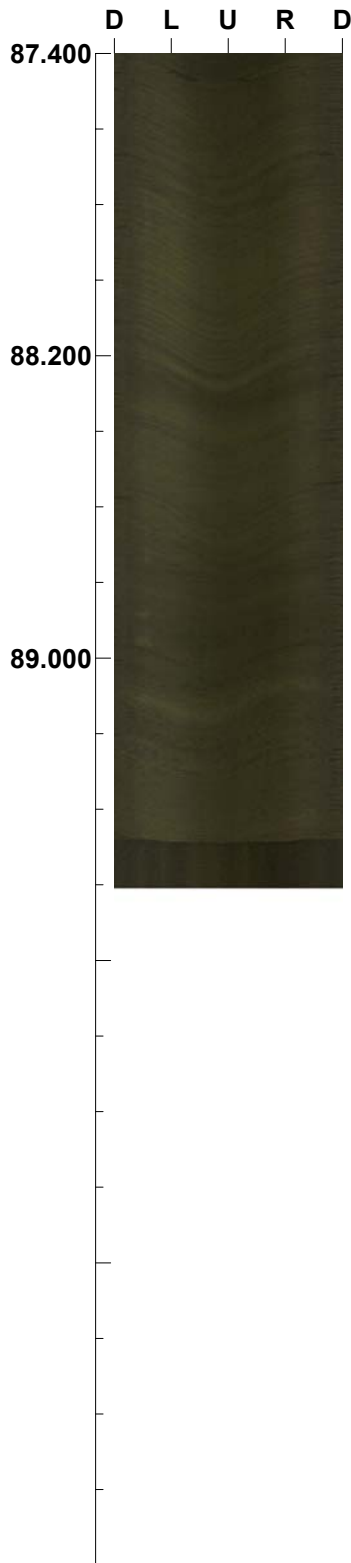
Project name: HORNSBY QUARRY

Bore hole No.: HQ1

Azimuth: 127

Inclination: -60

Depth range: 87.400 - 89.609 m

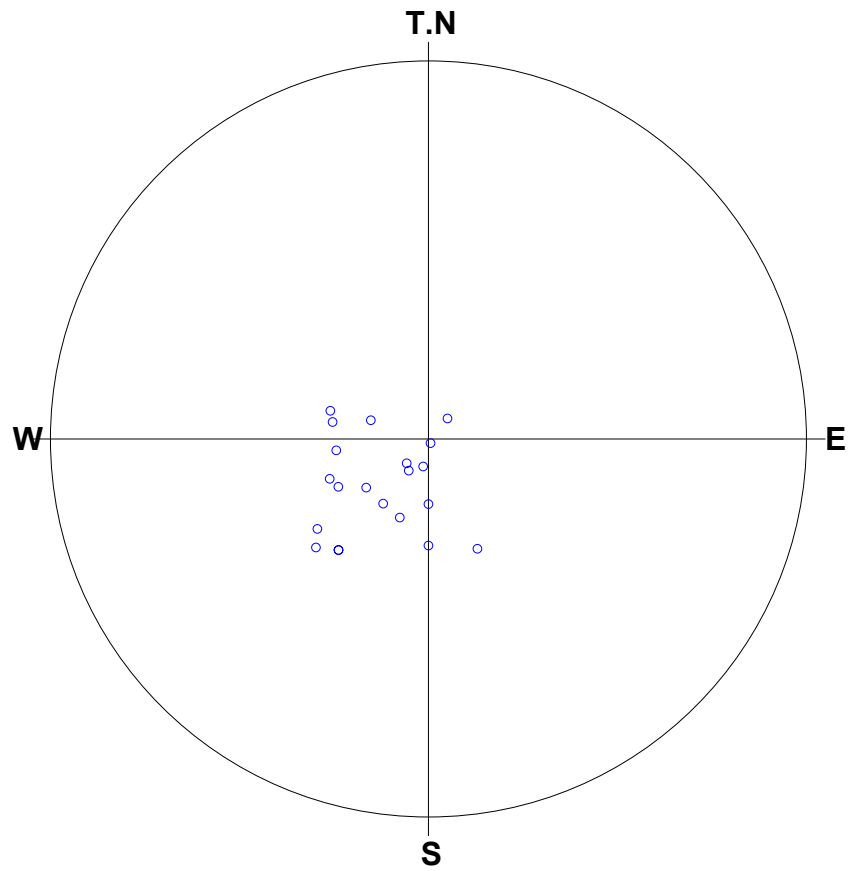


Scale: 1/20

Aspect ratio: 200 %

hq1.STR

<<BEDDING/LAMINA>>



Number of Data : 21/180

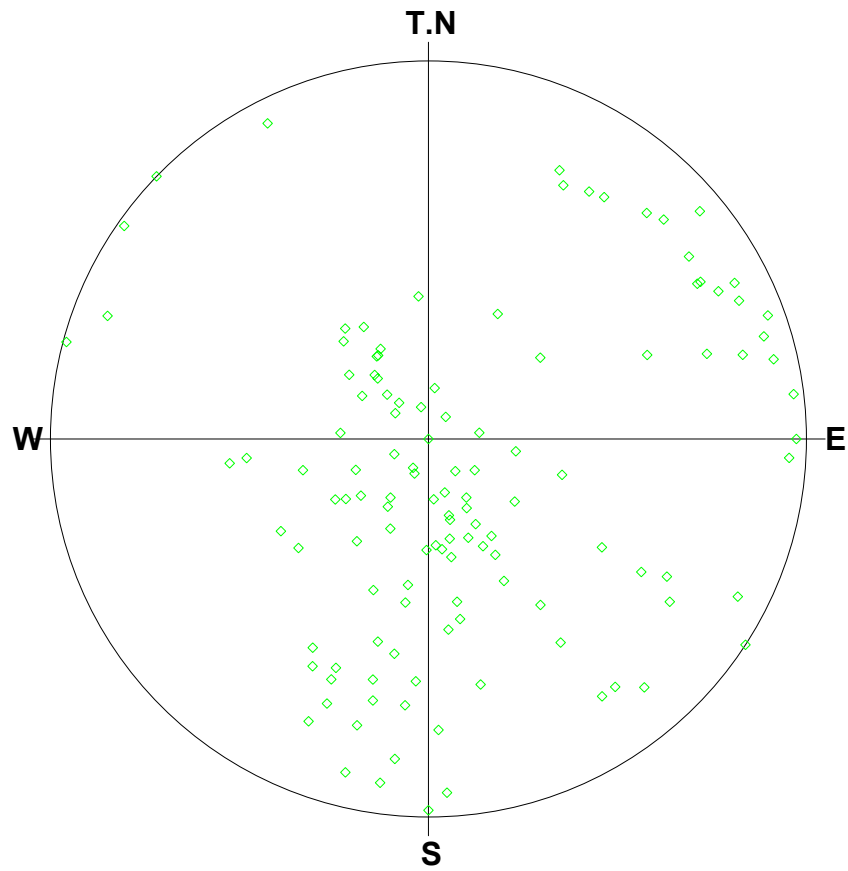
<Legend>

○:Bed/lamina-	21	+:Rkbndry	-- 0
◇:Joint	-- 0		
□:Parting	-- 0		
△:Fault	-- 0		
▽:Shearzone	-- 0		
×:Vein	-- 0		

Schmidt (L.H)

Depth : 3.751 - 88.244 m

hq1.STR
<<JOINT>>



Number of Data : 124/180

<Legend>

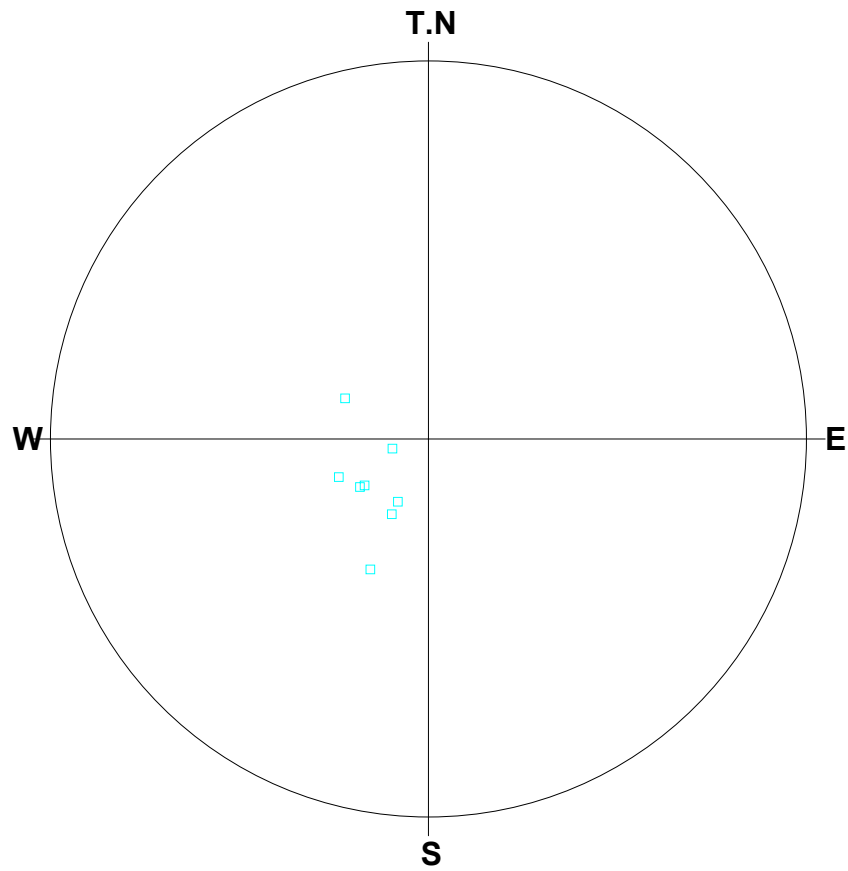
- | | | | |
|---------------|--------|----------|------|
| ○:Bed/lamina- | 0 | +:Rkbdry | -- 0 |
| ◇:Joint | -- 124 | | |
| □:Parting | -- 0 | | |
| △:Fault | -- 0 | | |
| ▽:Shearzone | -- 0 | | |
| ×:Vein | -- 0 | | |

Schmidt (L.H)

Depth : 3.751 - 88.244 m

hq1.STR

<<PARTING>>



Number of Data : 8/180

<Legend>

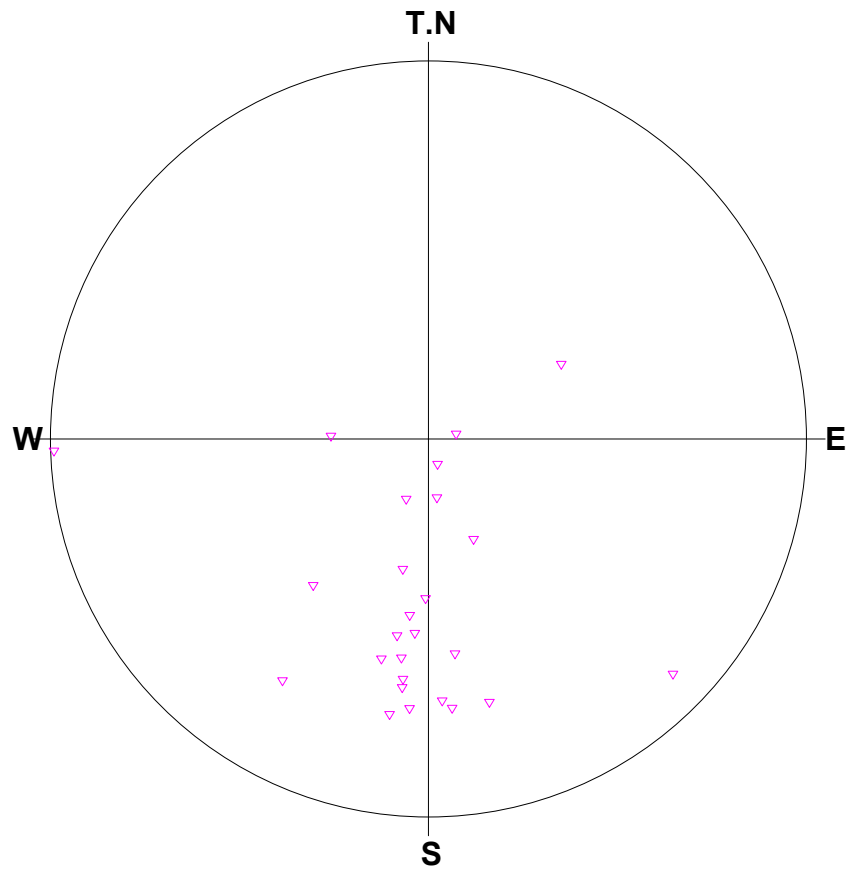
- | | | | | |
|---------------|----|-----------|----|---|
| ○:Bed/lamina- | 0 | +:Rkbndry | -- | 0 |
| ◇:Joint | -- | | | 0 |
| □:Parting | -- | | | 8 |
| △:Fault | -- | | | 0 |
| ▽:Shearzone | -- | | | 0 |
| ×:Vein | -- | | | 0 |

Schmidt (L.H)

Depth : 3.751 - 88.244 m

hq1.STR

<<SHEAR ZONE>>



Number of Data : 26/180

<Legend>

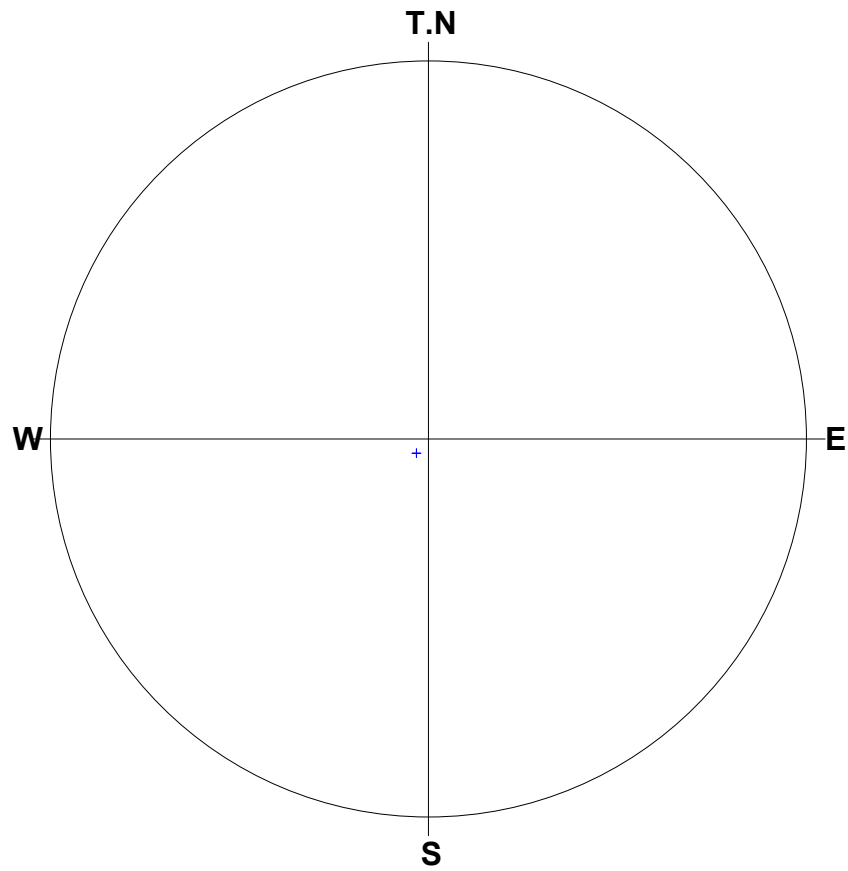
- | | | | | |
|---------------|----|-----------|----|---|
| ○:Bed/lamina- | 0 | +:Rkbndry | -- | 0 |
| ◇:Joint | -- | | | 0 |
| □:Parting | -- | | | 0 |
| △:Fault | -- | | | 0 |
| ▽:Shearzone-- | 26 | | | |
| ×:Vein | -- | | | 0 |

Schmidt (L.H)

Depth : 3.751 - 88.244 m

hq1.STR

<<ROCK BOUNDARY>>



Number of Data : 1/180

<Legend>

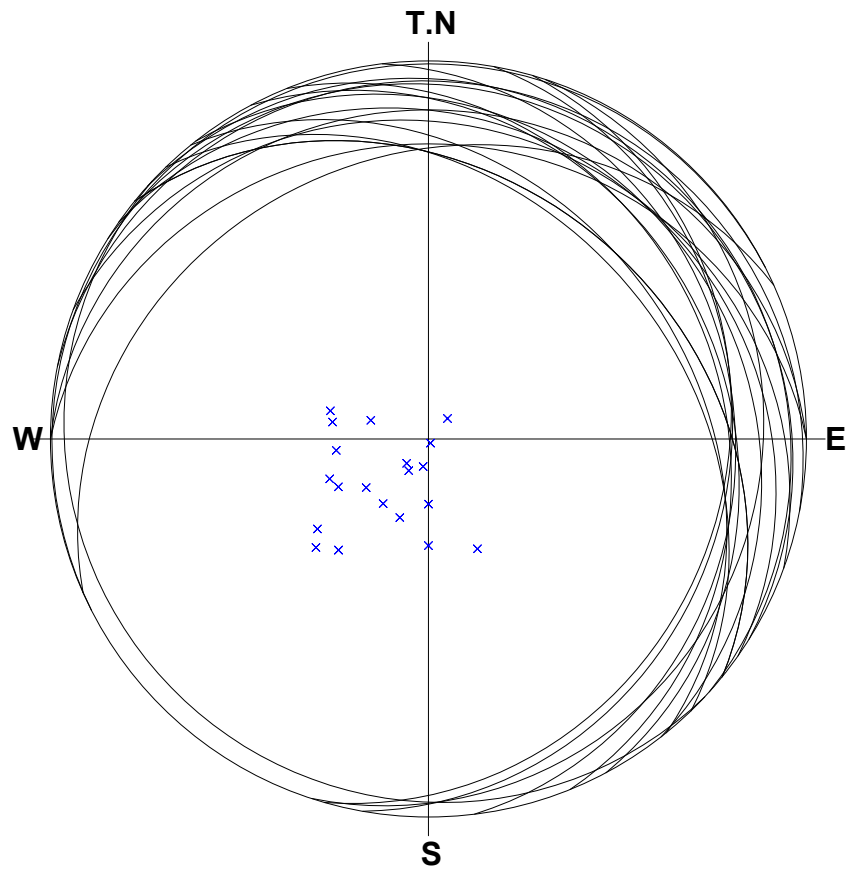
○:Bed/lamina-	0	+:Rkbdry	--	1
◇:Joint	--	0		
□:Parting	--	0		
△:Fault	--	0		
▽:Shearzone	--	0		
×:Vein	--	0		

Schmidt (L.H)

Depth : 3.751 - 88.244 m

hq1.STR

<<BEDDING/LAMINA>>



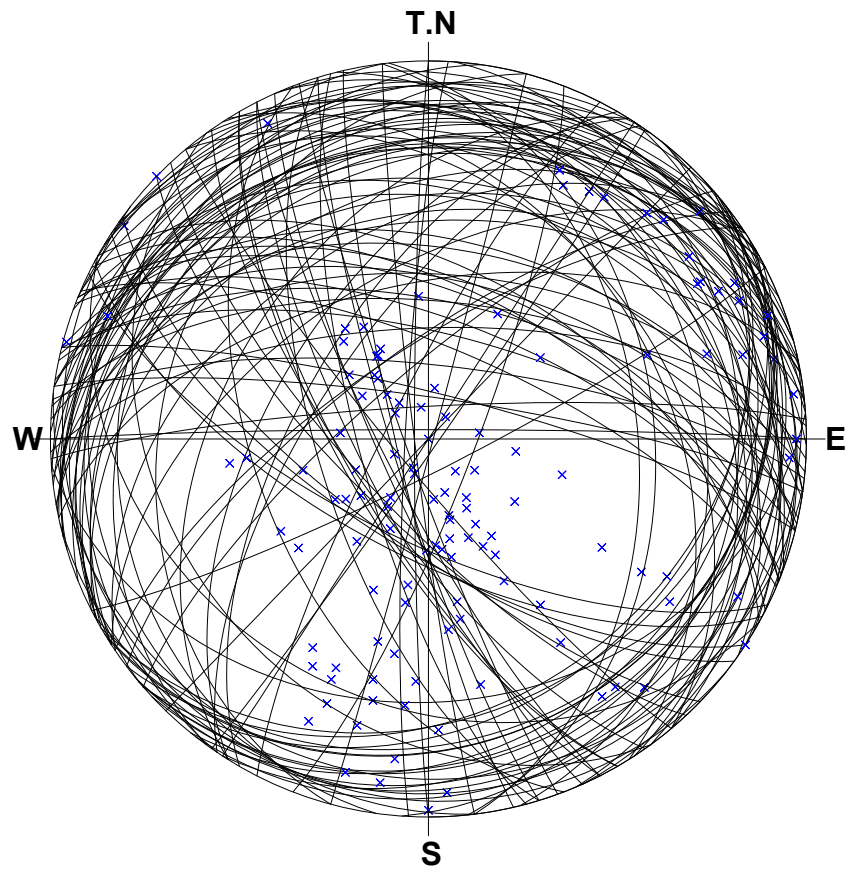
Number of Data:21/180

1 : 035/17(133)	6 : 051/31(141)
2 : 032/08(135)	7 : 039/31(143)
3 : 052/17(137)	8 : 039/31(145)
4 : 020/18(139)	9 : 333/01(151)
5 : 000/14(140)	10 : 011/06(153)

Schmidt (L.H)

Depth : 3.751 - 88.244 m

hq1.STR
<<JOINT>>



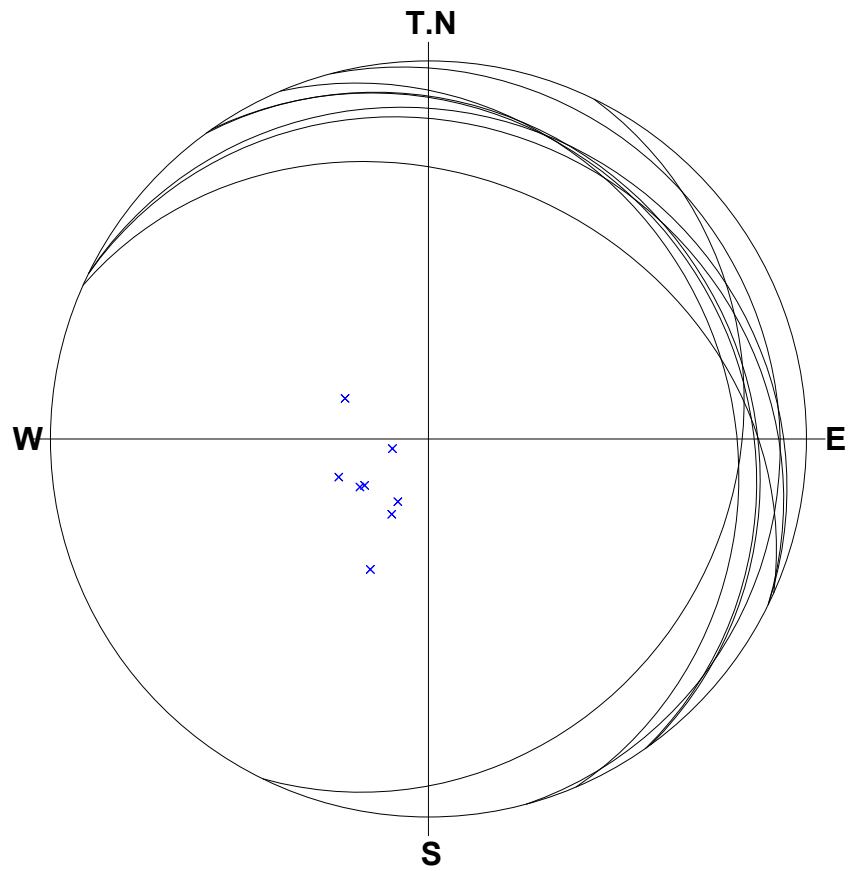
Number of Data:124/180

- | | |
|---------------|-----------------|
| 1 : 008/36(1) | 6 : 319/76(6) |
| 2 : 167/07(2) | 7 : 012/60(8) |
| 3 : 326/71(3) | 8 : 090/00(10) |
| 4 : 323/71(4) | 9 : 349/26(12) |
| 5 : 348/56(5) | 10 : 003/54(16) |

Schmidt (L.H)

Depth : 3.751 - 88.244 m

hq1.STR
<<PARTING>>



Number of Data:8/180

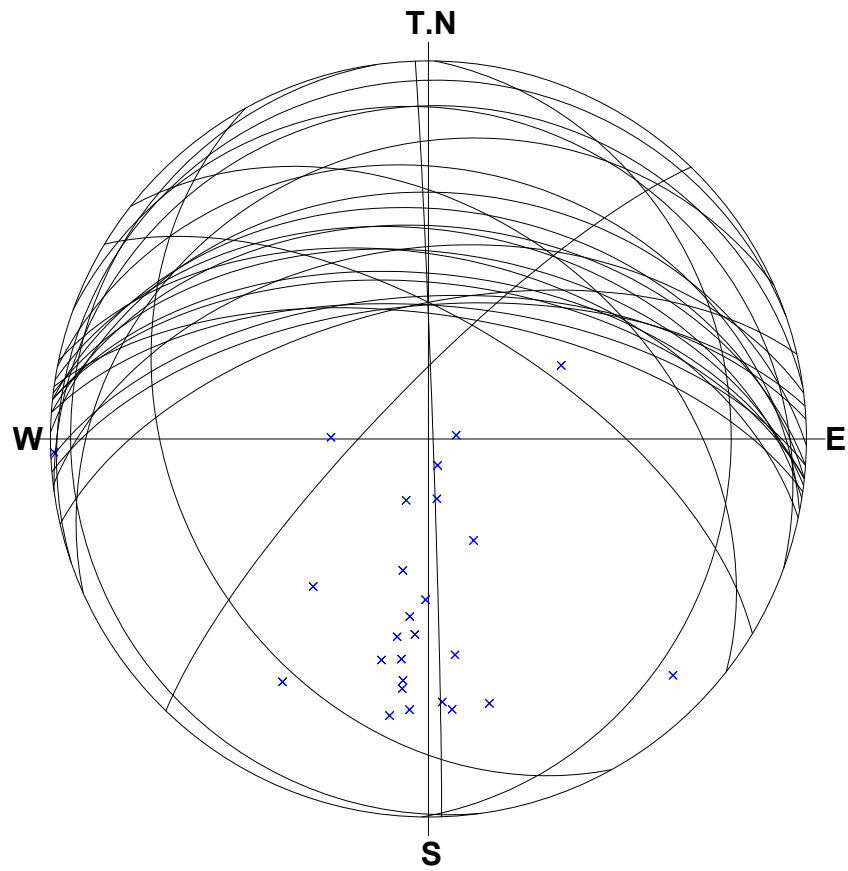
1 : 067/21(138)	6 : 055/18(175)
2 : 116/20(142)	7 : 054/17(176)
3 : 026/15(150)	8 : 075/08(178)
4 : 024/31(157)	
5 : 026/18(168)	

Schmidt (L.H)

Depth : 3.751 - 88.244 m

hq1.STR

<<SHEAR ZONE>>



Number of Data:26/180

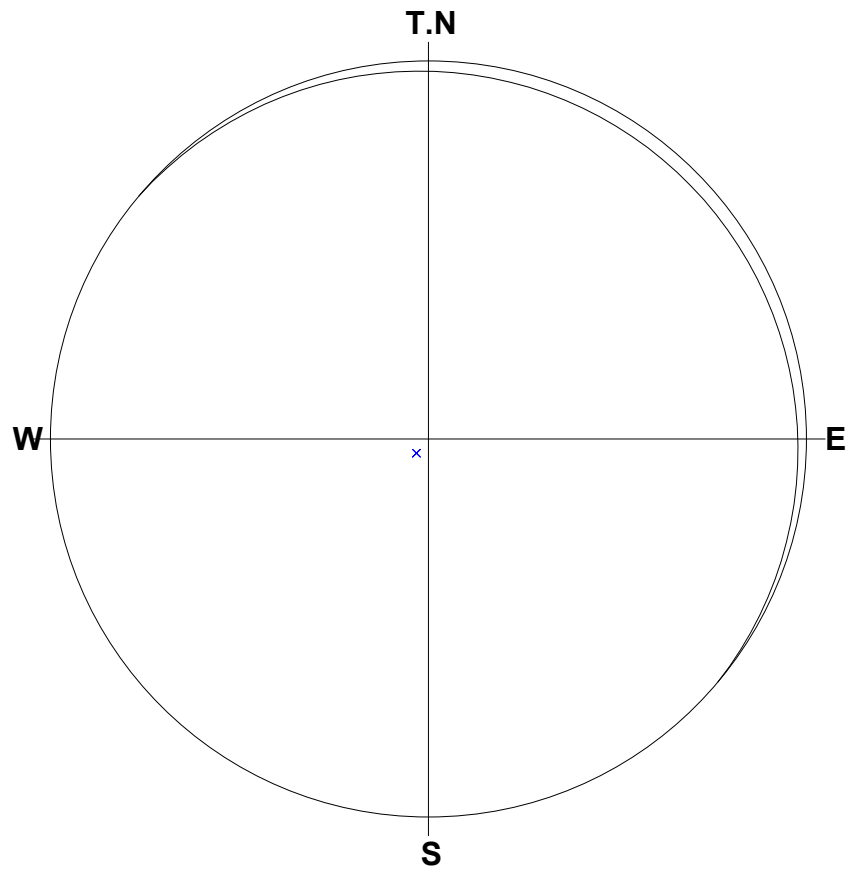
- | | |
|----------------|-----------------|
| 1 : 004/61(7) | 6 : 355/61(15) |
| 2 : 347/61(9) | 7 : 038/41(19) |
| 3 : 004/43(11) | 8 : 006/54(20) |
| 4 : 006/56(13) | 9 : 012/50(22) |
| 5 : 007/49(14) | 10 : 009/44(23) |

Schmidt (L.H)

Depth : 3.751 - 88.244 m

hq1.STR

<<ROCK BOUNDARY>>



Number of Data:1/180

1 : 040/04(125)

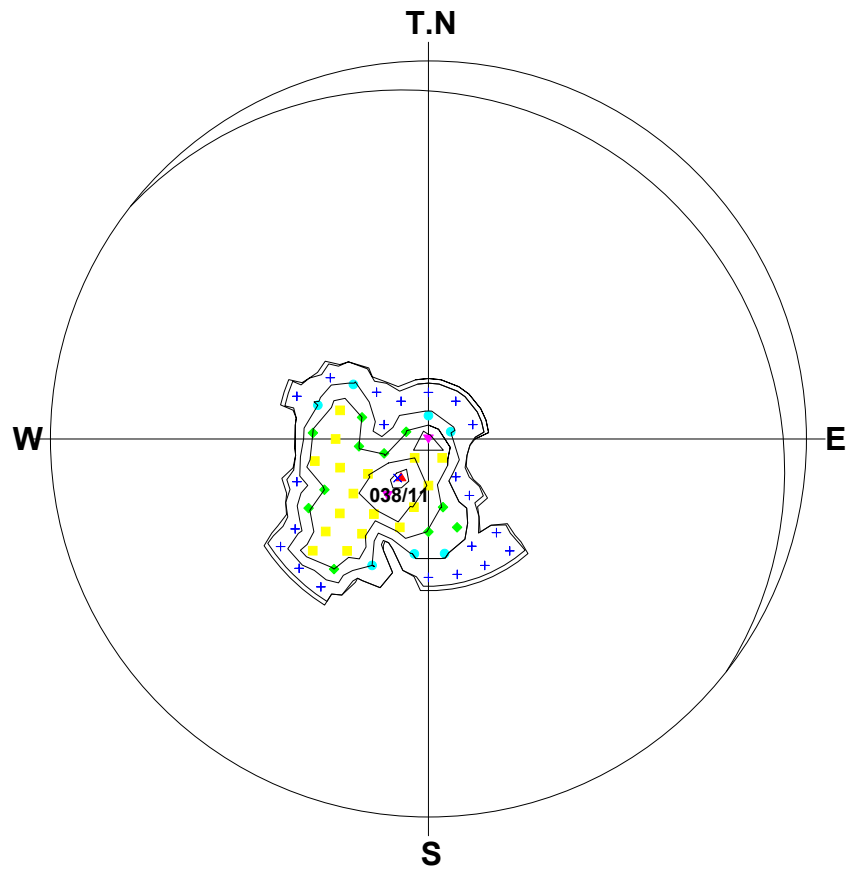
Schmidt (L.H)

Depth : 3.751 - 88.244 m

hq1.STR

<<BEDDING/LAMINA>>

***** % Diagram *****



Number of Data : 21

<Legend> Sym. (%)

▲ : 28

▼ : 22 - 28

■ : 17 - 22

◆ : 11 - 17

● : 5 - 11

⊕ : 0 - 5

Contour Value (%)

Contour 1 : 0

Contour 2 : 5

Contour 3 : 11

Contour 4 : 17

Contour 5 : 22

Contour 6 : 28

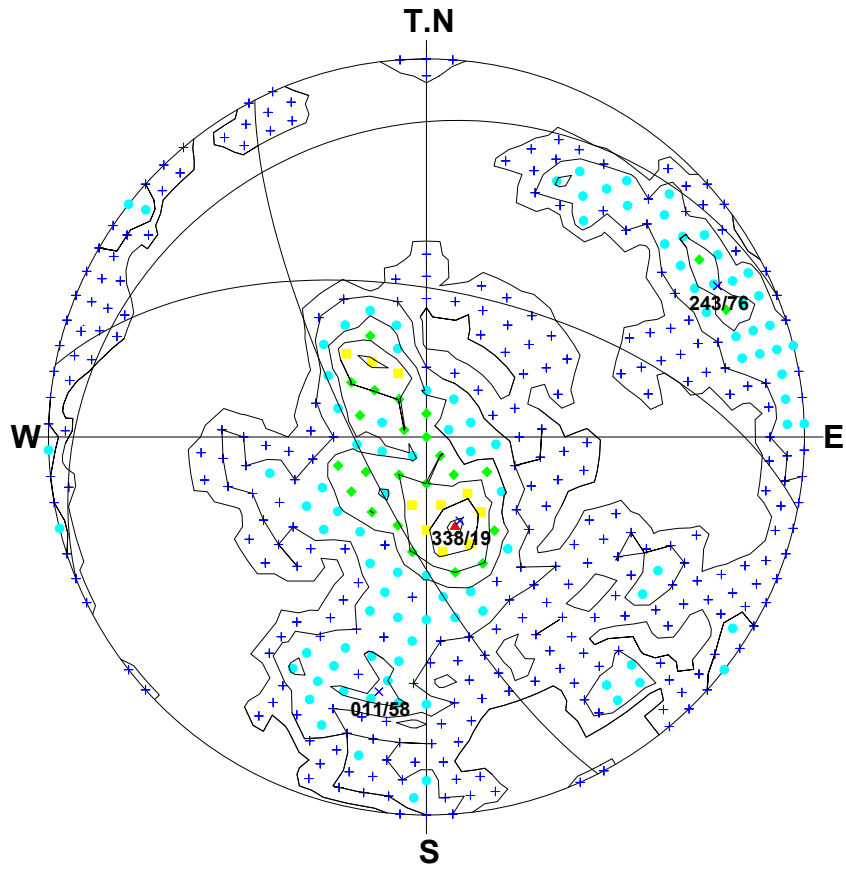


Schmidt (L.H)

Depth : 3.751 - 88.244 m

hq1.STR
 <<JOINT>>

***** % Diagram *****



Number of Data : 124

<Legend> Sym. (%)

- ▲ : 10
- ▼ : 8 - 10
- : 6 - 8
- ◆ : 4 - 6
- : 2 - 4
- ⊕ : 0 - 2

Contour Value (%)

- Contour 1 : 0
- Contour 2 : 2
- Contour 3 : 4
- Contour 4 : 6
- Contour 5 : 8
- Contour 6 : 10

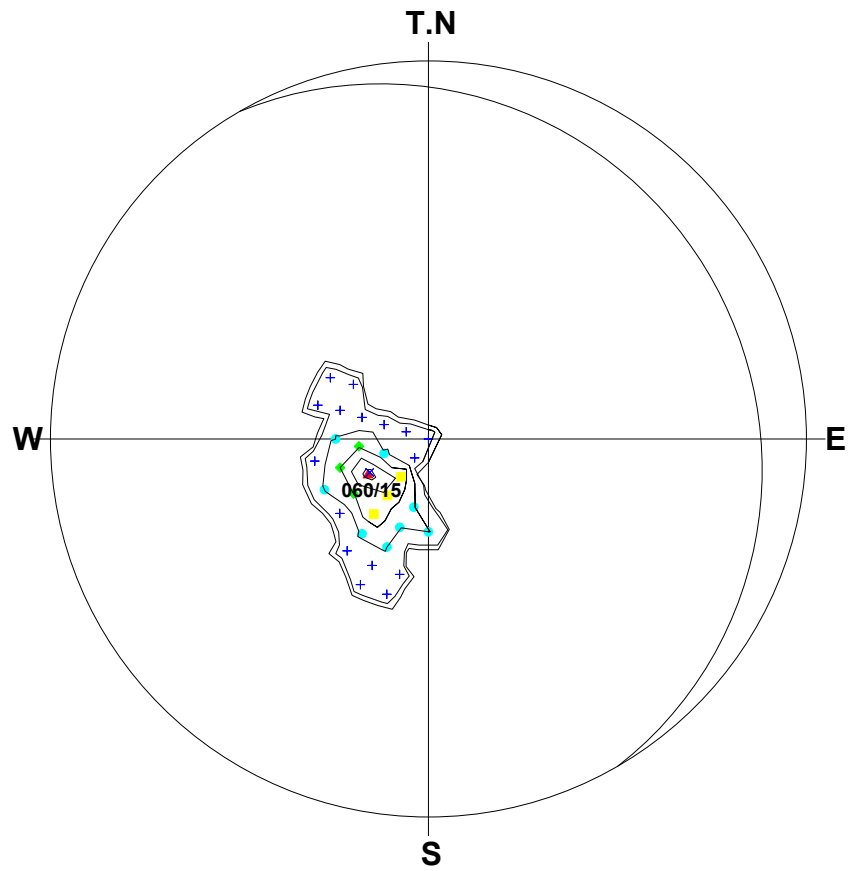
Schmidt (L.H)

Depth : 3.751 - 88.244 m

hq1.STR

<<PARTING>>

***** % Diagram *****



Number of Data : 8

<Legend> Sym. (%)

▲ : 75

▼ : 60 - 75

■ : 45 - 60

◆ : 30 - 45

● : 15 - 30

⊕ : 0 - 15

Contour Value (%)

Contour 1 : 0

Contour 2 : 15

Contour 3 : 30

Contour 4 : 45

Contour 5 : 60

Contour 6 : 75



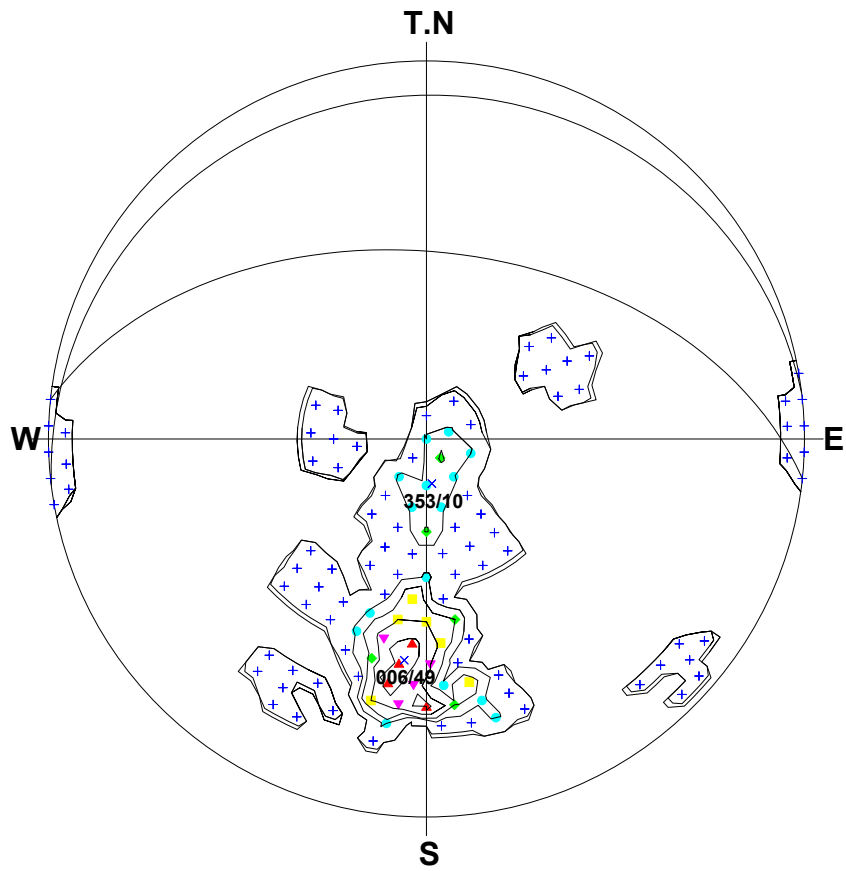
Schmidt (L.H)

Depth : 3.751 - 88.244 m

hq1.STR

<<SHEAR ZONE>>

***** % Diagram *****



Number of Data : 26

<Legend> Sym. (%)

▲ : 23

▼ : 18 - 23

■ : 13 - 18

◆ : 9 - 13

● : 4 - 9

⊕ : 0 - 4

Contour Value (%)

Contour 1 : 0

Contour 2 : 4

Contour 3 : 9

Contour 4 : 13

Contour 5 : 18

Contour 6 : 23



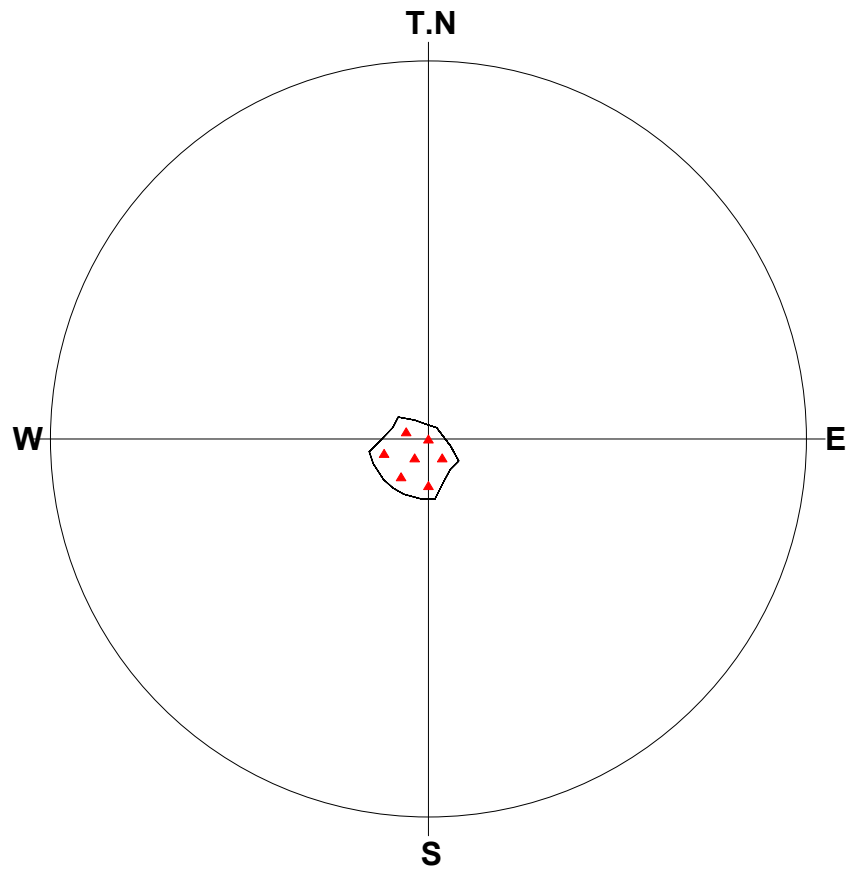
Schmidt (L.H)

Depth : 3.751 - 88.244 m

hq1.STR

<<ROCK BOUNDARY>>

***** % Diagram *****



Number of Data : 1

<Legend> Sym. (%)

- ▲ : 100
- ▼ : 80 - 100
- : 60 - 80
- ◆ : 40 - 60
- : 20 - 40
- ⊕ : 0 - 20

Contour Value (%)

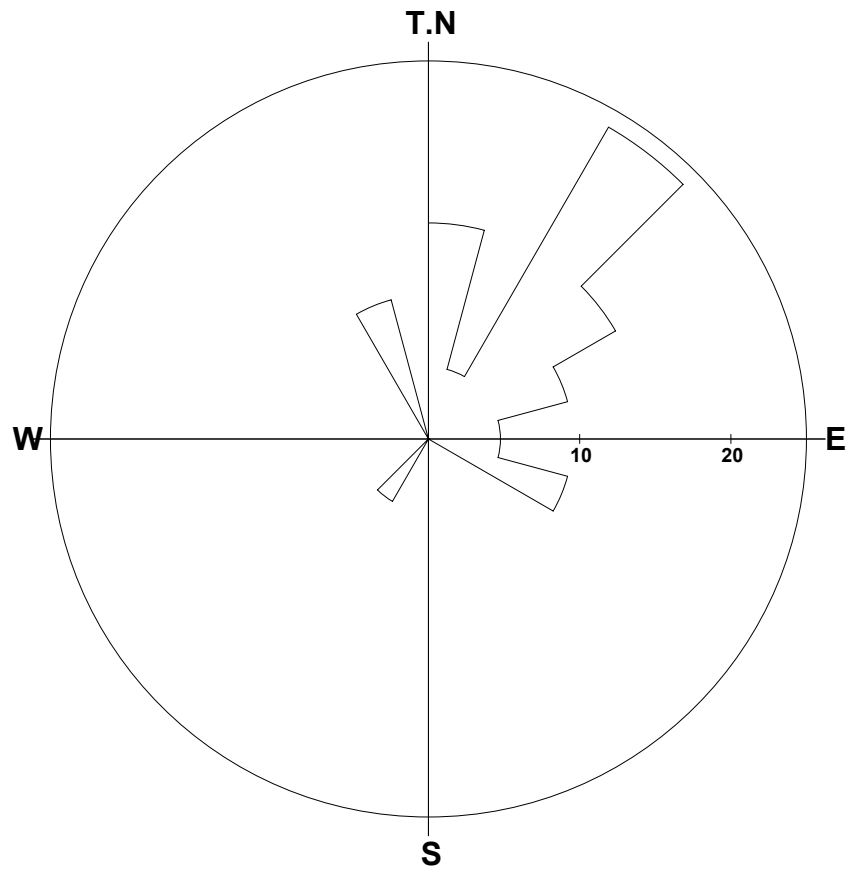
- Contour 1 : 0
- Contour 2 : 20
- Contour 3 : 40
- Contour 4 : 60
- Contour 5 : 80
- Contour 6 : 100

Schmidt (L.H)

Depth : 3.751 - 88.244 m

hq1.STR

<<BEDDING/LAMINA>>



Number of Data : 21/180

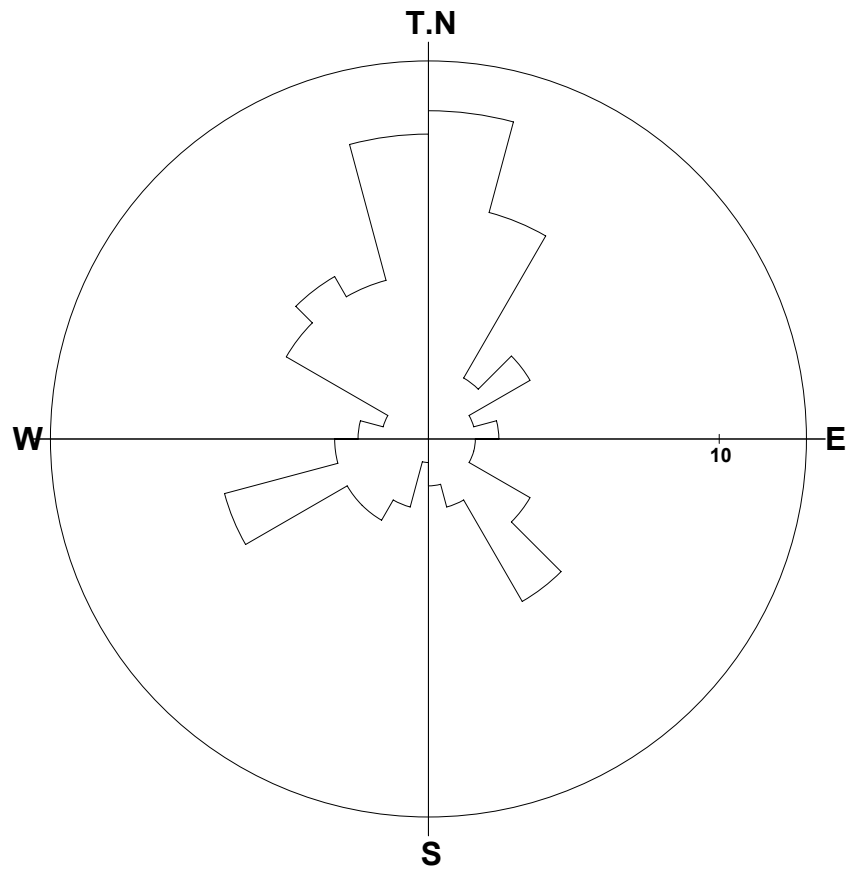
Max : 23.8%

Grouping Angle : 15 deg

Dir	%	Dir	%	Dir	%
0-	14	135-	0	270-	0
15-	5	150-	0	285-	0
30-	24	165-	0	300-	0
45-	14	180-	0	315-	0
60-	10	195-	0	330-	10
75-	5	210-	5	345-	0
90-	5	225-	0		
105-	10	240-	0		
120-	0	255-	0		

Depth : 3.751 - 88.244 m

hq1.STR
<<JOINT>>



Number of Data : 124/180

Max : 11.3%

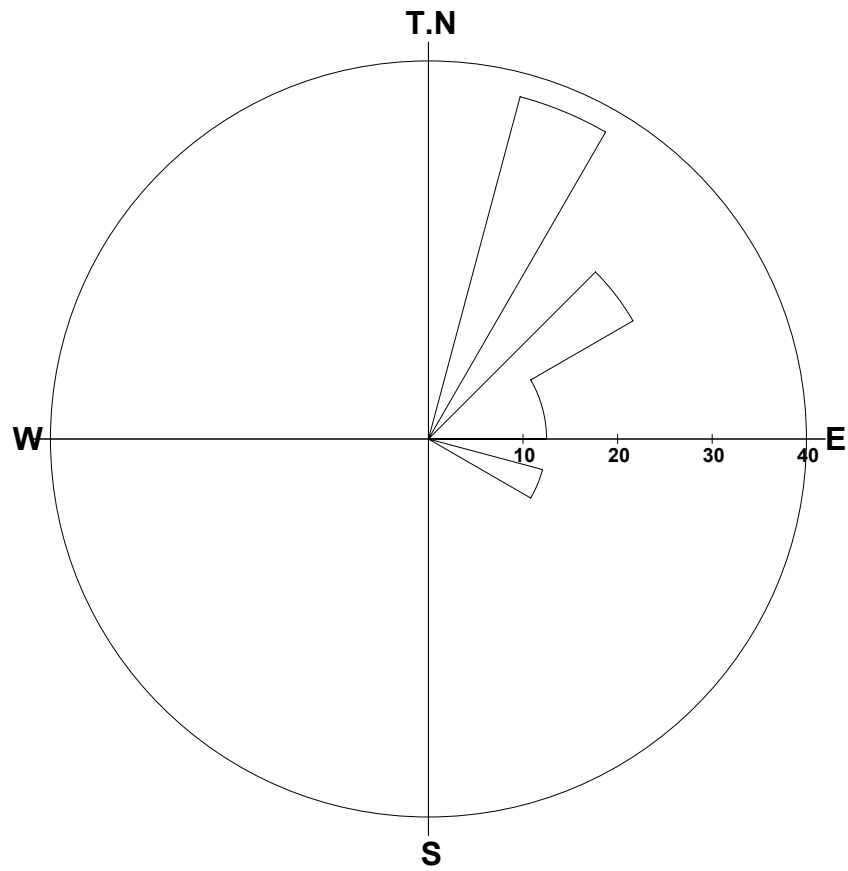
Grouping Angle : 15 deg

Dir	%	Dir	%	Dir	%
0-	11	135-	6	270-	2
15-	8	150-	2	285-	2
30-	2	165-	2	300-	6
45-	4	180-	1	315-	6
60-	2	195-	2	330-	6
75-	2	210-	3	345-	10
90-	2	225-	3		
105-	2	240-	7		
120-	4	255-	3		

Depth : 3.751 - 88.244 m

hq1.STR

<<PARTING>>



Number of Data : 8/180

Max : 37.5%

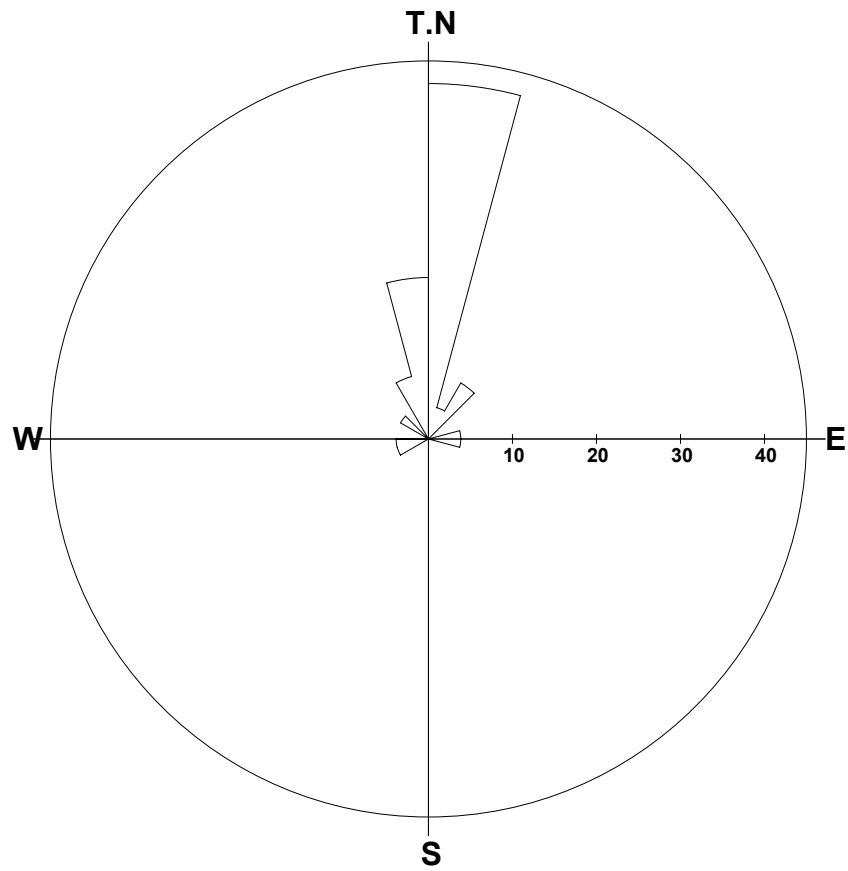
Grouping Angle : 15 deg

Dir	%	Dir	%	Dir	%
0-	0	135-	0	270-	0
15-	38	150-	0	285-	0
30-	0	165-	0	300-	0
45-	25	180-	0	315-	0
60-	13	195-	0	330-	0
75-	13	210-	0	345-	0
90-	0	225-	0		
105-	13	240-	0		
120-	0	255-	0		

Depth : 3.751 - 88.244 m

hq1.STR

<<SHEAR ZONE>>



Number of Data : 26/180

Max : 42.3%

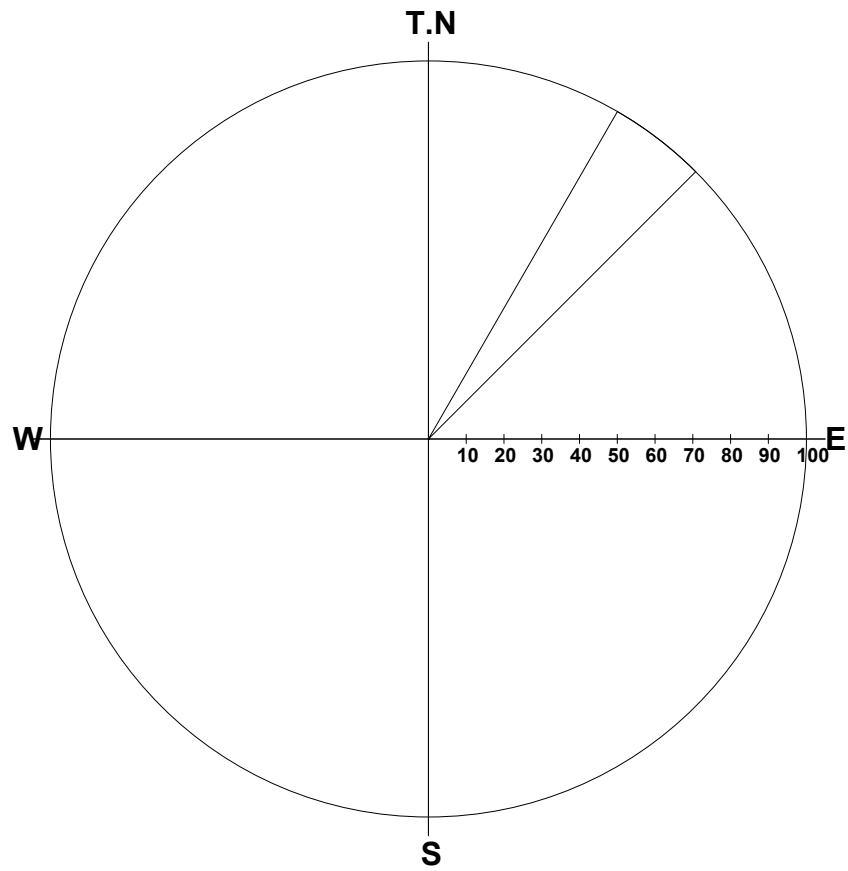
Grouping Angle : 15 deg

Dir	%	Dir	%	Dir	%
0-	42	135-	0	270-	0
15-	4	150-	0	285-	0
30-	8	165-	0	300-	4
45-	0	180-	0	315-	0
60-	0	195-	0	330-	8
75-	4	210-	0	345-	19
90-	4	225-	0		
105-	0	240-	4		
120-	0	255-	4		

Depth : 3.751 - 88.244 m

hq1.STR

<<ROCK BOUNDARY>>



Number of Data : 1/180

Max : 100.0%

Grouping Angle : 15 deg

Dir	%	Dir	%	Dir	%
0-	0	135-	0	270-	0
15-	0	150-	0	285-	0
30-	100	165-	0	300-	0
45-	0	180-	0	315-	0
60-	0	195-	0	330-	0
75-	0	210-	0	345-	0
90-	0	225-	0		
105-	0	240-	0		
120-	0	255-	0		

Depth : 3.751 - 88.244 m

Title: hq1.STR
 Comment: JOINT
 Depth: 3.751 - 88.244 m
 Aperture: 0.0 - 219.0 mm

Sort: 1/7
 Form: 5/5
 Condition: 10/10
 Remark: 9/9

2006/ 11/ 17
 Elevation: 0.000m
 Water Level: 21.460m

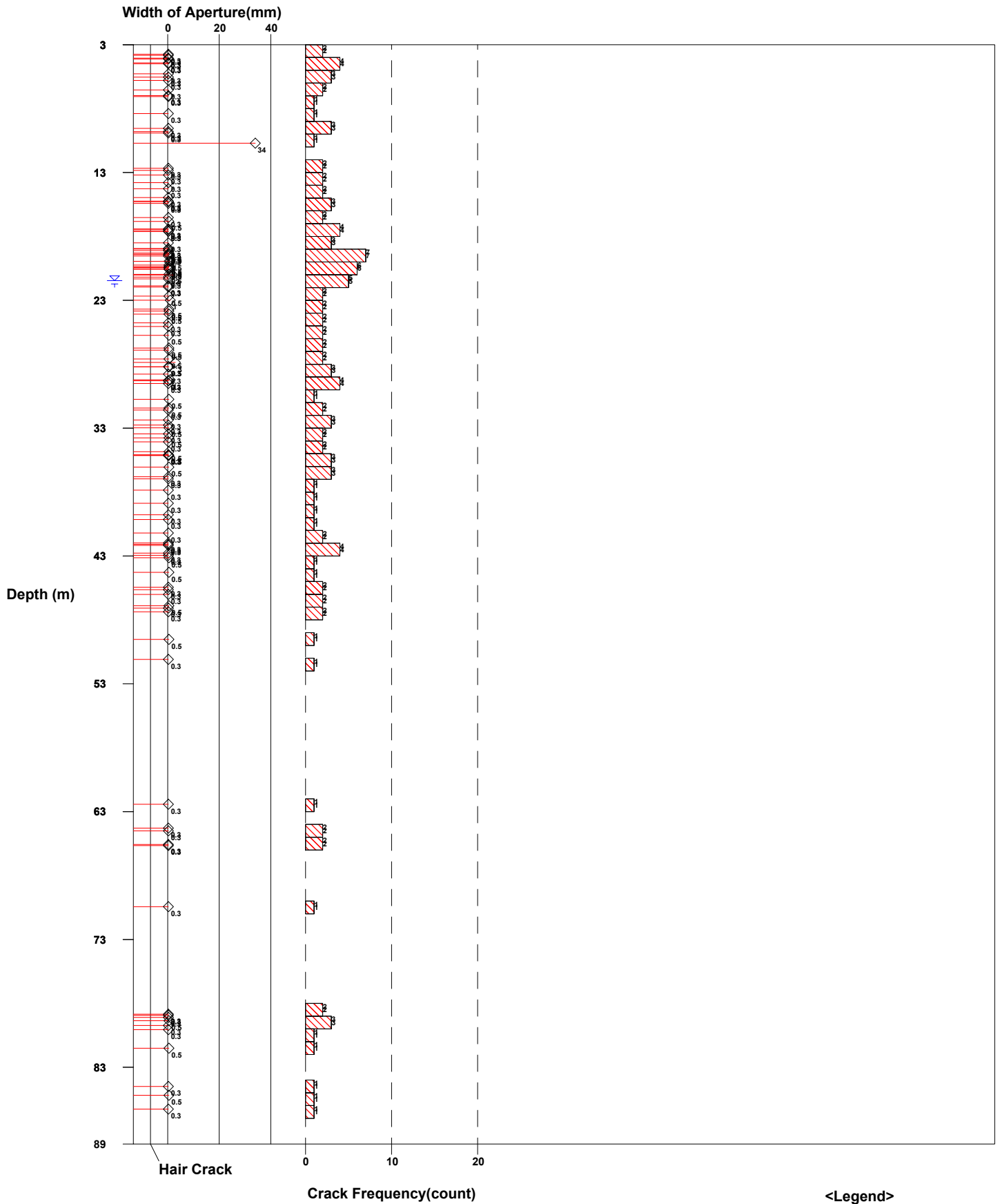


Fig. Rock Mass Condition Graph

- All Crack Frequency
- Open Crack Frequency
- Water Level

Title: hq1.STR
 Comment: PARTING
 Depth: 3.751 - 88.244 m
 Aperture: 0.0 - 219.0 mm

Sort: 1/7
 Form: 5/5
 Condition: 10/10
 Remark: 9/9

2006/ 11/ 17
 Elevation: 0.000m
 Water Level: 21.460m

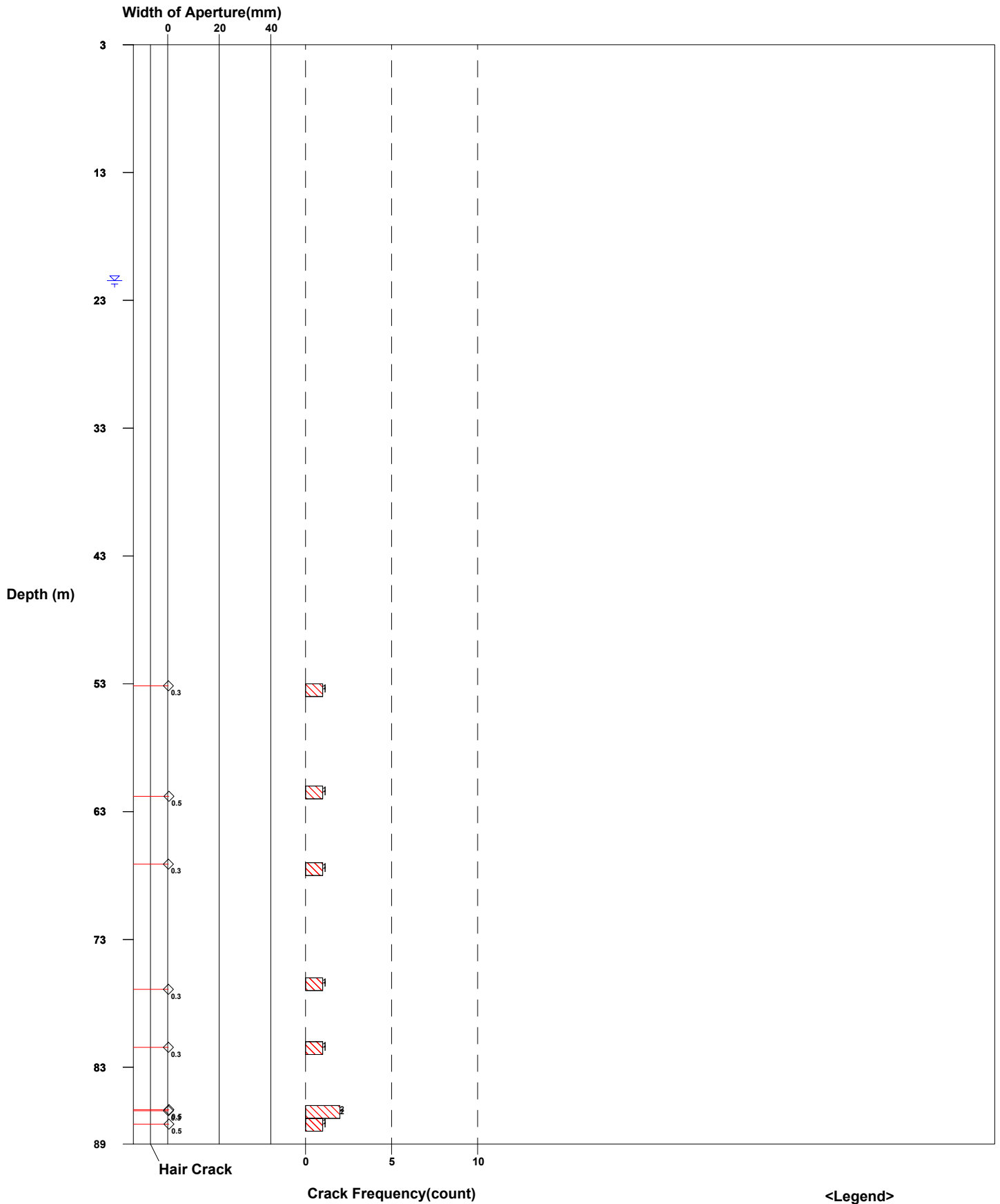


Fig. Rock Mass Condition Graph

- All Crack Frequency
- Open Crack Frequency
- Water Level

Title: hq1.STR
 Comment: SHEAR ZONE
 Depth: 3.751 - 88.244 m
 Aperture: 0.0 - 219.0 mm

Sort: 1/7
 Form: 5/5
 Condition: 10/10
 Remark: 9/9

2006/ 11/ 17
 Elevation: 0.000m
 Water Level: 21.460m

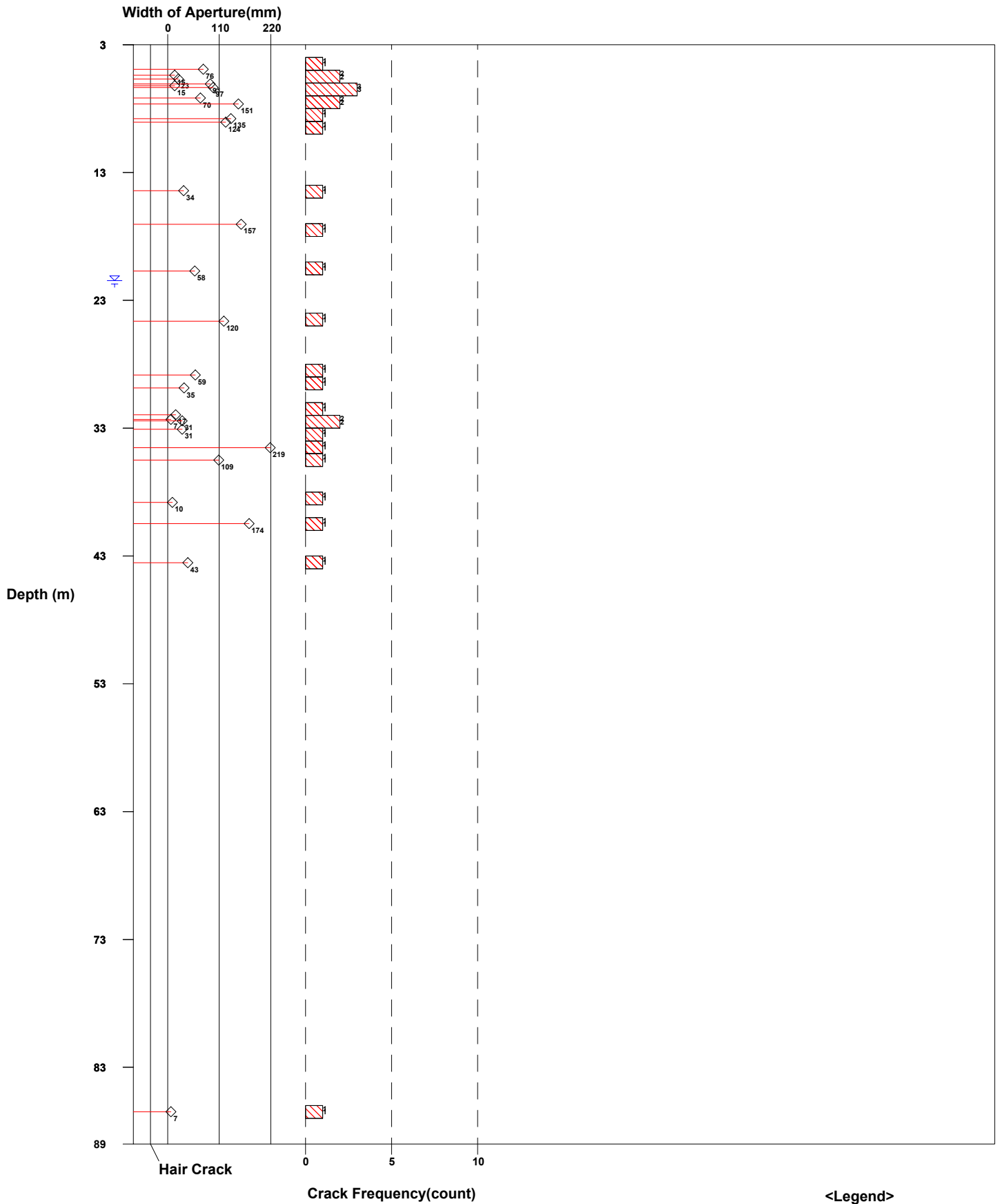


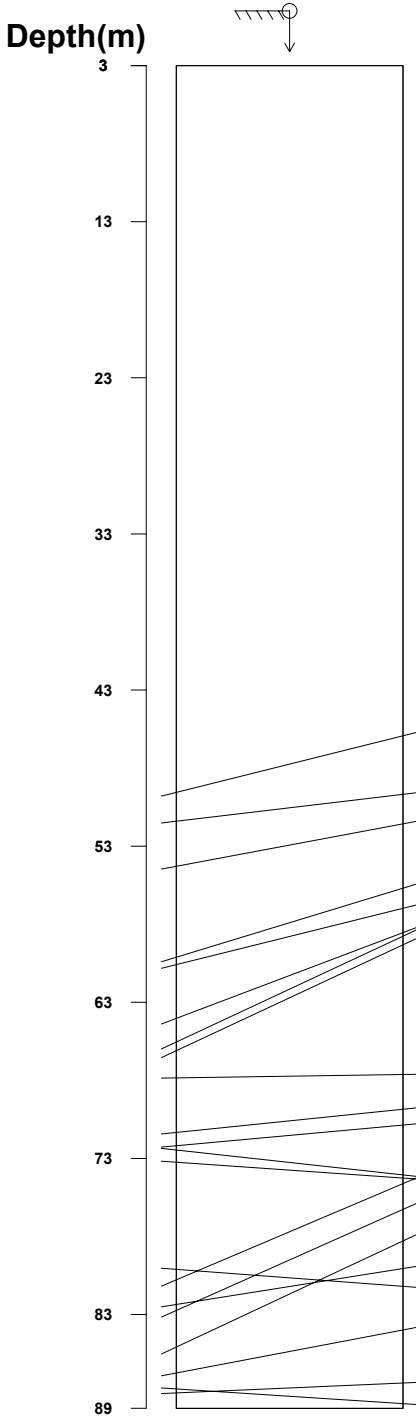
Fig. Rock Mass Condition Graph

- <Legend>
- All Crack Frequency
 - Open Crack Frequency
 - Water Level

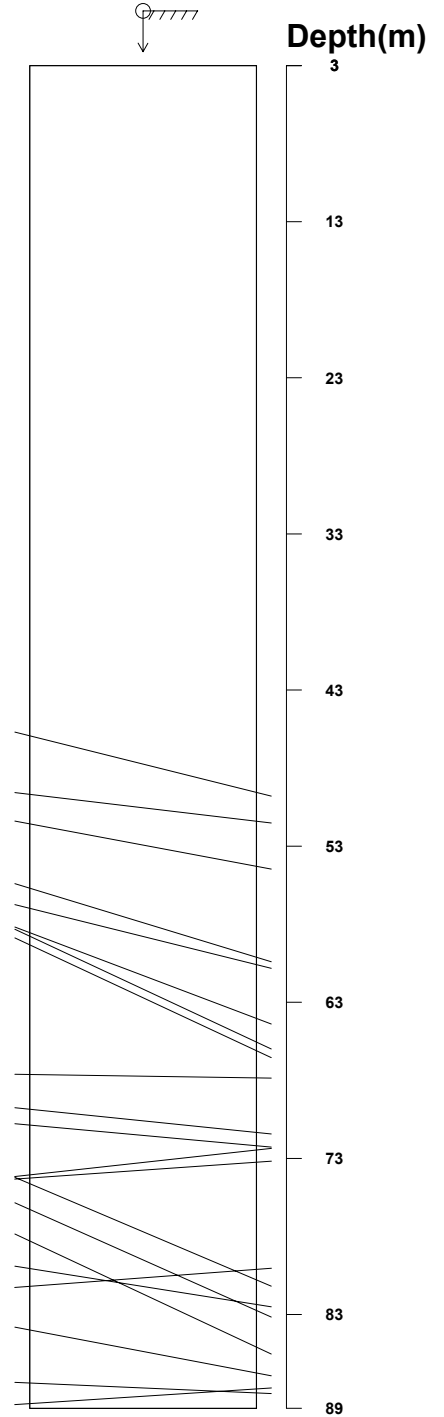
Title: hq1.STR
 Comment: BEDDING/LAMINA
 Depth: 3.751 - 88.244 m
 Aperture: 0.0 - 219.0 mm

Sort: 1/7
 Form: 5/5
 Condition: 10/10
 Remark: 9/9

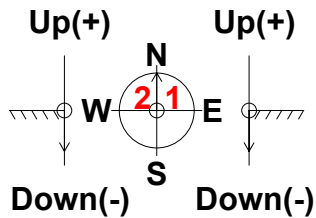
**View Point 2
 Profile of Apparent Borehole**



**View Point 1
 Profile of Apparent Borehole**



View Point2 View Point1



Direction: 0 deg
 Inclination: Vertical(Down)

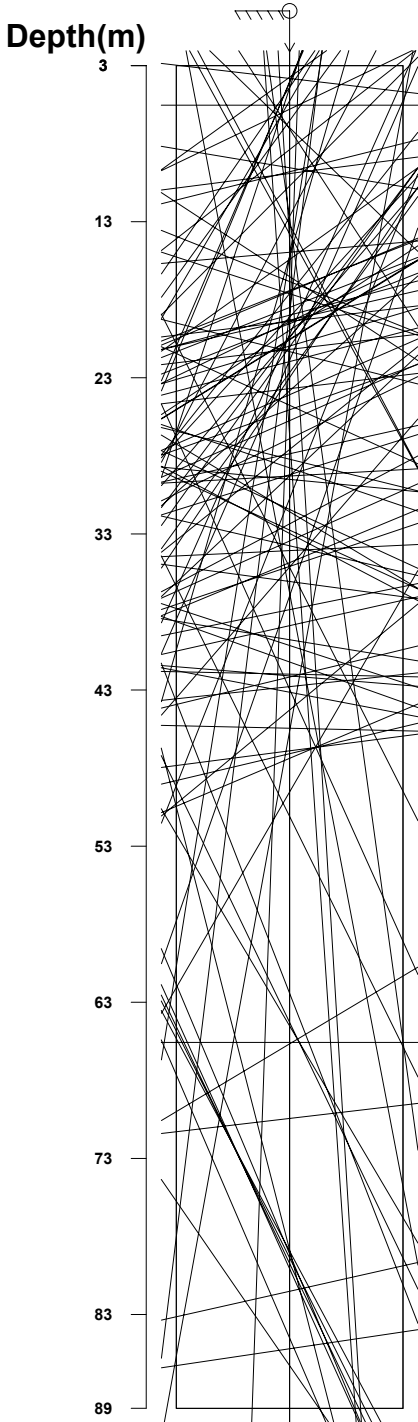
<Legend>
 Entrance G.L.
 Bottom

Fig. Apparent Dip

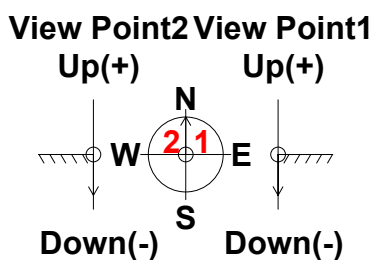
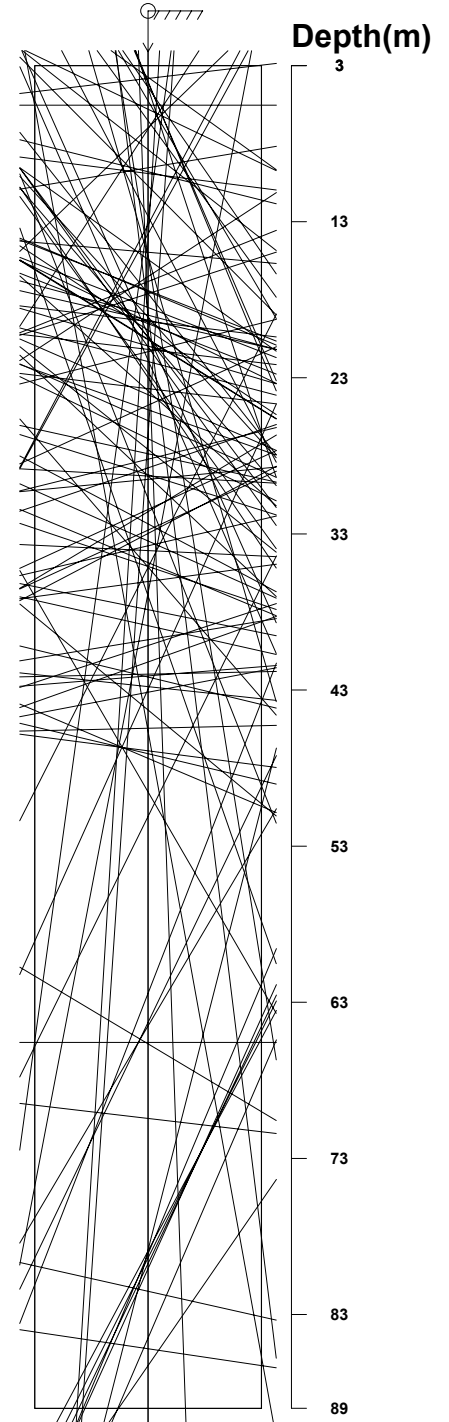
Title: hq1.STR
 Comment: JOINT
 Depth: 3.751 - 88.244 m
 Aperture: 0.0 - 219.0 mm

Sort: 1/7
 Form: 5/5
 Condition: 10/10
 Remark: 9/9

View Point 2
Profile of Apparent Borehole



View Point 1
Profile of Apparent Borehole



Direction: 0 deg
 Inclination: Vertical(Down)

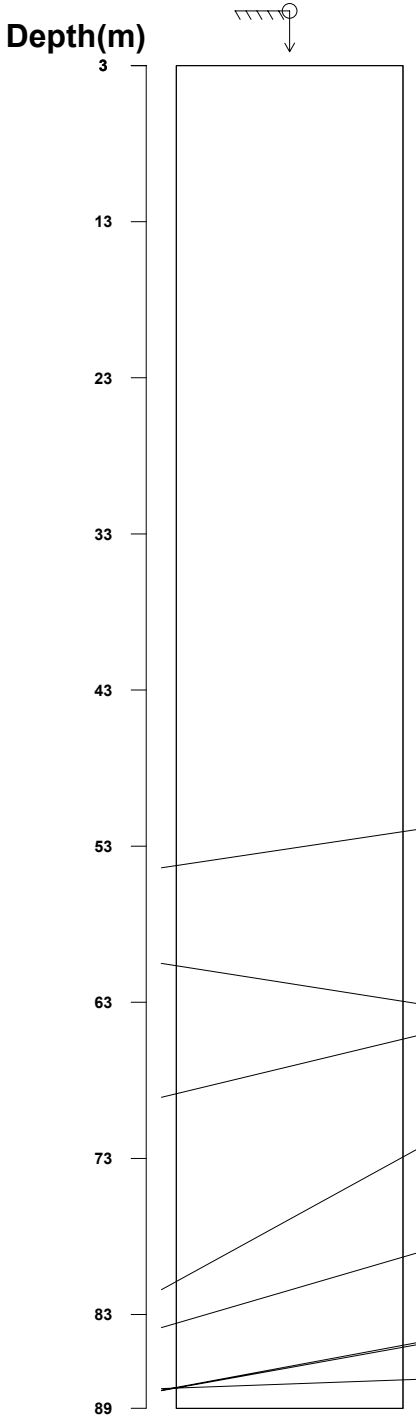
<Legend>
 Entrance G.L.
 Bottom Bottom

Fig. Apparent Dip

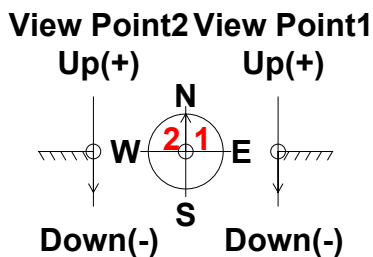
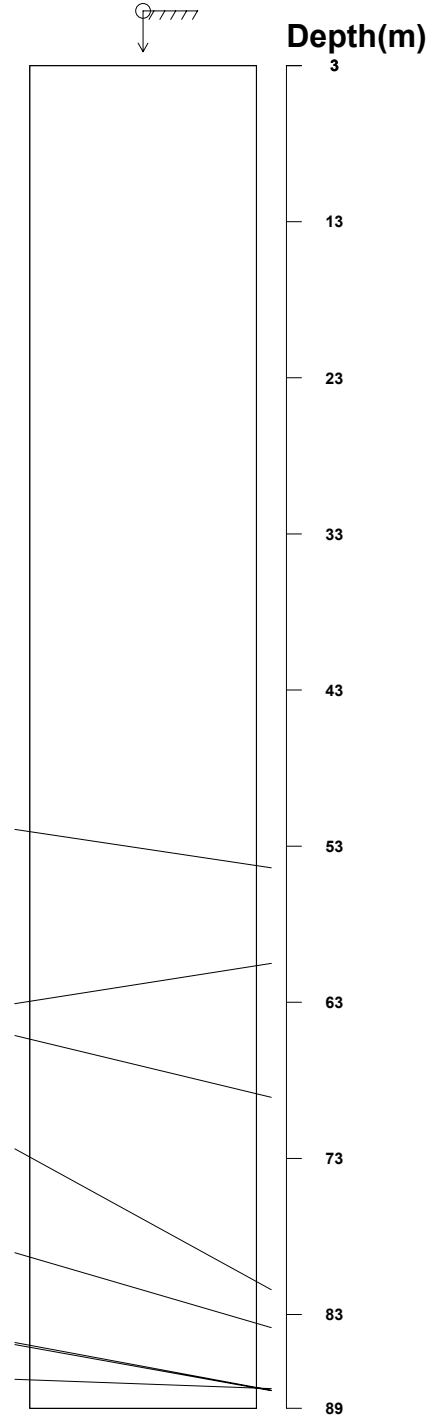
Title: hq1.STR
 Comment: PARTING
 Depth: 3.751 - 88.244 m
 Aperture: 0.0 - 219.0 mm

Sort: 1/7
 Form: 5/5
 Condition: 10/10
 Remark: 9/9

**View Point 2
 Profile of Apparent Borehole**



**View Point 1
 Profile of Apparent Borehole**



Direction: 0 deg
 Inclination: Vertical(Down)

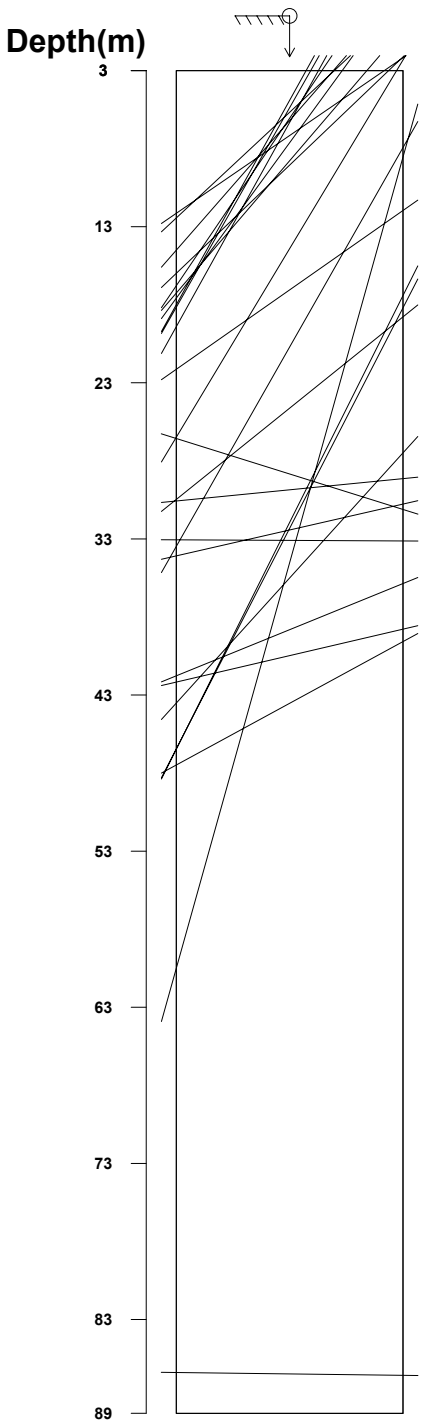
<Legend>
 Entrance G.L.
 Bottom

Fig. Apparent Dip

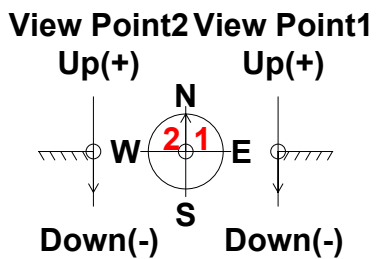
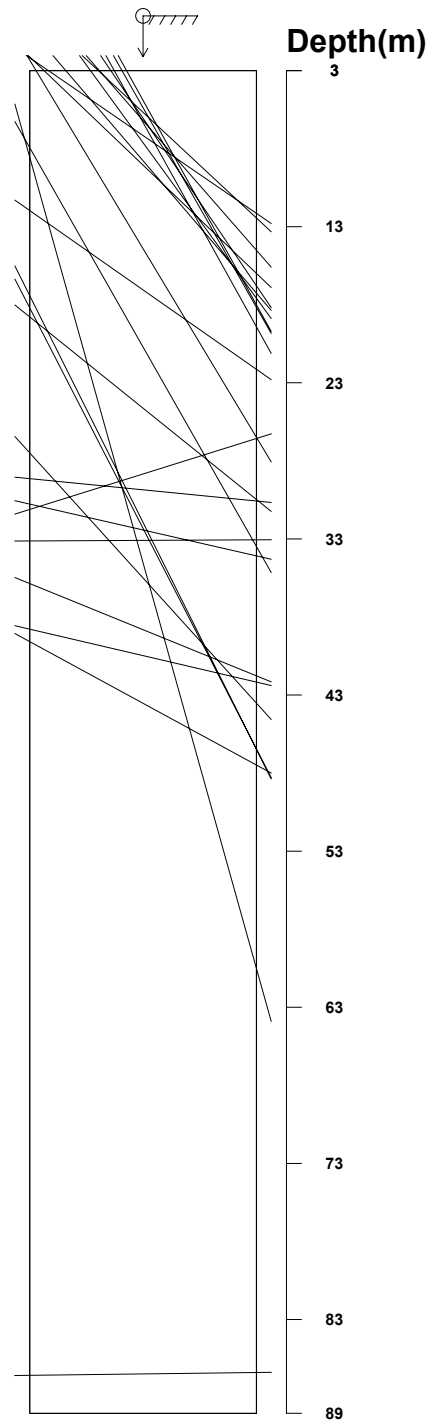
Title: hq1.STR
 Comment: SHEAR ZONE
 Depth: 3.751 - 88.244 m
 Aperture: 0.0 - 219.0 mm

Sort: 1/7
 Form: 5/5
 Condition: 10/10
 Remark: 9/9

View Point 2
Profile of Apparent Borehole



View Point 1
Profile of Apparent Borehole



Direction: 0 deg
 Inclination: Vertical(Down)

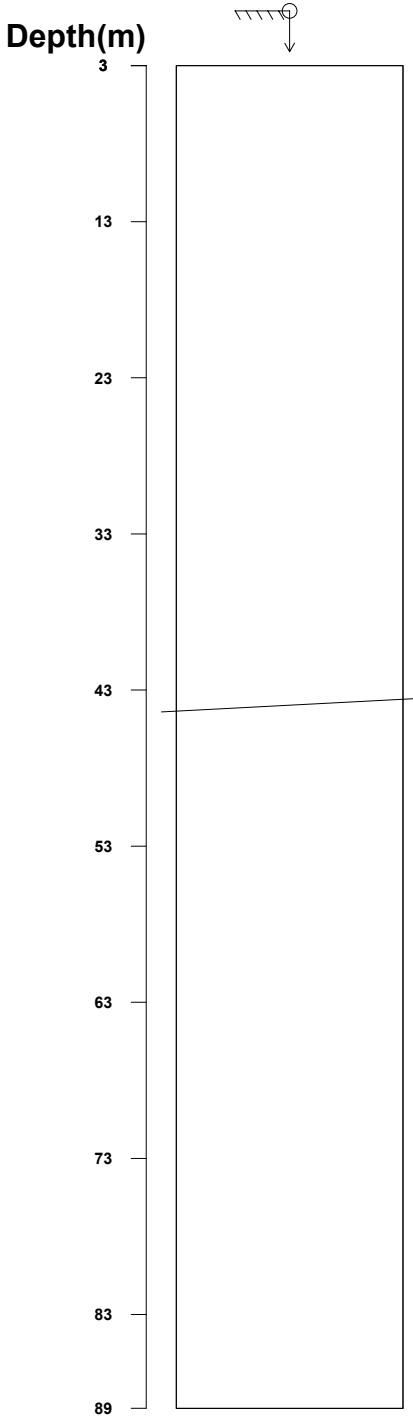
<Legend>
 Entrance G.L.
 Bottom Bottom

Fig. Apparent Dip

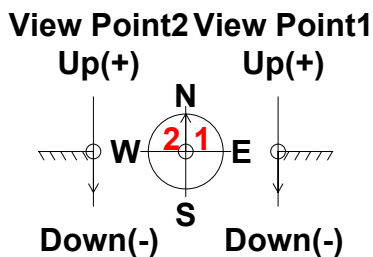
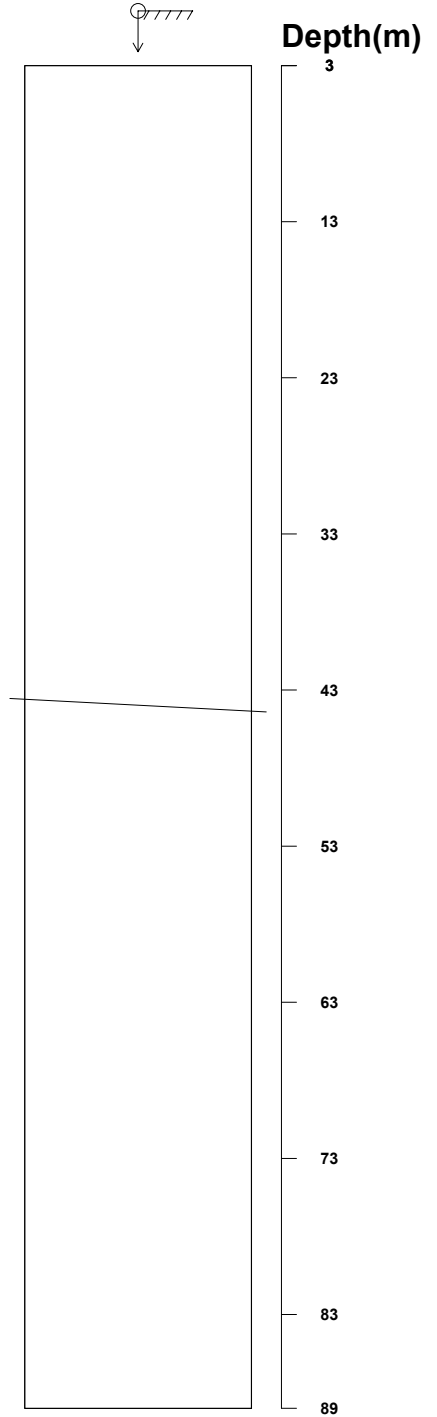
Title: hq1.STR
 Comment: ROCK BOUNDARY
 Depth: 3.751 - 88.244 m
 Aperture: 0.0 - 219.0 mm

Sort: 1/7
 Form: 5/5
 Condition: 10/10
 Remark: 9/9

View Point 2
Profile of Apparent Borehole



View Point 1
Profile of Apparent Borehole



Direction: 0 deg
 Inclination: Vertical(Down)

<Legend>
 Entrance G.L.
 Bottom

Fig. Apparent Dip